Microwave Spectra of Molecules of Astrophysical Interest. XXVI. Acetic Acid (CH_3COOH)

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The microwave spectrum of acetic acid is critically reviewed and supplemented with spectral frequency calculations derived from the rotation-torsion analysis. A simultaneous analysis of the torsional ground state, $v_t=0$, and first and second torsionally excited states, $v_t=1$ and 2, was carried out using the so-called "rho axis method." The primary objective of this review is to provide radio astronomers with complete spectral coverage over the 1–400 GHz range for the ground and $v_t=1$ states, covering rotational quantum numbers $J\leqslant 30$ and $|K_a|\leqslant 15$. © *2008 by the U.S. Secretary of Commerce on behalf of the United States. All rights reserved.* [DOI: 10.1063/1.2815328]

Key words: acetic acid; internal rotation; interstellar molecule; microwave spectrum; radio astronomy; rotational transitions.

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1. Introduction

Acetic acid (CH_3COOH) was detected in the molecular cloud core known as the "large molecule heimat" toward the high mass star forming region Sagittarius B2(N-LMH) by Mehringer *et al.*[1] and toward W51e2 by Remijan *et al.*[2] A follow-up survey of 12 galactic hot molecular cores for acetic acid by Remijan *et al.*[3] resulted in the detection of an additional galactic acetic acid source toward G34.3+0.2, clearly illustrating that acetic acid is an important and abundant interstellar molecule. In the laboratory, acetic acid has been studied by a number of groups beginning with Tabor[4] in 1957 and later by Krisher and Saegebarth[5] in 1971. However, due to the internal rotation of the methyl group with a rather low V_3 barrier (170 cm^{-1}=2.03 kJ mol^{-1}), these earlier studies were hampered by the lack of a Hamiltonian that could fit the *E*-state transitions to within experimental uncertainty. Application of the rho axis method (RAM) internal rotation Hamiltonian to the three lowest torsional states of acetic acid rectified this situation and allowed spectral fitting to experimental uncertainty.[6,7]

The present work is a critical review that is intended to provide astronomers with the best available rotational spectrum for the CH_3COOH molecule. It is a part of a series of critical reviews on molecules identified in interstellar molecular clouds. Predicted and observed transition frequencies, energy levels, and line strengths are provided for the rotational transitions with $J\leqslant 30$, $|K_a|\leqslant 15$ in the ground $v_t=0$

and first excited $v_t=1$ torsion states. This review is based on the recent progress in measuring, assigning, and fitting the rotational spectrum of the first three torsional states (labeled $v_t=0,1,2$) of acetic acid[6,7] with the observed rotational transitions belonging to the range between 8 and 364 GHz. Although the Hamiltonian parameters used in the review were obtained from a simultaneous analysis of the first three torsional states $v_t=0,1,2$, the prediction is provided only for $v_t=0$ and 1 since the coverage of observed and fitted transitions for the $v_t=2$ [$J\leqslant 27$ (15), $|K_a|\leqslant 13$ (8) for the $A(E)$ species, respectively] is not as complete as for the $v_t=0$ and 1 states.

2. Organization of Tables

In the following subsections, we describe the sources of the microwave and millimeter-wavelength rotational transition frequencies employed in the analysis as well as molecular parameters obtained from the global fit of the rotational transitions in the $v_t=0,1,2$ states. Also, we discuss the format of Table 2 containing the microwave transitions of CH_3COOH in the order of frequency and the limits adopted for calculation of the transitions in this table.

2.1. Data Sources and Fitted Molecular Parameters

Literature data[4,5,8–11] were used (provided that they were not remeasured later) along with measurements from Lille (148–250 GHz), from NIST (Fourier transform microwave measurements from 8 to 40 GHz, millimeter measurements from 78 to 118 GHz, and submillimeter measurements from 300 to 304 and 350 to 365 GHz), and from Kharkov (measurements from 49 to 155 GHz). The detailed discussion of this data set is available in Ilyushin *et al.*[6] In Ilyushin *et al.*,[7] new $v_t=1$ and 2 microwave lines from the Kharkov laboratory were employed in a global 3 (torsional) state analysis. Our previous reports on acetic acid[6,7] contain considerable detail on the measurements and methods of analysis as well as statistics on the various data sets employed. The reader is encouraged to consult these references for more details.

In the present review, we decided to refit the $v_t=0$, 1, and 2 data set (originally containing 2103 $v_t=0$, 1111 $v_t=1$, and 634 $v_t=2$ microwave lines)[7] using the same RAM as in Ilyushin *et al.*[6,7] but taking into account the fact that in this data set, 358 observed lines (occurring in the $v_t=0,1$ states of both A and E species) correspond to multiple transitions with frequencies that are degenerate within experimental accuracy. These transitions have either two or four degenerate components. The weight ($w=1/\Delta\nu^2$, where $\Delta\nu$ is the measurement accuracy) for these cluster lines was thus taken either as $1/2$ (or $1/4$) of the original one. The main purpose of doing this was to obtain more reliable calculated uncertainties for the transitions in Table 2. This new weighting procedure was not exactly the same as the one applied in our original papers,[6,7] and therefore we decided to rerun a fit. The fit, which uses the RAM internal rotation Hamiltonian (already presented elsewhere[12–16]), achieves a unitless weighted standard deviation of 0.85. The obtained rms deviations of the different groups of data are almost identical to the rms deviations originally reported by Ilyushin *et al.*[7] (see Table 1 of Ilyushin *et al.*[7]). The set of 62 rotation-torsion parameters employed was the same as in our last original paper[7] and the values obtained here are almost the same differing within one standard uncertainty (type A, $k=1$).[17] As expected, the only significant consequence of applying a new weighting scheme was a slight increase in the calculated uncertainties, both for derived parameters and calculated frequencies. The rotation-torsion parameters of acetic acid $^{12}CH_3\ ^{12}C\ ^{16}O\ ^{16}OH$ obtained from a nonlinear least-squares fit of the microwave and millimeter-wave measurements in the first three torsional states ($v_t=0$, 1, and 2) are presented in Table 1. The vibration-rotation-torsion Hamiltonian used in the fit is a sum of terms, where each term is a product of the parameter and the operator in a given row of Table 1 [except for F, ρ and A, which occur in the Hamiltonian in the form $F(P_\alpha-\rho P_a)^2+AP_a^2$]. The authors would like to direct the reader's attention to the fact that a number of errors slipped through Table 2 of Ilyushin *et al.*:[7] two parameters δ_{ab} and D_{abJK} were, in fact, set to zero in the final fit and were *not* used eventually in the $v_t\leqslant 2$ fit and, in addition, a number of operators have been misprinted in Table 2 of this reference.[7] The authors will provide the data set and program employed in the review upon request. Also, the fitting program is now available through the PROSPE database.[18]

2.2. The Intensity Calculation

In the calculation of the line intensities presented in Table 2, we follow the approach and the discussion described in detail in Ilyushin *et al.*[7] and Mekhtiev *et al.*[19] Here, we reproduce several expressions from these references, which are useful for the discussion of the intensity calculation for acetic acid. The line strength of the torsion-rotation transition between the level L' containing all $(2J'+1)$ M' components and the level L containing all $(2J+1)$ M components is given by the formula

$$S(L';L)=\frac{1}{\mu^2}\sum_M 3|\langle J',\tau',M,v_t',\sigma'|\mu_Z|J,\tau,M,v_t,\sigma\rangle|^2, \quad (1)$$

where μ_Z is the instantaneous electric dipole moment along the laboratory-fixed Z axis and $|J',\tau',M,v_t',\sigma'\rangle$ and $|J,\tau,M,v_t,\sigma\rangle$ are the wave functions that represent levels L' and L.[19] Note that a factor $1/\mu^2$ has been introduced in the expression [Eq. (1)] which was absent in the corresponding expression [Eq. (1)] of our previous paper[7] where we discuss intensity calculations for acetic acid. This was done to be more consistent with the line strength definition for usual asymmetric tops.[20] Consequently, in Table 2, we present a product μ^2S of line strength S and square of dipole moment μ^2. As shown in Ilyushin *et al.*,[7] the substitution of the expressions for torsion-rotation asymmetric rotor functions $|J,\tau,M,v_t,\sigma\rangle$ gives the following final expression:

$$S(L';L)=\frac{1}{\mu^2}\sum_M 3\left|\sum_\alpha \sum_{\substack{K',K=-J,J \\ v_t''',v_t''=0,N_t-1}} C_{K',v_t'''}^{J',\tau',v_t',\sigma'} C_{K,v_t''}^{J,\tau,v_t,\sigma} \times\langle K',v_t''',\sigma'|\mu_\alpha|K,v_t'',\sigma\rangle \times\langle J',K',M|\Phi_{Z\alpha}|J,K,M\rangle\right|^2, \quad (2)$$

where $|K,v'_t,\sigma\rangle$ and $|J,K,M\rangle$ are the torsional and symmetric rotor basis functions used to set up the torsion-rotation Hamiltonian matrix for the second diagonalization step, the coefficients $C_{K,v_t'}^{J,\tau,v_t,\sigma}$ are the eigenvector coefficients obtained after diagonalization of the torsion-rotation Hamiltonian matrix, $\Phi_{Z\mu}$ represents direction cosines, and μ_α is the electric dipole moment along the molecular-fixed $\alpha=x,y,z$ axes.

As can be seen from the last expression, the μ_x, μ_y, and μ_z contributions are added together before squaring that is why the relative signs of the dipole moment components are important for obtaining the correct intensity calculations. For acetic acid, the permanent electric dipole moment components in the principal axis system are[5] $\mu_a=2.87(3)\times10^{-30}$ C m=0.86(1) D and $\mu_b=4.90(7)\times10^{-30}$ C m =1.47(2) D. In Ilyushin *et al.*,[7] it has been shown on the basis of careful relative intensity measurements of *a*-type and *b*-type lines that the dipole moment ratio $\mu_a/\mu_b>0$ reproduces the experimental result best, and therefore this ratio has been used in calculating the line strengths here. The use of a nonprincipal axis system [the RAM axis system can be obtained by a rotation about the *c* axis from the principal axis system, used in the principal axis method (PAM), by an angle $\theta_{\mathrm{RAM}}=3.8°$, which is the angle that diagonalizes the inertial moment matrix] has the consequences that the dipole moment components given here in the principal axis system must be subjected to the rotation according to

$$\begin{bmatrix}\mu_a\\ \mu_b\end{bmatrix}_{\mathrm{RAM}}=\begin{bmatrix}\cos\theta_{\mathrm{RAM}} & \sin\theta_{\mathrm{RAM}}\\ -\sin\theta_{\mathrm{RAM}} & \cos\theta_{\mathrm{RAM}}\end{bmatrix}\begin{bmatrix}\mu_a\\ \mu_b\end{bmatrix}_{\mathrm{PAM}}. \quad (3)$$

While preparing this review, we noticed a problem occurring in the acetic acid spectrum for the line strength calculation of the degenerate transition clusters. The degenerate transition clusters appear in the acetic acid spectrum both for *A* and *E* symmetry species and, because of the arbitrarily mixed eigenvectors corresponding to degenerate eigenvalues, the distribution of intensity between the different components of the transitions forming the cluster differs considerably from one calculation to another depending on small changes in parameter values and even on the particular diagonalization procedure used. At the same time, the total line strength for the cluster obtained as a sum of line strengths of individual components is not affected by the factors mentioned above. A similar situation was already observed in some *A* symmetry species transitions of acetaldehyde[21] but in the case of a near-prolate top like acetaldehyde, the transitions cluster differently than in the case of a near-oblate top like acetic acid. In acetaldehyde, the K_a-type doublets which remain degenerate to (or nearly to) the machine round-off error belong to either the A_1 or the A_2 symmetry species and, because the calculations were carried out without factorizing the *A* block of the Hamiltonian into A_1 and A_2 submatrices, the parity of degenerate eigenvectors was not well defined. For the acetaldehyde case, a cluster of transitions is thus formed by two formally symmetry allowed and two formally symmetry forbidden transitions, and therefore the problem of random distribution of calculated intensity among the cluster components was solved by calculating both formally parity allowed and formally parity forbidden components of a given cluster and then ascribing all the calculated intensities to the two parity allowed transitions.[21] Unfortunately, in acetic acid, we are not able to use this approach since the clustering in near-oblate acetic acid differs from the case of near-prolate acetaldehyde and the components of a degenerate pair of *A* symmetry species eigenvalues belong to the same symmetry. Therefore, all four transitions in the cluster are parity allowed. In addition, clustering occurs also for the *E* symmetry species transitions where no symmetry restrictions can be imposed.

We decided to address this problem in the following way. Since the sum of line strengths of the degenerate transitions for a given cluster is preserved and since this sum is the only observable quantity from the point of view of astronomers, we decided to represent the degenerate clusters of transitions by only one transition frequency accompanied by the sum of line strengths calculated for the cluster components and to label this one transition by a somewhat unorthodox $8_{*,8}$-$7_{*,7}$ notation. This unorthodox $8_{*,8}$-$7_{*,7}$ notation is prompted by the relatively uncommon very tight clustering behavior in acetic acid and was already used in the astronomical searches of acetic acid.[1,2] In our calculation, such a format was used for the transitions if the splitting in the cluster was less than 0.005 MHz. The K_a values replaced by the asterisk can be determined from the expressions given in Sec. 2.3.

2.3. Microwave Transitions

Table 2 contains the predicted and observed rotational transitions for both the *A* and *E* species of the $v_t=0$ and 1 states of acetic acid $^{12}CH_3\ ^{12}C\ ^{16}O\ ^{16}OH$. For each spectral line, the first ten columns present the quantum numbers v_t, J, K_a, K_c, Par of the upper (primed) and lower (double primed) states, giving torsional state v_t, rotational state J, K_a, and K_c plus a so-called parity quantum number (Par=+ or −) for the *A* symmetry species following the convention adopted in earlier studies.[6,7] Also, following Ilyushin *et al.*,[6,7] for the *E* symmetry species, the K_a quantum number presented in Table 2 has a signed value, as discussed earlier.[6,7] In the case of a cluster of degenerate transitions, instead of the usual label J, K_a, K_c, the cluster is represented by the rotational state designation J, $*$, K_c, where the asterisk stands for the two degenerate levels with the same J, K_c but with different K_a quantum numbers. For the *A* species, the J, $*$, K_c notation means that two levels $[J,J-K_c,K_c]$ and $[J,J-K_c+1,K_c]$ are

degenerate within the selected cutoff (0.005 MHz), and for the E species, it means that two levels $[J,(-1)^{v_t+1}(J-K_c),K_c]$ and $[J,(-1)^{v_t}(J-K_c+1),K_c]$ are degenerate within the same selected cutoff (0.005 MHz).

The quantum numbers for a given transition are followed by the observed transition frequency ["Obs. Freq. (unc.)" column] and the experimentally estimated uncertainty (type B, $k=1$ (Ref. 17) in megahertz if available. In the next column, "Calc. Freq. (unc.)," calculated transition frequencies are presented which were computed from the molecular parameters of Table 1 and are followed by the calculated uncertainties given in the parentheses. The calculated uncertainties were estimated from the variance-covariance matrix in the conventional manner and correspond approximately to 95% confidence interval (i.e., type A, $k=2$, representing twice the standard deviation).[17] The next column, $\mu^2 S$, shows the transition dipole matrix element squared or line strength S multiplied by dipole moment squared μ^2. The torsion-rotation energy of the lower state is shown in the following column, E_1, given in cm^{-1} (the conversion of wave numbers, cm^{-1}, a unit customary in the field of spectroscopy, to several other energy units, is given at the end of Sec. 4). The torsional zero point energy of the $0_{0,0}$ $A+$ state, 40.249 cm^{-1}, has been subtracted from all energy levels. The last column, " Ref.," gives the reference from which the measurements included in Table 2 were obtained.

The rotational transitions in the ground and first excited torsional state of acetic acid obeying symmetry selection rules $A_1 \leftrightarrow A_2$, $E \leftrightarrow E$ were calculated for the range of rotational quantum numbers $0 \leqslant J \leqslant 30$ and $0 \leqslant |K_a| \leqslant 15$. We have included in the calculation rotational transitions with rotational selection rules $\Delta J=0, \pm 1$ and $\Delta|K_a|=0, \pm 1, \pm 2, \pm 3$. In Table 2, the transitions which match the frequency range requirement (from 1 to 400 GHz) and those for which the line strengths S exceed the limit of 0.1 are given in the order of frequency.

2.4. Acknowledgments

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3. Acetic Acid Spectral Tables

The molecular parameters employed in the global fit of the rotational spectrum of acetic acid for $v_t=0$, 1, and 2 are given in Table 1. The calculated spectrum for the ground ($v_t=0$) torsional state and first excited ($v_t=1$) torsional state of acetic acid is given in Table 2. References to the experimental data shown in Table 2 can be found in Sec. 5.

TABLE 1. Torsion-rotation parameters needed for the global fit of transitions involving $v_t=0$, 1, and 2 torsional energy levels of acetic acid CH_3COOH

nlm[a]	Operator[b]	Parameter[b,c]	Value[d] (cm^{-1})	
220	$(1/2)(1-\cos 3\alpha)$	V_3	170.174 08(17)	
	P_α^2	F	5.621 815 4(43)	
211	$P_\alpha P_a$	ρ	0.071 946 408(69)	(unitless)
202	P_a^2	A	0.377 735 22(11)	
	P_b^2	B	0.316 693 691(20)	
	P_c^2	C	0.177 660 565(11)	
	$(P_aP_b+P_bP_a)$	D_{ab}	−0.004 074 46(12)	
440	P_α^4	k_4	$-0.222\,33(27)\times10^{-3}$	
	$(1/2)(1-\cos 6\alpha)$	V_6	−6.472 61(13)	
431	$P_\alpha^3 P_a$	k_3	$0.334\,89(74)\times10^{-4}$	
422	$P_\alpha^2 P^2$	G_v	$-0.559\,119(68)\times10^{-5}$	
	$2P_\alpha^2(P_b^2-P_c^2)$	c_1	$-0.194\,510(39)\times10^{-5}$	
	$(1-\cos 3\alpha)P^2$	F_v	$-0.352\,184\,8(58)\times10^{-3}$	
	$(1-\cos 3\alpha)(P_a^2)$	k_5	$0.568\,270(88)\times10^{-3}$	
	$(1-\cos 3\alpha)(P_b^2-P_c^2)$	c_2	$-0.188\,490\,9(48)\times10^{-3}$	
	$(1-\cos 3\alpha)(P_aP_b+P_bP_a)$	d_{ab}	$-0.223\,216\,3(54)\times10^{-2}$	
	$P_\alpha^2 P_a^2$	k_2	$-0.545(12)\times10^{-6}$	
	$P_\alpha^2(P_aP_b+P_bP_a)$	Δ_{ab}	$-0.265\,8(19)\times10^{-6}$	
413	$P_\alpha P_a P^2$	L_v	$0.316\,318(38)\times10^{-5}$	
	$P_\alpha P_a^3$	k_1	$-0.107\,943(66)\times10^{-5}$	
	$P_\alpha\{P_a,(P_b^2-P_c^2)\}$	c_4	$0.172\,738(14)\times10^{-5}$	
404	$-P^4$	Δ_J	$0.143\,548(29)\times10^{-6}$	
	$-P^2P_a^2$	Δ_{JK}	$0.350\,654(97)\times10^{-6}$	
	$-P_a^4$	Δ_K	$-0.123\,2(14)\times10^{-7}$	
	$-2P^2(P_b^2-P_c^2)$	δ_J	$0.576\,200(46)\times10^{-7}$	
	$-\{P_a^2,(P_b^2-P_c^2)\}$	δ_K	$0.353\,998(46)\times10^{-6}$	
	$(P_aP_b+P_bP_a)P^2$	D_{abJ}	$-0.350\,08(96)\times10^{-7}$	
	$(P_a^3P_b+P_bP_a^3)$	D_{abK}	$0.434\,2(34)\times10^{-7}$	

TABLE 1. Torsion-rotation parameters needed for the global fit of transitions involving v_t=0, 1, and 2 torsional energy levels of acetic acid CH_3COOH—Continued

nlm[a]	Operator[b]	Parameter[b,c]	Value[d] (cm^{-1})
642	$(1-\cos 6\alpha)P^2$	N_v	$0.270\,86(17)\times10^{-4}$
	$(1-\cos 6\alpha)P_a^2$	K_2	$-0.540\,0(12)\times10^{-4}$
	$(1-\cos 6\alpha)(P_aP_b+P_bP_a)$	dd_{ab}	$0.615\,4(63)\times10^{-5}$
	$(1-\cos 6\alpha)(P_b^2-P_c^2)$	c_{11}	$0.104\,812(46)\times10^{-4}$
	$2P_\alpha^4(P_b^2-P_c^2)$	c_3	$-0.652(24)\times10^{-9}$
	$P_\alpha^4P_a^2$	K_1	$-0.413\,2(51)\times10^{-7}$
624	$(1-\cos 3\alpha)P^2P_a^2$	k_{5J}	$0.573(12)\times10^{-8}$
	$(1-\cos 3\alpha)P_a^4$	k_{5K}	$-0.723(18)\times10^{-8}$
	$2P_\alpha^2\{P_a^2,(P_b^2-P_c^2)\}$	c_{1K}	$0.869(15)\times10^{-10}$
	$(1-\cos 3\alpha)P^4$	f_v	$0.853(17)\times10^{-9}$
	$(1-\cos 3\alpha)(P_b^2-P_c^2)P^2$	c_{2J}	$0.821(10)\times10^{-9}$
	$(1-\cos 3\alpha)\{P_a^2,(P_b^2-P_c^2)\}$	c_{2K}	$0.289\,2(62)\times10^{-8}$
	$(1-\cos 3\alpha)(P_aP_b+P_bP_a)P^2$	d_{abJ}	$0.228\,3(11)\times10^{-7}$
	$(1-\cos 3\alpha)(P_a^3P_b+P_bP_a^3)$	d_{abK}	$-0.303\,2(43)\times10^{-7}$
	$P_\alpha^2P^4$	g_v	$0.374(17)\times10^{-10}$
	$P_\alpha^2P_a^2P^2$	k_{2J}	$-0.974(68)\times10^{-10}$
633	$P_\alpha^3P^2P_a$	k_{3J}	$-0.646(21)\times10^{-9}$
	$P_\alpha^3P_a^3$	k_{3K}	$0.403\,8(37)\times10^{-8}$
606	P^6	H_J	$0.189\,6(87)\times10^{-12}$
	$P^4P_a^2$	H_{JK}	$0.196\,6(45)\times10^{-11}$
	$P^2P_a^4$	H_{KJ}	$-0.224\,1(87)\times10^{-11}$
	$2P^4(P_b^2-P_c^2)$	h_J	$0.996(32)\times10^{-13}$
	$P^2\{P_a^2,(P_b^2-P_c^2)\}$	h_{JK}	$0.116\,6(25)\times10^{-11}$
	$\{P_a^4,(P_b^2-P_c^2)\}$	h_K	$0.463\,4(69)\times10^{-11}$
660	$(1/2)(1-\cos 9\alpha)$	V_9	$-0.279\,789(70)$
	P_α^6	k_{4B}	$-0.643\,9(60)\times10^{-6}$
615	$P_\alpha\{P_a^3,(P_b^2-P_c^2)\}$	c_{4K}	$-0.295\,0(79)\times10^{-10}$
	$P_\alpha\{P_a,(P_b^2-P_c^2)\}P^2$	c_{4J}	$-0.790(24)\times10^{-11}$
	$P_\alpha P_aP^4$	l_v	$-0.163\,3(38)\times10^{-10}$
	$P_\alpha P_a^3P^2$	λ_v	$0.189\,6(93)\times10^{-10}$
651	$P_\alpha^5P_a$	k_{3B}	$0.264\,6(28)\times10^{-6}$
862	$(1-\cos 9\alpha)P^2$	V_{9J}	$0.109\,4(19)\times10^{-5}$
	$(1-\cos 9\alpha)P_a^2$	V_{9K}	$-0.274(19)\times10^{-5}$
844	$(1-\cos 6\alpha)P^4$	N_{vJ}	$-0.336(37)\times10^{-9}$

[a]Notation of Ilyushin *et al.* (Refs. 6 and 7): $n=l+m$, where n is the total order of the operator, l is the order of the torsional part, and m is the order of the rotational part.

[b]Notation of Ilyushin *et al.* (Refs. 6 and 7): $\{A,B\}=AB+BA$. The product of the parameter and operator from a given row yields the term actually used in the vibration-rotation-torsion Hamiltonian, except for F, ρ, and A, which occur in the Hamiltonian in the form $F(P_\alpha-\rho P_a)^2+AP_a^2$.

[c]The authors would like to direct the reader's attention to the fact that a number of errors slipped through Table 2 of Ilyushin *et al.* (Ref. 7): two parameters δ_{ab} and D_{abJK} were, in fact, set to zero in the final fit and were not used eventually in the $v_t\leqslant2$ fit and, in addition, a number of operators have been misprinted in Table 2 of this reference[7].

[d]Values of the parameters from the present fit. All values are in cm^{-1}, except for ρ which is unitless. Statistical uncertainties are shown as one standard uncertainty in the last digit (type A, k=1) (Ref. 17).

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	7	6	1	+	0	7	6	2	−		1 036.731(0.000)	5.972	19.078	
1	6	6	0	+	1	6	6	1	−		1 082.116(0.001)	1.849	92.740	
0	10	8	2	+	0	10	8	3	−		1 236.515(0.000)	7.155	36.761	
0	19	14	5	+	0	19	14	6	−		1 295.265(0.000)	10.680	124.346	
0	13	10	3	+	0	13	10	4	−		1 319.365(0.000)	8.339	60.204	
0	16	12	4	+	0	16	12	5	−		1 329.235(0.000)	9.515	89.402	
1	10	9	1	−	1	10	9	2	+		1 434.101(0.001)	2.673	114.520	
0	3	3	0	−	0	3	3	1	+		1 464.404(0.000)	3.403	4.214	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	3	−2	2		1	3	1	2			1 740.952(0.003)	0.233	76.340	
1	5	5	0	−	1	5	5	1	+		1 743.772(0.001)	0.979	88.774	
1	13	11	2	−	1	13	11	3	+		2 075.723(0.001)	2.685	137.399	
1	19	15	4	−	1	19	15	5	+		2 106.190(0.001)	3.798	200.644	
1	18	13	5		1	18	−13	6			2 141.761(0.011)	1.170	186.380	
1	5	−4	2		1	5	3	2			2 172.314(0.005)	2.899	82.546	
1	5	−3	3		1	5	2	3			2 178.646(0.004)	0.322	81.765	
0	6	5	1	−	0	6	5	2	+		2 246.059(0.000)	4.526	14.079	
1	4	−3	2		1	4	2	2			2 266.267(0.004)	1.165	79.059	
1	16	13	3	−	1	16	13	4	+		2 286.959(0.001)	3.072	166.095	
1	7	−4	4		1	7	3	4			2 384.416(0.004)	0.399	89.655	
1	4	4	0	+	1	4	4	1	−		2 468.529(0.001)	0.450	85.497	
1	9	−5	5		1	9	4	5			2 477.703(0.004)	0.436	99.999	
1	11	−6	6		1	11	5	6			2 526.678(0.003)	0.400	112.785	
1	15	−8	8		1	15	7	8			2 528.265(0.002)	0.176	145.634	
0	21	15	6	−	0	21	15	7	+		2 550.893(0.001)	10.318	149.854	
1	13	−7	7		1	13	6	7			2 552.122(0.003)	0.297	128.002	
0	9	7	2	−	0	9	7	3	+		2 636.135(0.000)	5.691	29.715	
0	18	13	5	−	0	18	13	6	+		2 690.021(0.001)	9.172	111.195	
1	9	8	1	+	1	9	8	2	−		2 702.013(0.002)	1.376	107.851	
0	2	2	0	+	0	2	2	1	−		2 749.864(0.000)	2.102	2.016	
0	15	11	4	−	0	15	11	5	+		2 780.436(0.000)	8.018	78.280	
0	12	9	3	−	0	12	9	4	+		2 782.902(0.000)	6.856	51.118	
1	3	3	0	−	1	3	3	1	+		3 137.523(0.001)	0.175	82.892	
1	6	−5	2		1	6	4	2			3 216.659(0.011)	1.099	86.810	
1	6	−4	3		1	6	3	3			3 369.793(0.006)	1.571	85.846	
1	19	13	6		1	19	−13	7			3 855.256(0.008)	5.219	196.723	
1	7	−5	3		1	7	4	3			4 010.149(0.006)	3.673	90.654	
1	12	10	2	+	1	12	10	3	−		4 066.896(0.002)	1.248	128.698	
0	1	1	0	−	0	1	1	1	+		4 151.318(0.000)	1.084	0.558	
1	8	−5	4		1	8	4	4			4 268.652(0.006)	1.934	95.094	
0	5	4	1	+	0	5	4	2	−		4 292.838(0.000)	3.168	9.822	
1	8	7	1	−	1	8	7	2	+		4 384.992(0.002)	0.549	101.903	
1	1	1	0	−	1	1	0	1	+		4 420.880(0.000)	4.330	79.645	
0	2	−2	0		0	2	2	1			4 449.845(0.001)	0.785	2.332	
0	1	−1	0		0	1	1	1			4 559.338(0.000)	0.845	0.906	
0	2	2	1		0	2	−1	1			4 581.398(0.001)	0.809	2.179	
1	18	14	4	+	1	18	14	5	−		4 631.496(0.002)	1.878	187.809	
0	6	4	3		0	6	−3	3			4 676.087(0.001)	0.280	13.120	
1	15	12	3	+	1	15	12	4	−		4 729.585(0.002)	1.419	155.338	
1	2	2	0	+	1	2	1	1	−		4 880.159(0.001)	6.841	80.908	
0	20	14	6	+	0	20	14	7	−		4 992.706(0.001)	8.754	135.421	
1	10	−6	5		1	10	5	5			5 055.107(0.006)	2.039	106.796	
0	4	3	2		0	4	−2	2			5 082.387(0.001)	0.530	6.435	
0	8	6	2	+	0	8	6	3	−		5 083.422(0.001)	4.270	23.411	
0	17	12	5	+	0	17	12	6	−		5 257.978(0.001)	7.628	98.787	
0	3	−3	0		0	3	3	1			5 391.574(0.002)	0.264	4.474	
0	11	8	3	+	0	11	8	4	−		5 400.903(0.001)	5.383	42.774	
0	14	10	4	+	0	14	10	5	−		5 420.050(0.001)	6.503	67.902	
1	3	3	0	−	1	3	2	1	+		5 687.183(0.001)	8.734	82.807	
1	12	−7	6		1	12	6	6			5 732.149(0.005)	1.761	120.941	
1	8	−6	3		1	8	5	3			5 857.732(0.011)	2.126	96.216	
1	18	−10	9		1	18	9	9			6 026.710(0.003)	0.245	177.890	
0	1	1	0	−	0	1	0	1	+		6 088.808(0.000)	3.268	0.493	
1	9	−6	4		1	9	5	4			6 107.927(0.007)	4.301	101.219	
0	1	−1	0		0	1	0	1			6 175.167(0.000)	3.149	0.852	
1	14	−8	7		1	14	7	7			6 212.676(0.004)	1.209	137.514	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	16	−9	8		1	16	8	8			6 350.431(0.003)	0.638	156.502	
1	1	0	1		1	0	0	0			6 415.044(0.002)	1.118	73.199	
0	11	7	5		0	11	−6	5			6 603.619(0.001)	0.246	41.099	
1	11	9	2	−	1	11	9	3	+		6 827.254(0.003)	0.382	120.736	
1	4	4	0	+	1	4	3	1	−		7 016.008(0.002)	9.730	85.345	
0	4	3	1	−	0	4	3	2	+		7 038.675(0.000)	2.046	6.299	
0	5	−4	1		0	5	4	2			7 594.805(0.002)	1.076	10.076	
0	6	−5	1		0	6	5	2			8 072.962(0.003)	0.404	14.259	
1	20	15	5	−	1	20	15	6	+		8 087.060(0.003)	1.016	212.001	
0	9	6	4		0	9	−5	4			8 117.676(0.001)	0.519	28.226	
1	14	11	3	−	1	14	11	4	+		8 367.735(0.004)	0.404	145.337	
1	1	−1	1		1	1	0	1			8 387.876(0.002)	1.206	73.413	
1	11	−7	5		1	11	6	5			8 402.401(0.007)	4.532	114.238	
0	4	−3	1		0	4	3	2		8 534.616(0.002)	8 534.616(0.001)	1.395	6.605	6
0	2	2	0	+	0	2	1	1	−	8 560.830(0.100)	8 560.596(0.000)	4.377	1.823	5
0	22	15	7	−	0	22	15	8	+		8 608.863(0.002)	8.264	162.081	
0	7	5	2	−	0	7	5	3	+		8 641.576(0.001)	3.031	17.839	
0	3	3	1		0	3	−2	1			8 683.799(0.002)	1.330	4.184	
1	17	13	4	−	1	17	13	5	+		8 753.388(0.003)	0.599	175.749	
0	2	−2	0		0	2	−1	1		9 031.243(0.002)	9 031.243(0.001)	3.668	2.179	6
0	19	13	6	−	0	19	13	7	+		9 113.959(0.001)	7.179	121.725	
1	5	5	0	−	1	5	4	1	+		9 129.672(0.003)	9.705	88.528	
0	7	5	3		0	7	−4	3			9 243.703(0.002)	0.986	17.774	
1	10	−7	4		1	10	6	4			9 299.100(0.010)	3.240	108.067	
0	10	7	3	−	0	10	7	4	+		9 415.686(0.001)	4.031	35.162	
0	16	11	5	−	0	16	11	6	+		9 487.632(0.001)	6.108	87.115	
0	5	4	2		0	5	−3	2			9 542.824(0.002)	1.490	9.757	
0	13	9	4	−	0	13	9	5	+		9 633.964(0.001)	5.057	58.257	
1	20	13	7		1	20	−13	8			9 808.612(0.006)	7.004	207.657	
0	8	−6	2		0	8	6	3			9 897.563(0.003)	1.291	23.586	
0	3	2	1	+	0	3	2	2	−	9 944.029(0.002)	9 944.028(0.000)	1.220	3.498	6
0	9	−7	2		0	9	7	3			10 006.980(0.004)	0.492	29.805	
1	9	−7	3		1	9	6	3			10 109.819(0.013)	0.432	102.540	
0	14	9	6		0	14	−8	6			10 129.202(0.002)	0.371	65.718	
0	21	−15	6		0	21	15	7			10 187.963(0.011)	0.943	149.643	
0	3	−2	1		0	3	2	2		10 519.364(0.002)	10 519.362(0.000)	1.062	3.834	6
0	19	−14	5		0	19	14	6			10 638.914(0.009)	0.238	124.119	
1	13	−8	6		1	13	7	6			10 682.415(0.006)	4.085	129.704	
1	5	4	1	+	1	5	3	2	−		10 923.577(0.001)	11.485	88.164	
1	6	5	1	−	1	6	4	2	+		10 932.679(0.002)	14.758	91.999	
0	12	−9	3		0	12	9	4			11 165.674(0.004)	0.567	51.116	
0	18	−13	5		0	18	13	6			11 184.033(0.007)	0.765	111.037	
1	4	3	1	−	1	4	2	2	+		11 268.981(0.001)	8.142	84.969	
0	7	−5	2		0	7	5	3			11 365.089(0.002)	1.868	18.083	
0	19	12	8		0	19	−11	8			11 402.545(0.003)	0.217	118.906	
0	11	−8	3		0	11	8	4			11 426.317(0.003)	1.475	42.862	
0	16	−12	4		0	16	12	5			11 428.940(0.006)	0.191	89.237	
0	15	−11	4		0	15	11	5			11 543.216(0.005)	0.650	78.194	
1	2	1	1		1	2	−1	2			11 583.211(0.001)	0.559	74.368	
0	20	−14	6		0	20	14	7			11 613.767(0.008)	2.245	135.282	
1	7	6	1	+	1	7	5	2	−		11 643.748(0.003)	17.069	96.477	
1	3	2	1	+	1	3	1	2	−		11 722.218(0.001)	5.217	82.416	
1	18	12	6		1	18	−12	7			11 748.293(0.010)	1.273	183.401	
1	2	1	1	−	1	2	0	2	+		12 138.006(0.001)	2.695	80.503	
0	14	−10	4		0	14	10	5			12 193.439(0.004)	1.668	67.904	
0	17	−12	5		0	17	12	6			12 230.676(0.006)	1.908	98.711	
1	2	1	1		1	2	0	2			12 275.159(0.002)	2.684	74.345	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	6	6	0	+	1	6	5	1	−		12 341.067(0.005)	8.878	92.364	
0	12	8	5		0	12	−7	5			12 391.408(0.002)	0.783	49.073	
0	3	2	1	+	0	3	1	2	−	12 398.379(0.002)	12 398.379(0.000)	5.763	3.416	6
0	2	1	1	−	0	2	1	2	+	12 453.868(0.002)	12 453.869(0.000)	0.603	1.407	6
0	3	−2	1		0	3	−1	2		12 508.433(0.002)	12 508.434(0.000)	5.611	3.767	6
1	15	−9	7		1	15	8	7			12 534.073(0.005)	2.904	147.607	
0	2	−1	1		0	2	1	2		12 591.669(0.002)	12 591.668(0.000)	0.569	1.759	6
1	19	−11	9		1	19	10	9			12 793.344(0.004)	0.424	190.671	
0	6	4	2	+	0	6	4	3	−	12 885.702(0.002)	12 885.701(0.001)	2.086	12.987	6
0	3	3	0	−	0	3	2	1	+		12 983.549(0.001)	4.427	3.829	
0	2	1	1	−	0	2	0	2	+	12 989.907(0.002)	12 989.908(0.000)	2.885	1.389	6
0	2	−1	1		0	2	0	2		13 025.272(0.002)	13 025.273(0.000)	2.828	1.745	6
0	10	−7	3		0	10	7	4			13 304.939(0.002)	2.286	35.330	
1	2	2	1	−	1	2	1	2	+		13 307.164(0.001)	2.354	80.505	
1	17	−10	8		1	17	9	8			13 379.877(0.004)	1.443	167.935	
0	4	3	1	−	0	4	2	2	+	13 381.245(0.002)	13 381.244(0.000)	7.965	6.088	6
1	12	−8	5		1	12	7	5			13 405.671(0.009)	4.329	122.365	
1	8	7	1	−	1	8	6	2	+		13 488.454(0.004)	17.655	101.599	
0	4	−3	1		0	4	−2	2		13 617.003(0.002)	13 617.003(0.001)	7.506	6.435	6
0	22	−15	7		0	22	15	8			13 687.728(0.008)	4.328	161.962	
0	4	4	1		0	4	−3	1			13 918.830(0.002)	1.020	6.890	
1	3	3	1	+	1	3	2	2	−		14 067.969(0.001)	3.996	82.423	
0	3	−3	0		0	3	−2	1		14 075.375(0.002)	14 075.373(0.001)	3.213	4.184	6
1	2	1	1		1	1	1	0			14 136.433(0.003)	0.634	74.283	
0	10	7	4		0	10	−6	4			14 219.140(0.002)	1.466	34.855	
0	6	−4	2		0	6	4	3			14 358.830(0.001)	1.712	13.276	
0	13	−9	4		0	13	9	5			14 441.064(0.003)	2.693	58.343	
0	17	11	7		0	17	−10	7			14 516.973(0.003)	0.488	96.072	
0	19	−13	6		0	19	13	7			14 542.234(0.005)	3.659	121.662	
0	9	6	3	+	0	9	6	4	−	14 577.350(0.100)	14 577.196(0.001)	2.945	28.271	5
0	21	14	7	+	0	21	14	8	−		14 664.881(0.002)	6.705	147.094	
0	1	0	1		0	0	0	0		14 802.618(0.002)	14 802.619(0.000)	0.695	0.358	6
1	1	−1	1		1	0	0	0			14 802.921(0.000)	0.936	73.199	
0	1	0	1	+	0	0	0	0	+	14 804.002(0.002)	14 804.004(0.000)	0.723	0.000	6
0	16	−11	5		0	16	11	6			14 829.296(0.004)	3.134	87.121	
1	3	2	1		1	3	−2	2			15 065.205(0.004)	1.130	76.398	
1	1	1	1	+	1	0	0	0	+		15 090.314(0.000)	2.887	79.155	
0	6	5	2		0	6	−4	2			15 105.895(0.002)	2.060	13.755	
0	8	6	3		0	8	−5	3			15 194.950(0.002)	2.153	23.079	
1	4	4	1	−	1	4	3	2	+		15 203.370(0.002)	5.283	84.990	
1	11	−8	4		1	11	7	4			15 222.157(0.013)	1.013	115.658	
0	18	12	6	+	0	18	12	7	−		15 248.156(0.002)	5.711	108.756	
0	12	8	4	+	0	12	8	5	−		15 376.266(0.001)	3.829	49.335	
0	15	10	5	+	0	15	10	6	−		15 535.178(0.002)	4.751	76.166	
0	22	14	9		0	22	−13	9			15 811.109(0.005)	0.253	158.763	
0	1	1	1		0	0	0	0		16 418.447(0.002)	16 418.448(0.000)	2.115	0.358	6
0	5	4	1	+	0	5	3	2	−	16 539.473(0.002)	16 539.472(0.001)	8.740	9.414	6
1	2	−2	1		1	2	1	1			16 715.282(0.003)	2.639	74.754	
0	1	1	1	+	0	0	0	0	+	16 741.494(0.002)	16 741.494(0.000)	2.178	0.000	6
1	3	2	1		1	3	1	2			16 806.156(0.005)	3.449	76.340	
1	5	5	1	+	1	5	4	2	−		16 861.283(0.003)	6.196	88.212	
1	9	7	2	−	1	9	6	3	+		16 888.059(0.003)	20.035	106.812	
1	7	7	0	−	1	7	6	1	+		16 889.883(0.006)	7.766	96.865	
1	10	8	2	+	1	10	7	3	−		16 926.844(0.004)	23.290	113.258	
1	9	8	1	+	1	9	7	2	−		16 943.154(0.005)	16.494	107.376	
0	9	−6	3		0	9	6	4		17 053.830(0.100)	17 053.863(0.002)	2.296	28.496	5
1	19	12	7		1	19	−12	8			17 062.134(0.005)	3.909	193.857	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	5	−4	1		0	5	−3	2		17 137.629(0.002)	17 137.629(0.001)	7.477	9.757	6
0	5	3	2	−	0	5	3	3	+	17 144.977(0.002)	17 144.974(0.001)	1.421	8.842	6
0	2	2	1		0	2	1	2		17 173.065(0.002)	17 173.066(0.001)	1.656	1.759	6
0	15	10	6		0	15	−9	6			17 570.160(0.003)	1.031	75.656	
0	2	2	1		0	2	0	2			17 606.671(0.001)	0.281	1.745	
1	1	1	0		1	1	−1	1			17 686.335(0.002)	1.738	73.693	
1	8	6	2	+	1	8	5	3	−	17 790.870(0.050)	17 790.855(0.002)	15.924	101.006	10
1	14	−9	6		1	14	8	6			17 835.965(0.008)	4.935	139.112	
0	5	−3	2		0	5	3	3		17 904.242(0.002)	17 904.240(0.001)	1.300	9.160	6
1	7	5	2	−	1	7	5	3	+		18 078.765(0.003)	0.245	95.874	
0	2	2	1	−	0	2	1	2	+	18 264.480(0.100)	18 264.602(0.000)	1.815	1.407	5
1	11	9	2	−	1	11	8	3	+	18 620.540(0.050)	18 620.517(0.005)	24.254	120.343	10
0	12	−8	4		0	12	8	5			18 791.778(0.002)	2.863	49.486	
0	2	2	1	−	0	2	0	2	+		18 800.641(0.000)	0.308	1.389	
0	6	4	2	+	0	6	3	3	−	18 807.750(0.002)	18 807.749(0.000)	11.020	12.790	6
1	7	5	2	−	1	7	4	3	+	18 978.900(0.050)	18 978.896(0.002)	12.257	95.844	10
0	6	−4	2		0	6	−3	3		19 034.950(0.100)	19 034.917(0.000)	10.658	13.120	5
0	3	3	1		0	3	2	2		19 203.162(0.002)	19 203.161(0.001)	2.343	3.834	6
1	6	6	1	−	1	6	5	2	+	19 238.340(0.050)	19 238.315(0.004)	6.675	92.098	10
0	21	−14	7		0	21	14	8			19 258.640(0.005)	4.819	147.036	
0	4	4	0	+	0	4	3	1	−	19 357.760(0.100)	19 357.828(0.001)	4.064	6.534	5
0	5	3	2	−	0	5	2	3	+	19 483.576(0.002)	19 483.575(0.000)	8.035	8.764	6
1	2	0	2		1	1	−1	1			19 547.609(0.003)	1.983	73.693	
1	6	4	2	+	1	6	4	3	−		19 629.506(0.002)	0.224	91.345	
1	25	−15	11		1	25	14	11			19 631.090(0.007)	0.929	276.055	
0	15	−10	5		0	15	10	6			19 676.090(0.003)	3.450	76.242	
0	5	5	1		0	5	−4	1			19 725.183(0.003)	0.425	10.329	
0	5	−3	2		0	5	−2	3		19 729.944(0.002)	19 729.943(0.000)	7.808	9.099	6
0	18	−12	6		0	18	12	7			19 796.560(0.004)	4.091	108.759	
0	20	13	8		0	20	−12	8			19 823.545(0.005)	0.574	132.155	
1	6	4	2	+	1	6	3	3	−	20 000.560(0.050)	20 000.543(0.002)	9.387	91.332	10
0	13	9	5		0	13	−8	5			20 098.137(0.003)	1.919	57.673	
0	8	5	3	−	0	8	5	4	+	20 209.130(0.100)	20 209.190(0.001)	2.169	22.087	5
1	2	−1	2		1	1	−1	1			20 239.557(0.002)	0.445	73.693	
1	21	14	7		1	21	−14	8			20 324.602(0.012)	0.831	221.924	
0	7	5	2	−	0	7	4	3	+	20 357.705(0.002)	20 357.703(0.001)	12.810	17.449	6
0	7	−5	2		0	7	−4	3		20 608.791(0.002)	20 608.792(0.001)	12.017	17.774	6
1	5	3	2	−	1	5	2	3	+	20 666.180(0.050)	20 666.177(0.002)	7.047	87.474	10
0	4	−4	0		0	4	−3	1		20 797.733(0.002)	20 797.731(0.001)	3.091	6.890	6
0	4	2	2	+	0	4	2	3	−	20 816.635(0.002)	20 816.633(0.001)	0.937	5.393	6
1	4	2	2		1	4	1	3			20 894.112(0.001)	5.012	78.362	
1	4	2	2	+	1	4	1	3	−	20 987.890(0.050)	20 987.894(0.001)	4.893	84.269	10
1	3	1	2	−	1	3	0	3	+		21 069.843(0.001)	2.664	81.713	
0	4	−2	2		0	4	2	3		21 115.522(0.002)	21 115.520(0.001)	0.899	5.731	6
0	3	3	1		0	3	−1	2			21 192.233(0.001)	0.225	3.767	
1	3	2	2	−	1	3	1	3	+	21 269.150(0.050)	21 269.161(0.001)	2.642	81.713	10
1	4	3	1		1	4	−3	2			21 287.550(0.006)	1.504	79.135	
1	13	−9	5		1	13	8	5			21 424.231(0.011)	2.021	131.209	
0	3	3	1	+	0	3	2	2	−		21 463.173(0.001)	2.779	3.498	
0	4	2	2	+	0	4	1	3	−	21 463.441(0.002)	21 463.443(0.000)	5.008	5.372	6
0	7	6	2		0	7	−5	2			21 562.468(0.003)	1.552	18.462	
1	4	3	2	+	1	4	2	3	−	21 568.960(0.050)	21 568.963(0.001)	4.780	84.270	10
0	4	−2	2		0	4	−1	3		21 613.645(0.002)	21 613.647(0.000)	4.899	5.714	6
0	2	−2	0		0	2	1	2			21 622.911(0.001)	0.199	1.759	
1	3	1	2		1	3	0	3			21 623.486(0.002)	2.487	75.619	
1	17	11	6		1	17	−11	7			21 636.393(0.010)	0.683	170.814	
1	11	8	3	+	1	11	8	4	−		21 640.283(0.005)	0.273	119.621	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	11	8	4		0	11	−7	4			21 688.723(0.003)	2.754	42.139	
0	8	−5	3		0	8	5	4		21 800.488(0.002)	21 800.486(0.001)	1.923	22.352	6
1	3	2	1		1	2	2	0			21 835.093(0.003)	0.492	76.172	
1	16	−10	7		1	16	9	7			21 858.574(0.006)	4.234	158.307	
1	5	4	2	−	1	5	3	3	+	21 987.840(0.050)	21 987.831(0.001)	6.684	87.479	10
0	11	7	4	−	0	11	7	5	+	22 057.880(0.100)	22 057.925(0.001)	2.917	41.120	5
0	6	5	1	−	0	6	4	2	+	22 082.205(0.002)	22 082.204(0.001)	8.384	13.417	6
0	23	15	8	−	0	23	15	9	+		22 104.782(0.003)	6.259	174.891	
0	9	7	3		0	9	−6	3			22 181.059(0.003)	2.649	29.065	
1	4	−3	2		1	4	−2	3			22 311.051(0.002)	3.632	78.390	
1	13	10	3	+	1	13	9	4	−	22 322.460(0.050)	22 322.444(0.005)	29.315	135.748	10
1	10	9	1	−	1	10	8	2	+	22 355.470(0.050)	22 355.415(0.006)	14.463	113.822	10
0	4	4	1		0	4	3	2		22 453.449(0.002)	22 453.447(0.001)	2.898	6.605	6
1	7	7	1	+	1	7	6	2	−	22 536.090(0.050)	22 536.081(0.005)	6.739	96.657	10
1	6	5	2	+	1	6	4	3	−	22 582.840(0.050)	22 582.821(0.002)	8.439	91.345	10
1	12	10	2	+	1	12	9	3	−	22 614.300(0.050)	22 614.245(0.006)	22.687	128.080	10
1	12	9	3	−	1	12	8	4	+	22 684.100(0.050)	22 684.053(0.003)	25.680	127.323	10
1	8	8	0	+	1	8	7	1	−		22 789.219(0.007)	6.819	102.049	
0	20	13	7	−	0	20	13	8	+		22 827.016(0.003)	5.361	132.823	
1	6	5	2	+	1	6	3	3	−		22 953.857(0.002)	0.246	91.332	
0	14	9	5	−	0	14	9	6	+		22 969.637(0.002)	3.692	65.928	
1	21	13	8		1	21	−13	9			23 040.690(0.006)	5.982	219.149	
1	20	−12	9		1	20	11	9			23 086.768(0.004)	0.265	204.018	
1	4	−3	2		1	4	1	3			23 160.379(0.004)	0.562	78.362	
0	17	11	6	−	0	17	11	7	+		23 165.093(0.002)	4.505	96.499	
0	6	−5	1		0	6	−4	2		23 178.859(0.002)	23 178.857(0.001)	6.564	13.755	6
1	3	−2	2		1	3	−1	3			23 204.454(0.002)	2.064	75.624	
1	3	−2	2		1	3	0	3			23 364.438(0.002)	0.381	75.619	
0	3	−1	2		0	3	1	3		23 420.471(0.002)	23 420.468(0.000)	0.502	2.986	6
1	5	−4	2		1	5	−3	3			23 421.500(0.003)	4.818	81.838	
1	5	3	2		1	5	2	3			23 427.832(0.003)	7.112	81.765	
0	3	1	2	−	0	3	1	3	+	23 443.078(0.002)	23 443.078(0.000)	0.512	2.634	6
1	7	6	2	−	1	7	5	3	+	23 492.260(0.050)	23 492.216(0.002)	10.056	95.874	10
0	3	−1	2		0	3	0	3		23 494.542(0.002)	23 494.542(0.000)	2.447	2.983	6
0	3	1	2	−	0	3	0	3	+	23 540.213(0.002)	23 540.214(0.000)	2.474	2.631	6
1	4	3	1		1	4	2	2			23 553.817(0.006)	3.856	79.059	
1	12	−9	4		1	12	8	4			23 684.898(0.014)	0.222	124.007	
0	18	12	7		0	18	−11	7			23 703.540(0.005)	1.227	107.969	
0	3	3	1	+	0	3	1	2	−		23 917.525(0.001)	0.292	3.416	
1	18	−11	8		1	18	10	8			24 091.244(0.005)	1.998	179.946	
1	22	14	8		1	22	−14	9			24 227.239(0.010)	3.782	234.068	
1	14	11	3	−	1	14	10	4	+	24 341.080(0.050)	24 341.029(0.006)	29.968	144.804	10
1	7	6	2	−	1	7	4	3	+		24 392.348(0.004)	0.270	95.844	
1	11	8	3	+	1	11	7	4	−	24 425.850(0.050)	24 425.827(0.003)	20.990	119.528	10
0	11	−7	4		0	11	7	5		24 549.560(0.100)	24 549.340(0.002)	2.515	41.320	5
0	8	6	2	+	0	8	5	3	−	24 587.330(0.002)	24 587.327(0.001)	12.960	22.761	6
0	3	−3	0		0	3	2	2			24 594.735(0.001)	0.558	3.834	
1	3	−3	1		1	3	2	1			24 844.076(0.003)	3.773	76.901	
0	2	0	2	+	0	1	1	1	+	24 920.660(0.100)	24 920.548(0.000)	2.626	0.558	5
0	9	6	3	+	0	9	5	4	−	24 949.230(0.100)	24 949.244(0.000)	16.281	27.925	5
1	8	7	2	+	1	8	6	3	−	24 966.520(0.050)	24 966.481(0.003)	11.415	101.070	10
0	8	−6	2		0	8	−5	3		25 092.530(0.100)	25 092.513(0.001)	11.218	23.079	5
1	10	7	3	−	1	10	7	4	+		25 147.374(0.005)	0.341	112.419	
0	2	0	2		0	1	1	1		25 156.159(0.002)	25 156.160(0.000)	2.607	0.906	6
0	9	−6	3		0	9	−5	4		25 171.536(0.002)	25 171.539(0.001)	15.746	28.226	6
0	8	5	3	−	0	8	4	4	+	25 240.590(0.100)	25 240.582(0.001)	13.447	21.919	5
1	2	0	2	+	1	1	1	1	+	25 345.020(0.050)	25 344.991(0.001)	4.080	79.658	10

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	3	2	2		0	3	1	3		25 409.540(0.002)	25 409.540(0.001)	2.289	2.986	6
0	2	1	2	+	0	1	1	1	+	25 456.589(0.002)	25 456.586(0.000)	1.084	0.558	6
0	3	2	2		0	3	0	3			25 483.614(0.001)	0.464	2.983	
1	6	4	2		1	6	−4	3			25 539.920(0.006)	0.892	85.958	
0	7	4	3	+	0	7	4	4	−		25 547.788(0.001)	1.641	16.596	
0	2	1	2		0	1	1	1		25 589.765(0.002)	25 589.766(0.000)	1.046	0.906	6
0	8	−5	3		0	8	−4	4		25 663.721(0.002)	25 663.721(0.001)	13.031	22.223	6
0	4	4	1	−	0	4	3	2	+	25 740.907(0.002)	25 740.909(0.001)	3.300	6.299	6
1	2	1	2	+	1	1	0	1	+	25 775.660(0.050)	25 775.587(0.001)	4.285	79.645	10
1	2	2	0		1	2	−2	1			25 800.714(0.002)	2.198	75.312	
0	3	2	2	−	0	3	1	3	+	25 897.432(0.002)	25 897.430(0.000)	2.303	2.634	6
1	3	0	3		1	2	1	1			25 921.447(0.002)	0.738	74.754	
0	3	2	2	−	0	3	0	3	+		25 994.566(0.000)	0.467	2.631	
1	14	10	4	+	1	14	10	5	−		26 071.452(0.006)	0.306	143.935	
0	23	15	9		0	23	−14	9			26 075.841(0.006)	0.610	173.961	
1	3	−1	3		1	2	1	1			26 081.431(0.002)	0.267	74.754	
1	5	−2	4		1	4	3	1			26 187.332(0.005)	0.182	79.845	
0	4	3	2		0	4	2	3		26 197.900(0.100)	26 197.907(0.001)	3.978	5.731	5
0	14	−9	5		0	14	9	6			26 290.189(0.002)	3.111	66.056	
0	23	−15	8		0	23	15	9			26 485.484(0.005)	5.173	174.831	
0	7	−4	3		0	7	4	4			26 497.438(0.001)	1.547	16.890	
1	10	7	3	−	1	10	6	4	+	26 521.020(0.050)	26 521.033(0.003)	17.023	112.373	10
1	4	0	4		1	3	1	2			26 632.652(0.003)	0.175	76.340	
0	4	3	2		0	4	−1	3			26 696.034(0.001)	0.675	5.714	
0	2	0	2		0	1	0	1		26 771.988(0.002)	26 771.989(0.000)	1.220	0.852	6
0	2	0	2	+	0	1	0	1	+	26 858.036(0.002)	26 858.038(0.000)	1.261	0.493	6
1	8	7	2	+	1	8	5	3	−		26 894.318(0.005)	0.197	101.006	
1	8	8	1	−	1	8	7	2	+	26 898.700(0.050)	26 898.745(0.006)	6.513	101.903	10
0	5	5	0	−	0	5	4	1	+	26 923.910(0.100)	26 924.051(0.001)	3.820	9.966	5
0	16	11	6		0	16	−10	6			26 938.627(0.004)	2.299	86.223	
0	17	−11	6		0	17	11	7			27 123.841(0.003)	3.737	96.556	
0	20	−13	7		0	20	13	8			27 150.225(0.004)	4.418	132.816	
0	4	3	2	+	0	4	2	3	−	27 159.203(0.002)	27 159.203(0.001)	4.075	5.393	6
0	2	1	2		0	1	0	1		27 205.592(0.002)	27 205.595(0.000)	3.273	0.852	6
0	5	5	1		0	5	4	2		27 319.960(0.100)	27 319.988(0.001)	3.465	10.076	5
1	9	8	2	−	1	9	7	3	+	27 334.760(0.050)	27 334.764(0.004)	12.257	106.939	10
0	2	1	2	+	0	1	0	1	+	27 394.077(0.002)	27 394.077(0.000)	3.268	0.493	6
0	10	7	3	−	0	10	6	4	+	27 444.940(0.050)	27 444.948(0.001)	17.435	34.561	9
0	5	4	2		0	5	3	3			27 447.064(0.001)	4.982	9.160	
0	7	4	3	+	0	7	3	4	−	27 518.940(0.050)	27 519.041(0.001)	10.036	16.531	9
0	10	−7	3		0	10	−6	4		27 524.060(0.050)	27 524.078(0.001)	16.371	34.855	9
1	9	6	3	+	1	9	6	4	−		27 630.579(0.004)	0.246	105.891	
1	16	12	4	+	1	16	11	5	−	27 750.210(0.050)	27 750.190(0.005)	35.237	163.983	10
0	4	3	2	+	0	4	1	3	−		27 806.012(0.001)	0.686	5.372	
1	18	11	7		1	18	−11	8			27 917.884(0.005)	2.101	180.750	
1	2	0	2		1	1	0	1		27 935.480(0.050)	27 935.485(0.001)	0.451	73.413	10
1	15	11	4	−	1	15	10	5	+	27 939.730(0.050)	27 939.719(0.004)	31.917	153.581	10
1	23	−14	10		1	23	13	10			27 973.771(0.006)	0.909	245.805	
0	7	−4	3		0	7	−3	4		27 976.500(0.050)	27 976.569(0.001)	9.752	16.841	9
0	5	−5	0		0	5	−4	1		28 084.830(0.100)	28 084.590(0.001)	3.391	10.329	5
0	8	7	2		0	8	−6	2		28 243.040(0.050)	28 242.994(0.004)	0.673	23.916	8
1	9	6	3	+	1	9	5	4	−	28 246.130(0.050)	28 246.126(0.003)	14.101	105.870	10
1	15	−10	6		1	15	9	6			28 289.015(0.009)	3.405	149.202	
1	2	−2	1		1	2	−1	2		28 298.520(0.050)	28 298.494(0.004)	0.551	74.368	10
1	6	3	3		1	6	−3	4			28 612.604(0.003)	0.253	84.891	
1	2	−1	2		1	1	0	1		28 627.260(0.050)	28 627.433(0.001)	4.382	73.413	10
1	17	12	5	+	1	17	12	6	−		28 715.591(0.007)	0.259	174.054	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	6	−5	2		1	6	−4	3		28 756.650(0.050)	28 756.579(0.006)	4.155	85.958	10
1	5	4	1		1	5	−4	2		28 814.250(0.050)	28 814.176(0.009)	0.997	82.619	10
0	10	6	4	+	0	10	6	5	−		28 830.520(0.001)	2.302	33.599	
1	6	4	2		1	6	3	3		28 909.770(0.050)	28 909.712(0.007)	7.399	85.846	10
1	16	10	6		1	16	−10	7			29 008.978(0.008)	0.534	159.037	
0	14	10	5		0	14	−9	5		29 109.640(0.050)	29 109.568(0.004)	3.272	66.933	8
1	13	11	2	−	1	13	10	3	+	29 251.660(0.050)	29 251.571(0.007)	19.894	136.492	10
0	5	4	2		0	5	−2	3			29 272.767(0.001)	0.606	9.099	
0	4	−4	0		0	4	3	2			29 332.348(0.002)	0.601	6.605	
1	8	5	3	−	1	8	4	4	+	29 338.210(0.050)	29 338.196(0.002)	11.729	100.027	10
1	8	5	3		1	8	−5	4			29 357.443(0.007)	0.376	95.237	
0	5	4	2	−	0	5	3	3	+	29 391.570(0.050)	29 391.609(0.001)	5.415	8.842	9
0	6	5	2		0	6	4	3		29 464.520(0.100)	29 464.724(0.002)	5.493	13.276	5
1	15	12	3	+	1	15	11	4	−	29 472.460(0.050)	29 472.396(0.007)	27.599	154.513	10
0	7	6	1	+	0	7	5	2	−	29 522.530(0.050)	29 522.518(0.001)	7.806	18.128	9
1	6	3	3		1	6	2	4			29 525.766(0.002)	7.809	84.861	
1	11	10	1	+	1	11	9	2	−	29 659.260(0.050)	29 659.188(0.007)	12.636	120.964	10
1	4	1	3	−	1	4	0	4	+	29 700.710(0.050)	29 700.671(0.001)	2.731	83.278	10
1	4	3	1		1	3	3	0		29 712.240(0.050)	29 712.276(0.004)	0.402	78.854	10
1	4	2	3	−	1	4	1	4	+	29 732.200(0.050)	29 732.225(0.001)	2.728	83.278	10
1	9	9	0	−	1	9	8	1	+		29 772.092(0.007)	6.171	107.941	
0	10	8	3		0	10	−7	3		29 806.500(0.050)	29 806.523(0.004)	1.926	35.774	8
1	7	4	3	+	1	7	3	4	−	29 867.900(0.050)	29 868.037(0.002)	9.514	94.847	10
1	5	2	3	+	1	5	1	4	−	29 913.780(0.050)	29 913.707(0.001)	5.102	86.477	10
0	6	3	3	−	0	6	3	4	+	29 926.570(0.100)	29 926.397(0.001)	1.259	11.791	5
1	7	4	3		1	7	3	4			29 949.652(0.003)	10.555	89.655	
1	6	3	3	−	1	6	2	4	+	30 008.500(0.050)	30 008.490(0.001)	7.326	90.331	10
1	5	3	3	+	1	5	2	4	−	30 036.010(0.050)	30 036.042(0.001)	5.085	86.477	10
0	12	9	4		0	12	−8	4		30 071.920(0.050)	30 071.889(0.004)	3.141	50.113	8
1	14	10	4	+	1	14	9	5	−	30 251.850(0.050)	30 251.868(0.003)	26.789	143.795	10
0	6	−3	3		0	6	3	4		30 348.170(0.100)	30 348.131(0.001)	1.223	12.108	5
1	6	4	3	−	1	6	3	4	+	30 358.150(0.050)	30 358.113(0.001)	7.260	90.332	10
0	6	3	3	−	0	6	2	4	+	30 521.370(0.050)	30 521.320(0.001)	7.077	11.771	9
0	10	−6	4		0	10	6	5		30 593.960(0.100)	30 593.901(0.001)	2.128	33.835	5
0	11	7	4	−	0	11	6	5	+	30 675.950(0.050)	30 675.955(0.001)	18.981	40.832	9
1	7	5	3	+	1	7	4	4	−	30 688.080(0.050)	30 688.092(0.001)	9.320	94.850	10
0	7	−6	1		0	7	−5	2		30 771.400(0.100)	30 771.192(0.001)	6.380	18.462	5
0	6	−3	3		0	6	−2	4		30 785.790(0.050)	30 785.690(0.001)	6.949	12.093	9
0	21	14	8		0	21	−13	8			30 805.429(0.006)	1.336	146.008	
1	3	1	2		1	2	−2	1		30 829.720(0.050)	30 829.651(0.005)	1.120	75.312	10
1	2	−2	1		1	1	1	0		30 851.630(0.050)	30 851.715(0.001)	1.270	74.283	10
1	17	13	4	−	1	17	12	5	+	30 856.010(0.050)	30 855.975(0.007)	34.773	175.012	10
1	10	9	2	+	1	10	8	3	−	30 899.780(0.050)	30 899.762(0.005)	12.424	113.489	10
0	13	8	5	+	0	13	8	6	−		30 935.222(0.002)	2.961	56.385	
0	5	5	1	+	0	5	4	2	−	30 954.530(0.050)	30 954.645(0.001)	3.556	9.822	9
1	5	4	1		1	5	3	2		30 986.550(0.050)	30 986.490(0.005)	5.191	82.546	10
1	8	6	3	−	1	8	5	4	+	31 024.550(0.050)	31 024.539(0.002)	11.263	100.035	10
1	13	9	4	−	1	13	9	5	+	31 139.260(0.050)	31 139.232(0.006)	0.401	134.709	10
0	12	8	4	+	0	12	7	5	−	31 143.750(0.050)	31 143.731(0.001)	21.374	48.809	9
0	11	−7	4		0	11	−6	5		31 152.910(0.050)	31 152.959(0.001)	18.427	41.099	9
0	12	−8	4		0	12	−7	5		31 183.250(0.100)	31 183.186(0.001)	20.755	49.073	5
0	9	7	2	−	0	9	6	3	+	31 347.250(0.050)	31 347.265(0.001)	12.201	28.757	9
1	5	2	3		1	5	−2	4		31 377.460(0.050)	31 377.468(0.003)	0.333	80.718	10
1	9	7	3	+	1	9	6	4	−	31 425.060(0.050)	31 425.014(0.002)	13.071	105.891	10
1	7	−5	3		1	7	−4	4			31 575.385(0.003)	7.913	89.735	
1	5	2	3		1	5	1	4		31 605.480(0.050)	31 605.434(0.002)	5.028	80.711	10
0	5	4	2	−	0	5	2	3	+		31 730.209(0.001)	0.667	8.764	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	7	5	2		1	7	−5	3			31 787.291(0.010)	0.784	90.788	
1	2	1	1		1	1	−1	1		31 822.820(0.050)	31 822.768(0.001)	1.536	73.693	10
1	6	−4	3		1	6	−3	4		31 982.440(0.050)	31 982.397(0.003)	6.374	84.891	10
1	9	7	3	+	1	9	5	4	−		32 040.562(0.003)	0.312	105.870	
0	16	10	6	+	0	16	10	7	−		32 077.259(0.002)	3.639	84.939	
0	4	4	1	−	0	4	2	2	+		32 083.478(0.001)	0.190	6.088	
1	10	8	3	−	1	10	7	4	+	32 095.780(0.050)	32 095.770(0.003)	14.778	112.419	10
1	6	−5	2		1	6	3	3			32 126.371(0.007)	0.281	85.846	
0	9	−7	2		0	9	−6	3		32 188.010(0.050)	32 188.039(0.002)	9.934	29.065	9
0	22	14	8	+	0	22	14	9	−		32 190.075(0.003)	5.099	159.313	
1	9	9	1	+	1	9	8	2	−	32 359.020(0.050)	32 359.033(0.006)	6.151	107.851	10
0	19	12	7	+	0	19	12	8	−		32 441.860(0.003)	4.349	119.252	
1	14	−10	5		1	14	9	5			32 465.424(0.012)	0.650	140.793	
1	1	1	0		1	0	0	0			32 489.256(0.002)	0.847	73.199	
1	20	12	8		1	20	−12	9			32 565.361(0.005)	3.915	204.788	
1	3	−2	2		1	2	−2	1		32 570.640(0.050)	32 570.603(0.004)	0.369	75.312	10
0	6	5	2	+	0	6	4	3	−	32 721.790(0.050)	32 721.846(0.001)	6.327	12.987	9
1	18	13	5	−	1	18	12	6	+	32 767.500(0.050)	32 767.478(0.005)	38.519	185.607	10
1	4	−4	1		1	4	3	1		32 778.340(0.050)	32 778.308(0.003)	4.509	79.845	10
0	10	6	4	+	0	10	5	5	−	32 832.620(0.050)	32 832.564(0.001)	15.399	33.466	9
1	6	−4	3		1	6	2	4		32 895.510(0.050)	32 895.559(0.004)	0.540	84.861	10
0	5	2	3	+	0	5	2	4	−		32 897.444(0.001)	0.915	7.667	
0	5	−2	3		0	5	2	4			32 905.153(0.001)	0.900	8.002	
0	7	6	2		0	7	5	3			32 927.558(0.002)	6.169	18.083	
0	11	8	3	+	0	11	7	4	−	32 931.540(0.050)	32 931.567(0.001)	16.959	41.856	9
0	5	−2	3		0	5	−1	4		32 996.560(0.050)	32 996.639(0.001)	4.633	7.998	9
1	24	−15	10		1	24	14	10			33 015.052(0.008)	3.180	261.767	
0	5	2	3	+	0	5	1	4	−	33 023.710(0.050)	33 023.758(0.001)	4.673	7.662	9
0	11	−8	3		0	11	−7	4		33 115.070(0.050)	33 115.039(0.002)	14.826	42.139	9
1	13	9	4	−	1	13	8	5	+	33 285.180(0.050)	33 285.187(0.003)	22.313	134.638	10
1	11	9	3	+	1	11	8	4	−	33 433.560(0.050)	33 433.546(0.003)	16.316	119.621	10
1	10	8	3	−	1	10	6	4	+		33 469.430(0.005)	0.444	112.373	
1	9	6	3		1	9	−6	4			33 476.594(0.010)	0.421	101.423	
0	6	6	1		0	6	5	2			33 528.566(0.002)	3.774	14.259	
1	5	−3	3		1	5	−2	4		33 556.140(0.050)	33 556.114(0.002)	4.631	80.718	10
0	13	−8	5		0	13	8	6			33 556.418(0.002)	2.687	56.554	
0	10	−6	4		0	10	−5	5		33 567.710(0.050)	33 567.733(0.001)	14.916	33.736	9
1	19	14	5	+	1	19	13	6	−	33 595.930(0.050)	33 595.828(0.007)	40.617	197.978	10
0	2	−1	1		0	1	−1	0		33 622.098(0.002)	33 622.096(0.000)	1.041	1.058	6
1	8	5	3		1	8	4	4			33 626.095(0.006)	11.247	95.094	
1	3	3	0		1	3	−3	1		33 702.540(0.050)	33 702.522(0.003)	2.490	77.729	10
0	2	1	1	−	0	1	1	0	−		33 759.137(0.000)	1.084	0.696	
1	5	−3	3		1	5	1	4		33 784.100(0.050)	33 784.080(0.002)	0.531	80.711	10
1	4	1	3		1	4	−1	4		33 954.540(0.050)	33 954.522(0.001)	0.246	77.230	10
1	4	1	3		1	4	0	4		33 984.480(0.050)	33 984.448(0.001)	2.617	77.229	10
0	6	5	2		0	6	−3	3			34 140.812(0.002)	0.377	13.120	
0	4	−1	3		0	4	1	4			34 230.689(0.001)	0.511	4.573	
0	4	−1	3		0	4	0	4		34 241.090(0.050)	34 241.082(0.001)	2.431	4.572	9
0	4	1	3	−	0	4	1	4	+	34 473.227(0.002)	34 473.226(0.001)	0.519	4.222	6
0	4	1	3	−	0	4	0	4	+	34 487.750(0.050)	34 487.741(0.001)	2.442	4.221	9
0	13	−9	4		0	13	−8	5			34 539.201(0.002)	20.530	57.673	
0	9	8	2		0	9	−7	2			34 646.301(0.005)	0.177	30.139	
1	2	2	1	−	1	1	1	0	−		34 661.870(0.001)	4.313	79.792	
0	6	6	0	+	0	6	5	1	−	34 722.940(0.050)	34 722.963(0.001)	3.748	14.154	9
0	4	2	3		0	4	1	4		34 728.790(0.050)	34 728.816(0.001)	2.415	4.573	9
0	5	3	3		0	5	2	4		34 730.760(0.050)	34 730.856(0.001)	4.508	8.002	9
0	4	2	3		0	4	0	4			34 739.209(0.001)	0.507	4.572	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	19	13	7		0	19	−12	7			34 753.991(0.006)	2.567	120.503	
1	17	−11	7		1	17	10	7			34 780.193(0.007)	3.967	169.654	
1	4	−2	3		1	4	−1	4		34 803.890(0.050)	34 803.851(0.001)	2.571	77.230	10
0	5	3	3		0	5	−1	4			34 822.343(0.001)	0.869	7.998	
1	4	−2	3		1	4	0	4		34 833.820(0.050)	34 833.777(0.001)	0.300	77.229	10
0	13	9	4	−	0	13	8	5	+	34 836.490(0.050)	34 836.433(0.001)	21.780	57.417	9
0	9	5	4	−	0	9	5	5	+	34 863.010(0.050)	34 863.021(0.001)	1.895	26.762	9
1	12	8	4	+	1	12	8	5	−	34 913.560(0.050)	34 913.404(0.005)	0.272	126.158	10
0	6	4	3		0	6	3	4		35 024.240(0.050)	35 024.218(0.001)	6.355	12.108	9
0	5	−4	1		0	5	3	3		35 041.810(0.050)	35 041.869(0.001)	0.573	9.160	8
1	17	12	5	+	1	17	11	6	−	35 101.790(0.050)	35 101.753(0.004)	33.332	173.841	10
0	6	−6	0		0	6	−5	1		35 114.030(0.050)	35 114.109(0.001)	3.657	14.528	9
0	4	2	3	−	0	4	1	4	+	35 120.000(0.050)	35 120.035(0.001)	2.423	4.222	9
0	4	2	3	−	0	4	0	4	+		35 134.551(0.001)	0.514	4.221	
1	8	−6	3		1	8	−5	4			35 215.174(0.005)	7.981	95.237	
0	5	3	3	+	0	5	2	4	−	35 236.120(0.050)	35 236.044(0.001)	4.526	7.667	9
1	15	9	6		1	15	−9	7			35 279.135(0.006)	0.478	148.025	
0	5	3	3	+	0	5	1	4	−		35 362.359(0.001)	0.876	7.662	
0	6	4	3		0	6	−2	4			35 461.777(0.001)	1.079	12.093	
0	16	−10	6		0	16	10	7			35 482.279(0.003)	3.250	85.039	
1	16	11	5	−	1	16	11	6	+		35 542.395(0.007)	0.439	162.797	
0	5	−5	0		0	5	4	2		35 679.420(0.050)	35 679.395(0.003)	0.310	10.076	8
0	7	5	3		0	7	4	4			35 741.141(0.001)	7.773	16.890	
1	7	5	2		1	7	4	3			35 797.441(0.006)	8.068	90.654	
1	11	10	2	−	1	11	9	3	+	35 827.360(0.050)	35 827.381(0.006)	12.053	120.736	10
0	6	4	3	−	0	6	3	4	+	35 848.420(0.050)	35 848.445(0.001)	6.403	11.791	9
1	12	10	3	−	1	12	9	4	+	35 928.600(0.050)	35 928.612(0.004)	17.317	127.500	10
1	12	8	4	+	1	12	7	5	−	35 930.540(0.050)	35 930.567(0.003)	19.142	126.125	10
0	9	−5	4		0	9	5	5		35 955.120(0.050)	35 955.163(0.001)	1.821	27.026	9
0	14	9	5	−	0	14	8	6	+	36 065.350(0.050)	36 065.384(0.001)	24.477	65.491	9
1	11	9	3	+	1	11	7	4	−		36 219.090(0.007)	0.381	119.528	
1	3	0	3	+	1	2	1	2	+	36 224.800(0.050)	36 224.797(0.001)	7.139	80.505	10
1	3	1	3	+	1	2	0	2	+	36 270.370(0.050)	36 270.351(0.001)	7.151	80.503	10
0	9	5	4	−	0	9	4	5	+	36 411.110(0.050)	36 411.140(0.001)	11.942	26.711	9
0	14	−9	5		0	14	−8	6		36 419.460(0.050)	36 419.391(0.001)	23.892	65.718	9
0	6	4	3	−	0	6	2	4	+		36 443.368(0.001)	1.080	11.771	
0	19	−12	7		0	19	12	8			36 455.147(0.004)	3.839	119.287	
0	22	−14	8		0	22	14	9			36 565.769(0.004)	4.471	159.291	
1	9	5	4		1	9	4	5			36 590.445(0.002)	13.711	99.999	
0	3	0	3	+	0	2	1	2	+	36 681.388(0.002)	36 681.386(0.001)	5.096	1.407	6
0	3	0	3		0	2	1	2		36 701.712(0.050)	36 701.711(0.001)	5.145	1.759	6
0	3	1	3		0	2	1	2		36 775.787(0.002)	36 775.786(0.001)	1.830	1.759	6
0	3	1	3	+	0	2	1	2	+	36 778.523(0.002)	36 778.522(0.001)	1.871	1.407	6
1	23	14	9		1	23	−14	10			36 851.025(0.008)	5.468	246.738	
0	6	6	1	−	0	6	5	2	+		36 871.202(0.001)	3.672	14.079	
0	8	6	3		0	8	5	4			36 995.436(0.001)	8.472	22.352	
0	9	−5	4		0	9	−4	5		37 072.560(0.050)	37 072.578(0.001)	11.656	26.989	9
0	7	6	2	−	0	7	5	3	+	37 127.290(0.050)	37 127.363(0.001)	6.874	17.839	9
0	3	0	3		0	2	0	2		37 135.318(0.002)	37 135.317(0.001)	1.850	1.745	6
0	3	1	3		0	2	0	2		37 209.391(0.002)	37 209.391(0.001)	5.225	1.745	6
0	3	0	3	+	0	2	0	2	+	37 217.426(0.002)	37 217.425(0.001)	1.894	1.389	6
0	7	5	3		0	7	−3	4			37 220.272(0.001)	1.068	16.841	
0	15	−10	5		0	15	−9	6		37 246.280(0.050)	37 246.250(0.001)	25.614	75.656	9
1	8	4	4		1	8	−4	5			37 255.184(0.004)	0.377	93.852	
0	7	5	3	+	0	7	4	4	−	37 263.900(0.050)	37 263.915(0.001)	8.001	16.596	9
0	3	1	3	+	0	2	0	2	+	37 314.562(0.002)	37 314.561(0.001)	5.180	1.389	6
0	11	9	3		0	11	−8	3			37 338.005(0.005)	0.844	43.243	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	10	10	0	+	1	10	9	1	−	37 430.430(0.050)	37 430.277(0.007)	5.736	114.568	10
0	17	12	6		0	17	−11	6		37 483.250(0.050)	37 483.292(0.005)	3.699	97.461	8
1	3	0	3		1	2	−1	2		37 504.690(0.050)	37 504.658(0.001)	4.736	74.368	10
0	6	−5	1		0	6	4	3		37 537.750(0.050)	37 537.687(0.002)	1.096	13.276	8
0	15	10	5	+	0	15	9	6	−	37 583.000(0.050)	37 582.907(0.001)	26.203	75.431	9
1	3	−1	3		1	2	−1	2		37 664.680(0.050)	37 664.642(0.001)	1.404	74.368	10
1	21	15	6	−	1	21	14	7	+	37 692.000(0.050)	37 691.963(0.007)	44.895	223.405	10
0	13	8	5	+	0	13	7	6	−	37 726.120(0.050)	37 726.127(0.001)	21.000	56.158	9
1	11	7	4	−	1	11	6	5	+	37 732.040(0.050)	37 732.044(0.003)	16.637	118.269	10
0	8	7	1	−	0	8	6	2	+	37 802.830(0.050)	37 802.810(0.002)	7.495	23.581	9
1	16	13	3	−	1	16	12	4	+	37 850.620(0.050)	37 850.569(0.007)	24.172	164.909	10
1	18	14	4	+	1	18	13	5	−	37 871.330(0.050)	37 871.297(0.008)	31.339	186.700	10
1	5	4	1		1	4	4	0			37 880.386(0.004)	0.340	82.316	
1	7	−6	2		1	7	−5	3			37 972.047(0.006)	3.741	90.788	
1	19	13	6	−	1	19	13	7	+		37 974.066(0.008)	0.415	196.712	
1	10	6	4		1	10	5	5			38 093.956(0.005)	15.221	106.796	
0	8	7	2		0	8	6	3			38 140.557(0.002)	6.989	23.586	
1	17	10	7		1	17	−10	8			38 155.357(0.004)	1.518	168.381	
1	8	4	4		1	8	3	5			38 174.574(0.002)	10.524	93.821	
1	3	0	3		1	2	0	2		38 196.680(0.050)	38 196.606(0.001)	0.916	74.345	10
0	2	2	1		0	1	−1	0		38 203.495(0.002)	38 203.493(0.001)	2.253	1.058	6
1	14	12	2	+	1	14	11	3	−	38 205.400(0.050)	38 205.385(0.007)	17.483	145.616	10
1	22	15	7	−	1	22	15	8	+		38 216.810(0.010)	0.297	236.464	
1	3	2	1		1	3	−1	3		38 269.670(0.050)	38 269.659(0.003)	0.426	75.624	10
1	5	1	4	−	1	5	0	5	+	38 283.880(0.050)	38 283.853(0.002)	2.735	85.200	10
1	5	2	4	−	1	5	1	5	+	38 287.960(0.050)	38 287.999(0.002)	2.734	85.200	10
1	12	11	1	−	1	12	10	2	+	38 292.010(0.050)	38 291.973(0.007)	11.434	128.834	10
1	3	−1	3		1	2	0	2		38 356.770(0.050)	38 356.590(0.001)	5.045	74.345	10
1	19	−12	8		1	19	11	8			38 361.590(0.005)	1.190	192.577	
0	12	7	5	−	0	12	7	6	+		38 479.200(0.002)	2.492	47.525	
0	3	−1	2		0	2	−2	0		38 573.344(0.002)	38 573.343(0.001)	0.295	2.481	6
0	8	−7	1		0	8	−6	2		38 581.600(0.050)	38 581.615(0.002)	6.874	23.916	9
1	6	5	1		1	6	4	2		38 617.130(0.050)	38 617.116(0.003)	6.878	86.810	10
0	13	−8	5		0	13	−7	6		38 620.840(0.050)	38 620.881(0.001)	20.349	56.385	9
0	6	5	2	+	0	6	3	3	−		38 643.894(0.001)	0.500	12.790	
1	6	2	4	+	1	6	1	5	−	38 696.950(0.050)	38 696.919(0.001)	5.153	89.041	10
1	20	15	5	−	1	20	14	6	+	38 702.200(0.050)	38 702.147(0.008)	38.433	210.980	10
1	6	3	4	+	1	6	2	5	−	38 717.700(0.050)	38 717.730(0.001)	5.151	89.041	10
1	10	6	4	+	1	10	5	5	−	38 749.150(0.050)	38 749.152(0.002)	14.289	111.080	10
1	23	15	8		1	23	−15	9			38 774.559(0.013)	0.936	249.517	
0	13	10	4		0	13	−9	4			38 801.138(0.005)	2.230	58.825	
1	10	10	1	−	1	10	9	2	+	38 821.030(0.050)	38 821.078(0.006)	5.771	114.520	10
0	15	11	5		0	15	−10	5		38 841.490(0.050)	38 841.630(0.005)	3.572	76.898	8
1	16	11	5	−	1	16	10	6	+	38 932.980(0.050)	38 932.991(0.004)	28.136	162.684	10
1	7	3	4	−	1	7	2	5	+	39 040.930(0.050)	39 040.950(0.001)	7.461	93.545	10
1	7	4	4	−	1	7	3	5	+	39 117.610(0.050)	39 117.601(0.001)	7.450	93.545	10
1	20	14	6	+	1	20	13	7	−	39 172.590(0.050)	39 172.580(0.005)	40.511	209.673	10
1	9	5	4	−	1	9	4	5	+	39 191.290(0.050)	39 191.266(0.001)	11.998	104.563	10
0	9	7	3		0	9	6	4			39 234.922(0.002)	8.829	28.496	
0	7	5	3	+	0	7	3	4	−		39 235.168(0.001)	1.086	16.531	
1	8	4	4	+	1	8	3	5	−	39 241.240(0.050)	39 241.220(0.001)	9.735	98.718	10
1	6	−3	4		1	5	4	1			39 307.227(0.007)	0.242	83.580	
1	8	5	4	+	1	8	4	5	−	39 468.110(0.050)	39 468.104(0.001)	9.696	98.718	10
1	8	−6	3		1	8	4	4			39 483.826(0.007)	0.209	95.094	
0	8	4	4	+	0	8	4	5	−	39 494.260(0.050)	39 494.266(0.001)	1.593	20.601	9
0	2	2	1	−	0	1	1	0	−	39 569.871(0.002)	39 569.870(0.000)	3.268	0.696	6
1	9	6	3		1	9	5	4			39 584.521(0.006)	11.392	101.219	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	8	6	3	−	0	8	5	4	+	39 713.110(0.050)	39 713.095(0.001)	9.233	22.087	9
0	10	8	2	+	0	10	7	3	−	39 746.860(0.050)	39 746.830(0.002)	11.498	35.476	9
1	9	6	4	−	1	9	5	5	+	39 754.700(0.050)	39 754.705(0.001)	11.880	104.564	10
1	4	2	2		1	3	−3	1		39 860.930(0.050)	39 860.981(0.007)	0.790	77.729	10
1	3	−3	1		1	3	−2	2		39 909.270(0.050)	39 909.281(0.006)	0.363	76.398	10
1	13	11	3	+	1	13	10	4	−		39 961.952(0.005)	17.464	136.066	
1	10	7	4	+	1	10	6	5	−	39 962.240(0.050)	39 962.182(0.001)	13.993	111.086	10
0	8	−4	4		0	8	4	5		39 970.820(0.050)	39 970.819(0.001)	1.559	20.890	9
0	8	4	4	+	0	8	3	5	−	39 982.940(0.050)	39 982.964(0.001)	9.170	20.585	9
1	11	8	4	−	1	11	7	5	+		40 086.260(0.002)	15.995	118.284	
1	12	9	4	+	1	12	8	5	−		40 216.193(0.003)	17.835	126.158	
1	9	−6	4		1	9	−5	5			40 220.669(0.003)	10.666	100.082	
0	8	−4	4		0	8	−3	5			40 315.003(0.001)	9.050	20.878	
0	7	7	1		0	7	6	2			40 322.338(0.002)	3.859	19.181	
0	12	−7	5		0	12	7	6			40 376.717(0.002)	2.363	47.726	
1	5	−5	1		1	5	4	1			40 435.972(0.003)	4.993	83.580	
0	10	−8	2		0	10	−7	3			40 565.069(0.002)	9.791	35.774	
1	13	10	4	−	1	13	9	5	+		40 675.574(0.003)	19.579	134.709	
0	8	6	3		0	8	−4	4			40 858.671(0.002)	0.803	22.223	
0	12	9	3	−	0	12	8	4	+		40 868.280(0.002)	15.919	49.847	
0	15	9	6	−	0	15	9	7	+		40 959.492(0.002)	3.081	74.064	
1	15	10	5	+	1	15	10	6	−		40 977.961(0.006)	0.334	152.214	
1	11	6	5		1	11	−6	6			41 038.651(0.004)	0.311	112.869	
1	7	3	4		1	7	−3	5			41 062.350(0.003)	0.477	88.285	
1	12	10	3	−	1	12	8	4	+		41 231.401(0.009)	0.194	127.323	
1	12	9	4	+	1	12	7	5	−		41 233.356(0.005)	0.383	126.125	
0	12	−9	3		0	12	−8	4			41 237.564(0.002)	13.294	50.113	
0	14	−10	4		0	14	−9	5			41 303.006(0.002)	18.324	66.933	
1	7	3	4		1	7	2	5			41 319.332(0.002)	7.672	88.277	
1	4	4	0		1	4	−4	1			41 320.428(0.003)	2.689	80.938	
1	24	15	9		1	24	−15	10			41 442.072(0.012)	3.713	262.868	
0	12	7	5	−	0	12	6	6	+		41 512.502(0.001)	17.133	47.424	
1	8	−5	4		1	8	−4	5			41 523.836(0.003)	9.107	93.852	
0	17	11	6	−	0	17	10	7	+		41 601.756(0.001)	29.809	95.884	
0	14	10	4	+	0	14	9	5	−		41 637.813(0.002)	20.776	66.694	
0	17	−11	6		0	17	−10	7			41 640.814(0.001)	29.328	96.072	
1	14	8	6		1	14	−8	7			41 698.495(0.004)	0.563	137.721	
0	16	−11	5		0	16	−10	6			41 767.923(0.002)	24.508	86.223	
0	7	−7	0		0	7	−6	1			41 842.532(0.001)	3.762	19.488	
0	3	1	2	−	0	2	2	1	−		41 956.999(0.001)	1.829	2.016	
1	7	−6	2		1	7	4	3			41 982.196(0.009)	0.349	90.654	
1	14	11	4	+	1	14	10	5	−		42 044.745(0.004)	21.171	143.935	
1	12	11	2	+	1	12	10	3	−		42 091.389(0.006)	11.430	128.698	
1	4	−3	2		1	3	−3	1			42 127.248(0.007)	0.305	77.729	
0	7	−6	1		0	7	5	3			42 136.281(0.002)	1.056	18.083	
0	7	6	2		0	7	−4	3			42 171.261(0.003)	0.196	17.774	
0	7	7	0	−	0	7	6	1	+		42 235.263(0.001)	3.746	19.112	
1	16	−11	6		1	16	10	6			42 313.584(0.010)	1.699	160.004	
1	10	−7	4		1	10	−6	5			42 337.949(0.004)	11.378	106.965	
1	2	2	0	+	1	1	1	1	+		42 363.157(0.001)	1.651	79.658	
1	8	−5	4		1	8	3	5			42 443.226(0.004)	0.568	93.821	
0	8	7	2	+	0	8	6	3	−		42 448.005(0.001)	7.165	23.411	
0	16	10	6	+	0	16	9	7	−		42 448.531(0.001)	26.713	84.594	
0	18	11	7	−	0	18	11	8	+		42 467.955(0.003)	3.680	106.367	
0	7	3	4	−	0	7	3	5	+		42 471.128(0.001)	1.300	15.114	
0	7	−3	4		0	7	3	5			42 477.128(0.001)	1.278	15.424	
0	12	−7	5		0	12	−6	6			42 557.699(0.001)	16.653	47.654	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	7	−3	4		0	7	−2	5			42 560.280(0.001)	6.820	15.421	
1	11	7	4		1	11	6	5			42 572.433(0.006)	15.130	114.238	
0	7	3	4	−	0	7	2	5	+		42 591.622(0.001)	6.865	15.110	
0	16	11	5	−	0	16	10	6	+		42 618.759(0.002)	25.860	86.009	
0	2	−2	0		0	1	−1	0			42 653.338(0.001)	1.006	1.058	
1	15	10	5	+	1	15	9	6	−		42 666.734(0.004)	24.454	152.158	
1	12	7	5		1	12	6	6			42 712.949(0.004)	19.009	120.941	
0	2	2	1		0	1	1	1			42 762.831(0.001)	0.722	0.906	
1	13	10	4	−	1	13	8	5	+		42 821.528(0.007)	0.579	134.638	
0	3	−1	2		0	2	2	1			43 023.188(0.001)	1.638	2.332	
0	10	8	3		0	10	7	4			43 111.462(0.002)	9.601	35.330	
0	24	15	9	−	0	24	15	10	+		43 152.508(0.005)	4.953	188.221	
0	21	13	8	−	0	21	13	9	+		43 154.216(0.004)	4.301	144.423	
1	22	13	9		1	22	−13	10			43 182.679(0.005)	4.589	231.144	
0	7	7	1	+	0	7	6	2	−		43 237.138(0.001)	3.725	19.078	
1	6	6	0	+	1	6	3	3	−		43 274.288(0.004)	0.172	91.332	
0	9	7	3	+	0	9	6	4	−		43 288.326(0.001)	10.073	28.271	
0	16	−10	6		0	16	−9	7			43 326.794(0.001)	25.987	84.778	
1	8	6	2		1	8	5	3			43 329.879(0.004)	9.433	96.216	
1	19	13	6	−	1	19	12	7	+		43 339.020(0.004)	34.655	196.533	
1	7	−4	4		1	7	−3	5			43 446.766(0.002)	7.313	88.285	
0	18	−12	6		0	18	−11	7			43 500.100(0.002)	30.280	107.969	
0	22	15	8		0	22	−14	8			43 505.030(0.007)	2.687	160.510	
1	11	6	5		1	11	5	6			43 565.329(0.002)	16.547	112.785	
1	9	−7	3		1	9	−6	4			43 586.413(0.006)	7.575	101.423	
1	4	3	1		1	4	−2	3			43 598.601(0.005)	0.782	78.390	
0	15	−9	6		0	15	9	7			43 692.969(0.002)	2.882	74.198	
1	7	−4	4		1	7	2	5			43 703.748(0.002)	0.618	88.277	
1	4	1	3		1	3	2	1			43 810.944(0.004)	1.408	76.901	
0	6	−2	4		0	6	2	5			43 812.431(0.001)	0.940	10.632	
0	6	−2	4		0	6	−1	5			43 826.662(0.001)	4.678	10.631	
0	8	5	4		0	8	4	5			43 834.054(0.001)	8.699	20.890	
0	7	4	4		0	7	3	5			43 956.259(0.001)	6.739	15.424	
1	6	2	4		1	6	−2	5			43 959.885(0.002)	0.428	83.394	
1	3	1	2	−	1	2	2	1	−		43 987.476(0.001)	4.104	80.949	
1	6	2	4		1	6	1	5			44 010.251(0.001)	5.227	83.393	
0	7	4	4		0	7	−2	5			44 039.412(0.001)	1.258	15.421	
0	9	6	4		0	9	5	5			44 072.838(0.001)	10.429	27.026	
0	6	2	4	+	0	6	2	5	−		44 082.273(0.001)	0.957	10.301	
0	6	2	4	+	0	6	1	5	−		44 103.248(0.001)	4.696	10.300	
0	8	5	4		0	8	−3	5			44 178.237(0.001)	1.473	20.878	
1	7	−3	5		1	6	4	2			44 234.245(0.005)	0.228	86.810	
0	6	3	4		0	6	2	5			44 249.990(0.001)	4.663	10.632	
0	6	3	4		0	6	−1	5			44 264.220(0.001)	0.936	10.631	
1	19	11	8		1	19	−11	9			44 335.880(0.004)	2.678	191.098	
0	18	12	6	+	0	18	11	7	−		44 379.614(0.002)	30.733	107.784	
0	3	2	2	−	0	2	2	1	−		44 411.350(0.001)	1.205	2.016	
0	12	10	3		0	12	−9	3			44 432.620(0.005)	0.239	51.489	
0	7	4	4	−	0	7	3	5	+		44 442.381(0.001)	6.761	15.114	
0	5	−1	4		0	5	1	5			44 459.819(0.001)	0.523	6.515	
0	5	−1	4		0	5	0	5			44 461.130(0.001)	2.460	6.515	
1	22	−14	9		1	22	13	9			44 469.890(0.008)	3.731	232.584	
0	8	5	4	+	0	8	4	5	−		44 525.658(0.001)	8.731	20.601	
0	5	2	4		0	5	1	5			44 551.305(0.001)	2.458	6.515	
0	5	2	4		0	5	0	5			44 552.617(0.001)	0.523	6.515	
0	7	4	4	−	0	7	2	5	+		44 562.875(0.001)	1.272	15.110	
0	9	8	2		0	9	7	3			44 653.281(0.002)	7.463	29.805	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	4	−2	3		1	3	2	1			44 660.273(0.003)	0.374	76.901	
0	6	3	4	+	0	6	2	5	−		44 677.196(0.001)	4.678	10.301	
0	6	3	4	+	0	6	1	5	−		44 698.171(0.001)	0.952	10.300	
0	8	6	3	−	0	8	4	4	+		44 744.487(0.001)	0.904	21.919	
0	11	6	5	+	0	11	6	6	−		44 758.130(0.001)	2.187	39.339	
0	10	7	4		0	10	6	5			44 813.041(0.001)	11.620	33.835	
0	5	1	4	−	0	5	1	5	+		44 859.564(0.001)	0.533	6.166	
0	5	1	4	−	0	5	0	5	+		44 861.524(0.001)	2.466	6.166	
1	6	−3	4		1	6	−2	5			44 873.046(0.001)	5.172	83.394	
1	6	−3	4		1	6	1	5			44 923.413(0.001)	0.478	83.393	
1	15	12	4	−	1	15	11	5	+		44 947.133(0.004)	22.114	153.839	
0	5	2	4	−	0	5	1	5	+		44 985.878(0.001)	2.464	6.166	
0	5	2	4	−	0	5	0	5	+		44 987.839(0.001)	0.533	6.166	
0	3	2	2		0	2	2	1			45 012.260(0.001)	1.096	2.332	
0	8	5	4	+	0	8	3	5	−		45 014.356(0.001)	1.476	20.585	
1	13	8	5		1	13	7	6			45 114.363(0.005)	19.290	129.704	
0	9	6	4		0	9	−4	5			45 190.254(0.001)	1.524	26.989	
0	9	6	4	−	0	9	5	5	+		45 235.069(0.001)	10.521	26.762	
1	18	12	6	+	1	18	12	7	−		45 364.263(0.007)	0.414	184.094	
1	3	2	2	−	1	2	1	1	−		45 401.507(0.001)	4.812	80.908	
1	11	11	0	−	1	11	10	1	+		45 451.258(0.006)	5.407	121.953	
1	14	9	5	−	1	14	8	6	+		45 454.753(0.003)	21.744	142.279	
1	14	12	3	−	1	14	11	4	+		45 656.560(0.005)	16.917	145.337	
1	5	1	4		1	5	−1	5			45 659.054(0.001)	0.271	79.188	
1	5	1	4		1	5	0	5			45 664.335(0.001)	2.745	79.187	
1	5	−2	4		1	5	−1	5			45 887.021(0.001)	2.740	79.188	
0	9	−8	1		0	9	−7	2			45 891.910(0.002)	7.300	30.139	
1	5	−2	4		1	5	0	5			45 892.302(0.001)	0.279	79.187	
0	11	−6	5		0	11	6	6			45 899.603(0.001)	2.125	39.568	
0	11	6	5	+	0	11	5	6	−		45 918.774(0.001)	13.885	39.301	
0	18	−11	7		0	18	11	8			45 963.102(0.003)	3.398	106.436	
0	9	8	1	+	0	9	7	2	−		45 979.251(0.002)	7.413	29.803	
1	10	5	5		1	10	−5	6			46 038.653(0.004)	0.539	105.261	
0	15	9	6	−	0	15	8	7	+		46 082.487(0.001)	22.613	73.894	
1	11	11	1	+	1	11	10	2	−		46 095.400(0.006)	5.430	121.931	
1	7	6	1		1	7	5	2			46 179.536(0.003)	7.604	91.848	
1	14	11	4	+	1	14	9	5	−		46 225.162(0.008)	0.488	143.795	
0	11	8	4		0	11	7	5			46 238.063(0.002)	12.012	41.320	
1	15	−11	5		1	15	10	5			46 300.174(0.012)	0.188	151.119	
1	6	5	1		1	5	5	0			46 413.178(0.004)	0.295	86.550	
1	23	−15	9		1	23	14	9			46 439.416(0.011)	4.254	247.968	
0	2	2	0	+	0	1	1	1	+		46 471.052(0.001)	1.731	0.558	
1	22	15	7	−	1	22	14	8	+		46 673.028(0.005)	41.996	236.182	
1	3	−3	1		1	2	2	0			46 679.169(0.001)	1.374	76.172	
0	11	−6	5		0	11	−5	6			46 707.285(0.001)	13.642	39.541	
0	20	14	7		0	20	−13	7			46 772.805(0.007)	4.020	133.721	
0	9	6	4	−	0	9	4	5	+		46 783.188(0.001)	1.519	26.711	
0	10	7	4	+	0	10	6	5	−		46 859.782(0.001)	12.023	33.599	
1	6	1	5	−	1	6	0	6	+		46 878.573(0.002)	2.826	87.477	
1	6	2	5	−	1	6	1	6	+		46 879.168(0.002)	2.826	87.477	
1	10	7	3		1	10	6	4			46 880.060(0.004)	12.136	108.067	
0	8	−6	2		0	8	5	4			46 892.999(0.002)	1.015	22.352	
1	4	0	4	+	1	3	1	3	+		46 920.364(0.001)	10.053	81.713	
1	4	1	4	+	1	3	0	3	+		46 925.419(0.001)	10.054	81.713	
1	10	5	5		1	10	4	6			46 938.812(0.003)	13.160	105.231	
0	20	−13	7		0	20	−12	8			46 973.770(0.002)	34.646	132.155	
0	7	−5	2		0	7	4	4			47 106.230(0.001)	0.347	16.890	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	14	11	4		0	14	−10	4			47 142.070(0.005)	0.989	68.311	
0	19	12	7	+	0	19	11	8	−		47 192.767(0.001)	32.413	118.760	
0	2	−2	0		0	1	1	1			47 212.676(0.001)	1.023	0.906	
1	13	8	5	+	1	13	7	6	−		47 229.378(0.002)	19.263	133.062	
0	8	8	1		0	8	7	2			47 233.142(0.002)	3.876	24.858	
0	21	−13	8		0	21	13	9			47 246.266(0.004)	3.928	144.432	
0	9	7	3		0	9	−5	4			47 352.597(0.003)	0.468	28.226	
0	15	−9	6		0	15	−8	7			47 408.134(0.001)	21.943	74.074	
0	20	13	7	−	0	20	12	8	+		47 417.700(0.002)	34.891	132.002	
1	7	2	5	+	1	7	1	6	−		47 480.740(0.002)	5.329	91.961	
1	7	3	5	+	1	7	2	6	−		47 484.065(0.002)	5.328	91.961	
1	13	12	1	+	1	13	11	2	−		47 508.274(0.006)	10.690	137.468	
1	7	7	0	−	1	7	4	3	+		47 512.527(0.006)	0.261	95.844	
0	4	0	4		0	3	1	3			47 557.533(0.001)	7.407	2.986	
0	4	1	4		0	3	1	3			47 567.926(0.001)	2.543	2.986	
0	4	0	4	+	0	3	1	3	+		47 589.624(0.001)	7.340	2.634	
0	4	1	4	+	0	3	1	3	+		47 604.140(0.001)	2.603	2.634	
0	3	−1	2		0	2	−1	1			47 604.586(0.001)	1.645	2.179	
0	24	−15	9		0	24	15	10			47 613.496(0.005)	4.488	188.183	
0	4	0	4		0	3	0	3			47 631.607(0.001)	2.545	2.983	
1	3	2	1		1	2	−2	1			47 635.807(0.001)	2.236	75.312	
0	4	1	4		0	3	0	3			47 642.000(0.001)	7.416	2.983	
1	21	14	7	+	1	21	14	8	−		47 669.523(0.009)	0.458	221.815	
0	4	0	4	+	0	3	0	3	+		47 686.760(0.001)	2.605	2.631	
0	4	1	4	+	0	3	0	3	+		47 701.276(0.001)	7.349	2.631	
1	6	−6	1		1	6	5	1			47 755.711(0.003)	5.340	88.098	
1	16	9	7		1	16	−9	8			47 761.808(0.004)	1.348	156.714	
0	3	1	2	−	0	2	1	1	−		47 767.731(0.001)	1.710	1.823	
0	10	7	4		0	10	−5	5			47 786.873(0.002)	1.332	33.736	
1	15	9	6		1	15	8	7			47 813.207(0.004)	23.701	147.607	
0	19	−12	7		0	19	−11	8			47 857.691(0.001)	31.745	118.906	
1	14	8	6		1	14	7	7			47 911.171(0.003)	22.305	137.514	
0	10	8	3	−	0	10	7	4	+		47 926.002(0.001)	10.577	35.162	
1	8	3	5	−	1	8	2	6	+		48 011.465(0.001)	7.626	97.116	
1	8	4	5	−	1	8	3	6	+		48 025.434(0.001)	7.624	97.116	
1	4	0	4		1	3	−1	3			48 096.155(0.001)	7.454	75.624	
1	4	−1	4		1	3	−1	3			48 126.081(0.001)	2.001	75.624	
1	18	12	6	+	1	18	11	7	−		48 155.410(0.004)	30.122	184.001	
1	5	3	2		1	4	−4	1			48 214.324(0.006)	0.779	80.938	
1	12	7	5	−	1	12	6	6	+		48 220.271(0.002)	16.849	124.516	
1	4	0	4		1	3	0	3			48 256.139(0.001)	1.923	75.619	
1	4	−1	4		1	3	0	3			48 286.065(0.001)	7.486	75.619	
1	8	−7	2		1	8	−6	3			48 286.687(0.004)	3.859	96.411	
0	2	2	0	+	0	1	0	1	+		48 408.542(0.001)	0.184	0.493	
1	19	15	4	−	1	19	14	5	+		48 419.500(0.008)	27.595	199.099	
1	9	4	5	+	1	9	4	6	−		48 425.654(0.001)	0.182	102.947	
1	9	4	5	+	1	9	3	6	−		48 428.572(0.001)	9.855	102.947	
0	9	8	2	−	0	9	7	3	+		48 440.966(0.001)	7.310	29.715	
0	8	−8	0		0	8	−7	1			48 442.332(0.002)	3.805	25.203	
0	18	13	6		0	18	−12	6			48 476.634(0.006)	3.971	109.420	
1	9	5	5	+	1	9	4	6	−		48 477.762(0.001)	9.848	102.947	
0	8	−7	1		0	8	6	3			48 479.179(0.003)	0.534	23.586	
1	9	5	5	+	1	9	3	6	−		48 480.681(0.001)	0.182	102.947	
1	15	13	2	−	1	15	12	3	+		48 490.561(0.006)	15.992	155.496	
1	13	7	6		1	13	−7	7			48 490.609(0.004)	0.732	128.087	
1	2	−2	1		1	1	−1	1			48 538.050(0.002)	0.826	73.693	
0	11	9	2	−	0	11	8	3	+		48 574.349(0.002)	11.175	42.954	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	$\mu^2 S$ (D^2)	E_1 (cm^{-1})	Ref.
0	16	12	5		0	16	−11	5			48 588.574(0.006)	2.518	87.616	
1	5	5	0		1	5	−5	1			48 597.510(0.003)	2.838	84.929	
1	11	6	5	+	1	11	5	6	−		48 644.360(0.001)	14.487	116.647	
1	17	14	3	+	1	17	13	4	−		48 649.926(0.007)	21.555	176.041	
1	10	5	5	−	1	10	4	6	+		48 670.403(0.001)	12.143	109.457	
1	15	11	5	+	1	15	10	6	−		48 713.358(0.003)	22.681	152.214	
0	11	9	3		0	11	8	4			48 764.322(0.002)	10.595	42.862	
1	6	1	5		1	5	2	3			48 798.136(0.003)	0.203	81.765	
0	11	−9	2		0	11	−8	3			48 813.175(0.002)	10.463	43.243	
0	14	8	6	+	0	14	8	7	−		48 818.676(0.002)	2.741	63.862	
1	10	6	5	−	1	10	5	6	+		48 820.126(0.001)	12.120	109.457	
0	7	6	2	−	0	7	4	3	+		48 843.491(0.002)	0.328	17.449	
0	12	9	4		0	12	8	5			48 863.667(0.002)	12.235	49.486	
1	14	10	5	−	1	14	9	6	+		48 870.881(0.003)	20.843	142.305	
1	11	7	5	+	1	11	6	6	−		49 039.302(0.001)	14.416	116.648	
1	7	−4	4		1	6	5	1			49 063.895(0.008)	0.211	88.098	
1	13	9	5	+	1	13	8	6	−	49 066.608(0.050)	49 066.621(0.002)	18.820	133.072	7
1	16	12	5	−	1	16	11	6	+	49 105.920(0.050)	49 105.919(0.004)	24.458	162.797	7
1	12	8	5	−	1	12	7	6	+	49 126.092(0.050)	49 126.098(0.001)	16.657	124.520	7
1	12	8	4		1	12	7	5		49 213.260(0.050)	49 213.262(0.004)	15.070	122.365	7
0	9	−7	2		0	9	6	4			49 241.902(0.002)	1.633	28.496	
0	10	5	5	−	0	10	5	6	+	49 265.512(0.050)	49 265.501(0.001)	1.943	31.823	6
1	3	−2	2		1	2	1	1		49 285.880(0.050)	49 285.885(0.002)	4.893	74.754	7
0	19	−13	6		0	19	−12	7		49 296.227(0.010)	49 296.225(0.003)	28.346	120.503	6
1	11	−8	4		1	11	−7	5		49 392.190(0.050)	49 392.190(0.005)	11.297	114.519	7
0	8	8	0	+	0	8	7	1	−	49 417.545(0.050)	49 417.547(0.002)	3.758	24.842	6
1	11	−7	5		1	11	−6	6		49 441.052(0.050)	49 441.051(0.003)	13.257	112.869	7
1	13	12	2	−	1	13	11	3	+	49 485.971(0.010)	49 485.952(0.005)	10.777	137.399	7
1	5	1	4		1	4	2	2			49 513.183(0.002)	0.446	79.059	
0	11	8	4	−	0	11	7	5	+	49 588.587(0.050)	49 588.589(0.001)	13.153	41.120	6
0	3	2	2		0	2	−1	1		49 593.651(0.050)	49 593.657(0.001)	3.547	2.179	6
1	14	10	5	−	1	14	8	6	+		49 635.170(0.004)	0.200	142.279	
0	10	5	5	−	0	10	4	6	+	49 642.270(0.050)	49 642.273(0.001)	11.311	31.810	6
1	9	−7	3		1	9	5	4			49 694.340(0.010)	0.326	101.219	
0	17	−12	5		0	17	−11	6		49 713.976(0.050)	49 713.968(0.003)	21.753	97.461	6
0	10	−5	5		0	10	5	6		49 728.988(0.050)	49 728.976(0.001)	1.904	32.077	6
1	16	13	4	+	1	16	12	5	−	49 750.288(0.050)	49 750.276(0.005)	22.051	164.435	7
0	5	3	3	+	0	4	4	0	+		49 833.481(0.001)	0.233	7.180	
0	8	8	1	−	0	8	7	2	+	49 843.739(0.050)	49 843.743(0.001)	3.752	24.827	6
0	10	−5	5		0	10	−4	6		49 983.795(0.050)	49 983.793(0.001)	11.210	32.069	6
0	13	10	3	+	0	13	9	4	−	50 054.071(0.050)	50 054.071(0.002)	15.183	58.579	6
0	21	−14	7		0	21	−13	8		50 064.070(0.050)	50 064.069(0.003)	34.739	146.008	6
0	3	2	2	−	0	2	1	1	−	50 222.072(0.050)	50 222.083(0.001)	3.631	1.823	6
0	13	−10	3		0	13	−9	4		50 294.796(0.050)	50 294.789(0.002)	13.266	58.825	6
0	18	11	7	−	0	18	10	8	+		50 341.918(0.001)	28.314	106.105	
0	15	−11	4		0	15	−10	5			50 384.845(0.003)	16.645	76.898	
1	14	9	5		1	14	8	6			50 385.452(0.005)	18.545	139.112	
1	12	−8	5		1	12	−7	6			50 386.470(0.004)	14.213	121.132	
1	15	11	5	+	1	15	9	6	−		50 402.132(0.006)	0.508	152.158	
1	9	4	5		1	9	−4	6			50 611.505(0.003)	0.587	98.311	
0	15	11	4	−	0	15	10	5	+	50 626.609(0.050)	50 626.606(0.002)	19.589	76.684	6
0	17	12	5	+	0	17	11	6	−	50 695.189(0.050)	50 695.185(0.003)	24.474	97.271	6
0	14	−8	6		0	14	8	7		50 743.733(0.010)	50 743.733(0.002)	2.640	64.026	6
0	19	13	6	−	0	19	12	7	+	50 812.786(0.050)	50 812.782(0.003)	29.725	120.334	6
1	17	13	5	+	1	17	12	6	−		50 818.178(0.004)	26.003	174.054	
1	17	11	6	−	1	17	11	7	+		50 824.170(0.006)	0.197	172.145	
0	10	7	4	+	0	10	5	5	−	50 861.815(0.050)	50 861.826(0.001)	1.365	33.466	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	16	10	6		1	16	9	7		50 867.543(0.050)	50 867.552(0.005)	23.140	158.307	7
1	9	4	5		1	9	3	6		50 875.042(0.050)	50 875.036(0.002)	10.366	98.302	7
1	9	7	2		1	9	6	3		50 916.015(0.050)	50 916.014(0.003)	10.276	102.540	7
0	14	8	6	+	0	14	7	7	−	51 036.328(0.050)	51 036.329(0.001)	18.869	63.788	6
1	13	7	6		1	13	6	7		51 042.742(0.010)	51 042.731(0.002)	19.031	128.002	7
0	3	−2	1		0	2	−2	0		51 081.771(0.050)	51 081.777(0.001)	1.194	2.481	6
1	10	−6	5		1	10	−5	6		51 093.767(0.050)	51 093.760(0.003)	11.841	105.261	7
1	17	10	7		1	17	9	8		51 535.239(0.010)	51 535.233(0.003)	27.753	167.935	7
1	18	−12	7		1	18	11	7			51 568.014(0.008)	2.458	181.681	
0	21	14	7	+	0	21	13	8	−	51 590.616(0.050)	51 590.611(0.003)	34.974	145.862	6
0	3	2	1	+	0	2	2	0	+	51 605.515(0.010)	51 605.514(0.001)	1.319	2.108	6
0	10	9	2		0	10	8	3		51 670.209(0.050)	51 670.209(0.002)	7.608	36.768	6
0	18	−11	7		0	18	−10	8		51 778.682(0.050)	51 778.687(0.002)	27.509	106.242	6
0	17	10	7	+	0	17	10	8	−	51 797.398(0.050)	51 797.402(0.003)	3.279	94.156	6
1	11	−7	5		1	11	5	6			51 967.729(0.006)	0.323	112.785	
1	10	−6	5		1	10	4	6			51 993.919(0.004)	0.666	105.231	
1	18	11	7		1	18	10	8		52 009.121(0.010)	52 009.128(0.004)	28.788	179.946	7
0	9	−4	5		0	9	4	6		52 046.858(0.050)	52 046.868(0.001)	1.649	25.253	6
0	9	4	5	+	0	9	4	6	−	52 063.217(0.050)	52 063.264(0.001)	1.682	24.974	6
0	22	14	8	+	0	22	13	9	−	52 105.026(0.010)	52 105.024(0.002)	37.988	158.648	6
0	9	−4	5		0	9	−3	6		52 113.564(0.050)	52 113.566(0.001)	9.024	25.251	6
0	9	4	5	+	0	9	3	6	−	52 164.407(0.050)	52 164.405(0.001)	9.068	24.971	6
1	17	11	6	−	1	17	10	7	+	52 166.453(0.010)	52 166.447(0.004)	27.043	172.101	7
1	21	14	7	+	1	21	13	8	−	52 227.168(0.010)	52 227.167(0.005)	36.379	221.663	7
1	5	4	1		1	5	−3	3			52 235.676(0.007)	0.737	81.838	
0	14	−8	6		0	14	−7	7		52 289.872(0.010)	52 289.876(0.001)	18.466	63.974	6
0	22	−14	8		0	22	−13	9		52 376.869(0.010)	52 376.878(0.002)	37.524	158.763	6
1	16	12	5	−	1	16	10	6	+		52 496.515(0.008)	0.687	162.684	
0	11	7	5		0	11	6	6		52 503.222(0.010)	52 503.222(0.001)	12.935	39.568	6
0	23	−15	8		0	23	−14	9		52 561.318(0.010)	52 561.325(0.003)	39.769	173.961	6
1	15	12	4	−	1	15	10	5	+		52 682.530(0.010)	0.235	153.581	
0	10	6	5		0	10	5	6		52 702.802(0.010)	52 702.808(0.001)	11.012	32.077	6
0	12	8	5		0	12	7	6		52 768.137(0.050)	52 768.125(0.001)	14.552	47.726	6
0	10	−9	1		0	10	−8	2		52 792.344(0.050)	52 792.342(0.002)	7.477	37.127	6
0	11	8	4		0	11	−6	5			52 841.682(0.003)	0.920	41.099	
1	15	13	3	+	1	15	12	4	−	52 861.147(0.050)	52 861.133(0.005)	16.075	155.338	7
0	10	6	5		0	10	−4	6			52 957.625(0.001)	1.854	32.069	
1	9	−5	5		1	9	−4	6		53 089.209(0.050)	53 089.207(0.002)	10.041	98.311	7
0	9	5	5		0	9	4	6		53 164.283(0.050)	53 164.283(0.001)	8.975	25.253	6
0	9	5	5		0	9	−3	6		53 230.969(0.050)	53 230.982(0.001)	1.636	25.251	6
0	13	10	4		0	13	9	5		53 242.205(0.010)	53 242.201(0.002)	13.101	58.343	6
0	10	6	5	−	0	10	5	6	+	53 267.544(0.010)	53 267.545(0.001)	11.040	31.823	6
1	25	15	10		1	25	−15	11		53 271.335(0.050)	53 271.332(0.009)	5.035	276.710	7
0	11	7	5		0	11	−5	6			53 310.903(0.001)	1.952	39.541	
1	8	7	1		1	8	6	2		53 316.791(0.050)	53 316.789(0.003)	8.068	97.661	7
0	8	−3	5		0	8	3	6		53 347.887(0.050)	53 347.881(0.001)	1.339	19.099	6
1	9	−5	5		1	9	3	6			53 352.739(0.002)	0.680	98.302	
0	8	−3	5		0	8	−2	6		53 361.610(0.050)	53 361.610(0.001)	6.899	19.098	6
0	11	7	5	+	0	11	6	6	−	53 376.160(0.050)	53 376.160(0.001)	12.973	39.339	6
0	4	−2	2		0	3	−3	0			53 407.986(0.001)	0.402	4.654	
0	11	9	3	+	0	11	8	4	−	53 435.631(0.010)	53 435.631(0.001)	10.849	42.774	6
1	20	−13	8		1	20	12	8			53 444.214(0.006)	1.337	205.874	
0	12	9	4	+	0	12	8	5	−	53 461.643(0.010)	53 461.643(0.001)	13.905	49.335	6
0	23	15	8	−	0	23	14	9	+	53 599.270(0.010)	53 599.264(0.003)	39.678	173.840	6
0	9	5	5	+	0	9	4	6	−		53 611.383(0.001)	9.000	24.974	
0	8	3	5	−	0	8	3	6	+	53 640.054(0.050)	53 640.059(0.001)	1.369	18.796	6
0	10	6	5	−	0	10	4	6	+	53 644.315(0.050)	53 644.317(0.001)	1.870	31.810	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	13	9	5		0	13	8	6		53 654.555(0.010)	53 654.555(0.002)	15.486	56.554	6
0	9	7	3	+	0	9	5	4	−	53 660.399(0.050)	53 660.374(0.002)	0.648	27.925	6
0	8	3	5	−	0	8	2	6	+	53 661.353(0.050)	53 661.352(0.001)	6.920	18.795	6
0	10	9	1	−	0	10	8	2	+	53 685.686(0.050)	53 685.688(0.002)	7.416	36.802	6
0	8	4	5		0	8	3	6		53 692.062(0.050)	53 692.064(0.001)	6.889	19.099	6
1	12	12	0	+	1	12	11	1	−	53 704.672(0.050)	53 704.665(0.005)	5.136	130.111	7
0	8	4	5		0	8	−2	6		53 705.794(0.050)	53 705.793(0.001)	1.337	19.098	6
0	9	5	5	+	0	9	3	6	−	53 712.524(0.050)	53 712.524(0.001)	1.663	24.971	6
1	8	3	5		1	8	−3	6			53 752.958(0.002)	0.540	92.028	
0	20	12	8	+	0	20	12	9	−	53 812.878(0.050)	53 812.879(0.003)	3.817	130.207	6
1	8	3	5		1	8	2	6		53 814.487(0.050)	53 814.481(0.002)	7.903	92.026	6
0	10	−8	2		0	10	7	4			53 870.008(0.003)	1.445	35.330	
1	12	12	1	−	1	12	11	2	+		53 967.369(0.005)	5.145	130.102	
1	10	−8	3		1	10	−7	4			54 041.567(0.004)	7.559	108.377	
1	4	−4	1		1	4	−3	2			54 065.858(0.008)	0.182	79.135	
1	8	8	0	+	1	8	5	3	−		54 068.529(0.008)	0.292	101.006	
0	7	−2	5		0	7	2	6			54 072.611(0.001)	0.970	13.618	
0	7	−2	5		0	7	−1	6			54 074.605(0.001)	4.746	13.618	
1	16	9	7		1	16	8	8			54 112.239(0.002)	24.944	156.502	
1	21	12	9		1	21	−12	10			54 114.618(0.004)	3.449	216.163	
0	8	4	5	−	0	8	3	6	+		54 128.757(0.001)	6.905	18.796	
0	9	9	1		0	9	8	2			54 143.110(0.002)	3.878	31.295	
0	8	4	5	−	0	8	2	6	+		54 150.049(0.001)	1.365	18.795	
0	7	3	5		0	7	2	6			54 155.764(0.001)	4.745	13.618	
0	7	3	5		0	7	−1	6			54 157.757(0.001)	0.969	13.618	
0	12	8	5	−	0	12	7	6	+		54 246.665(0.001)	14.696	47.525	
0	21	13	8	−	0	21	12	9	+		54 477.171(0.001)	34.145	144.045	
0	6	−1	5		0	6	1	6			54 486.960(0.001)	0.530	8.814	
0	6	−1	5		0	6	0	6			54 487.114(0.001)	2.486	8.814	
0	6	2	5		0	6	1	6			54 501.190(0.001)	2.486	8.814	
0	6	2	5		0	6	0	6			54 501.344(0.001)	0.530	8.814	
1	18	14	5	−	1	18	13	6	+	54 506.594(0.050)	54 506.582(0.005)	26.663	185.991	7
0	7	2	5	+	0	7	2	6	−		54 508.264(0.001)	0.993	13.292	
0	7	2	5	+	0	7	1	6	−	54 511.415(0.010)	54 511.419(0.001)	4.755	13.292	6
0	17	−10	7		0	17	10	8		54 531.327(0.010)	54 531.323(0.003)	3.124	94.253	6
0	11	7	5	+	0	11	5	6	−	54 536.802(0.010)	54 536.804(0.001)	1.948	39.301	6
1	11	8	3		1	11	7	4		54 537.345(0.010)	54 537.346(0.003)	12.942	115.658	7
1	3	3	1	+	1	2	2	0	+	54 589.317(0.010)	54 589.317(0.002)	5.838	81.071	6
0	7	3	5	+	0	7	2	6	−	54 628.759(0.010)	54 628.759(0.001)	4.752	13.292	6
0	7	3	5	+	0	7	1	6	−	54 631.899(0.050)	54 631.914(0.001)	0.993	13.292	6
1	8	−4	5		1	8	−3	6			54 672.347(0.001)	7.843	92.028	
1	7	−7	1		1	7	6	1			54 686.812(0.003)	5.613	93.389	
1	8	−4	5		1	8	2	6			54 733.870(0.001)	0.576	92.026	
0	6	3	4	+	0	5	4	1	+		54 734.152(0.001)	0.211	9.966	
1	5	3	2		1	5	−2	4			54 805.300(0.002)	0.345	80.718	
0	10	9	2	+	0	10	8	3	−	54 855.687(0.010)	54 855.693(0.001)	7.385	36.761	6
0	15	12	4		0	15	−11	4			54 915.683(0.006)	0.296	78.579	
0	13	7	6	−	0	13	7	7	+	54 919.990(0.050)	54 919.978(0.001)	2.514	54.326	6
0	12	8	5		0	12	−6	6			54 949.108(0.002)	1.858	47.654	
1	16	10	6	+	1	16	9	7	−	54 960.988(0.010)	54 960.986(0.003)	24.428	160.851	7
1	24	16	8	+	1	24	15	9	−	54 968.884(0.010)	54 968.899(0.007)	43.517	265.137	7
1	12	6	6		1	12	−6	7			54 970.244(0.004)	0.796	119.107	
0	23	14	9	+	0	23	14	10	−	54 978.986(0.050)	54 978.958(0.004)	4.365	172.006	6
0	9	−9	0		0	9	−8	1		54 996.891(0.010)	54 996.895(0.002)	3.829	31.670	6
0	6	1	5	−	0	6	1	6	+		54 999.244(0.001)	0.544	8.466	
0	6	1	5	−	0	6	0	6	+	54 999.502(0.050)	54 999.493(0.001)	2.488	8.466	6
0	6	2	5	−	0	6	1	6	+	55 020.224(0.050)	55 020.219(0.001)	2.488	8.466	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	6	2	5	−	0	6	0	6	+		55 020.468(0.001)	0.544	8.466	
1	5	3	2		1	5	1	4			55 033.267(0.002)	0.174	80.711	
1	20	13	7	−	1	20	13	8	+		55 258.847(0.007)	0.301	207.830	
1	4	1	3	−	1	3	2	2	−	55 351.865(0.050)	55 351.874(0.001)	7.274	82.423	6
1	7	6	1		1	6	6	0			55 369.984(0.005)	0.262	91.542	
0	14	10	5		0	14	9	6		55 399.757(0.010)	55 399.757(0.002)	15.565	66.056	6
1	19	12	7		1	19	11	8		55 423.707(0.050)	55 423.724(0.004)	29.044	192.577	7
1	6	6	0		1	6	−6	1			55 480.413(0.003)	2.959	89.691	
1	7	1	6	−	1	7	*	7	+	55 493.668(0.050)	55 493.624(0.002)	2.862	90.110	6
1	7	2	6	−	1	7	*	7	+	55 493.667(0.050)	55 493.724(0.002)	2.862	90.110	
0	17	10	7	+	0	17	9	8	−	55 529.489(0.010)	55 529.495(0.002)	24.126	94.031	6
1	4	2	3	−	1	3	1	2	−	55 587.801(0.050)	55 587.801(0.001)	7.335	82.416	6
0	12	10	3		0	12	9	4		55 598.290(0.050)	55 598.294(0.002)	11.167	51.116	6
1	7	2	5		1	7	−2	6			55 620.015(0.001)	0.440	86.421	
1	18	10	8		1	18	−10	9			55 629.919(0.003)	2.169	178.091	
1	7	2	5		1	7	1	6		55 630.270(0.050)	55 630.259(0.001)	5.417	86.421	6
1	20	12	8		1	20	11	9		55 652.129(0.050)	55 652.130(0.004)	33.207	204.018	7
0	13	7	6	−	0	13	6	7	+	55 761.941(0.010)	55 761.944(0.001)	15.917	54.298	6
0	21	−13	8		0	21	−12	9		55 823.849(0.010)	55 823.858(0.002)	33.308	144.146	6
1	12	6	6		1	12	5	7			55 847.343(0.003)	15.679	119.078	
1	13	−9	5		1	13	−8	6		55 856.175(0.010)	55 856.179(0.004)	14.566	130.060	7
1	7	−3	5		1	7	−2	6		55 876.998(0.010)	55 876.997(0.001)	5.409	86.421	6
1	7	−3	5		1	7	1	6			55 887.242(0.001)	0.449	86.421	
0	13	−7	6		0	13	7	7		56 011.086(0.010)	56 011.090(0.001)	2.453	54.516	6
0	13	9	5	+	0	13	8	6	−	56 137.690(0.010)	56 137.691(0.001)	16.100	56.385	6
0	4	1	3	−	0	3	2	2	−	56 179.932(0.050)	56 179.936(0.001)	4.513	3.498	6
0	4	2	2	+	0	3	3	1	+		56 180.205(0.001)	1.132	4.214	
1	8	2	6	+	1	8	1	7	−	56 300.152(0.050)	56 300.147(0.002)	5.462	95.238	6
1	8	3	6	+	1	8	2	7	−	56 300.773(0.010)	56 300.772(0.002)	5.462	95.238	6
0	12	−10	2		0	12	−9	3		56 372.976(0.010)	56 372.971(0.002)	10.998	51.489	6
0	9	9	0	−	0	9	8	1	+	56 382.660(0.010)	56 382.661(0.002)	3.771	31.337	6
0	4	−1	3		0	3	2	2		56 389.075(0.010)	56 389.075(0.001)	4.581	3.834	6
1	6	4	2		1	5	−5	1			56 393.571(0.004)	0.820	84.929	
1	17	11	6		1	17	10	7		56 416.575(0.010)	56 416.586(0.005)	22.020	169.654	7
1	17	14	4	−	1	17	13	5	+	56 440.376(0.010)	56 440.369(0.005)	21.264	175.749	7
0	9	9	1	+	0	9	8	2	−	56 553.020(0.050)	56 553.024(0.002)	3.770	31.331	6
0	13	−7	6		0	13	−6	7		56 577.607(0.010)	56 577.609(0.001)	15.734	54.497	6
1	15	8	7		1	15	−8	8			56 618.771(0.004)	1.298	145.719	
1	2	2	0		1	1	1	0		56 652.429(0.010)	56 652.429(0.002)	2.754	74.283	6
1	15	9	6	−	1	15	8	7	+	56 732.084(0.010)	56 732.086(0.002)	21.893	150.265	7
1	6	1	5		1	6	−1	6			56 754.971(0.001)	0.269	81.499	
1	6	1	5		1	6	0	6			56 755.881(0.001)	2.820	81.499	
1	6	−2	5		1	6	−1	6		56 805.353(0.050)	56 805.338(0.001)	2.819	81.499	7
1	6	−2	5		1	6	0	6			56 806.248(0.001)	0.270	81.499	
1	14	13	1	−	1	14	12	2	+	56 821.785(0.050)	56 821.775(0.005)	10.149	146.891	7
1	13	9	4		1	13	8	5		56 822.892(0.010)	56 822.899(0.004)	15.543	131.209	7
0	4	2	3	−	0	3	2	2	−	56 826.731(0.050)	56 826.745(0.001)	2.071	3.498	6
1	18	13	6	+	1	18	12	7	−	56 864.957(0.050)	56 864.960(0.004)	27.594	184.094	7
0	4	2	3		0	3	2	2			56 887.201(0.001)	2.019	3.834	
0	12	10	2	+	0	12	9	3	−	57 005.144(0.050)	57 005.144(0.002)	11.095	51.211	6
1	9	3	6	−	1	9	2	7	+	57 006.675(0.050)	57 006.678(0.002)	7.896	101.046	6
1	9	4	6	−	1	9	3	7	+	57 009.481(0.010)	57 009.479(0.002)	7.895	101.046	7
0	25	−16	9		0	25	−15	10		57 040.755(0.010)	57 040.768(0.003)	43.216	204.342	6
0	24	−16	8		0	24	−15	9		57 041.477(0.010)	57 041.477(0.005)	38.998	189.772	6
1	19	11	8		1	19	10	9		57 129.227(0.010)	57 129.224(0.003)	30.687	190.671	7
0	17	−10	7		0	17	−9	8		57 168.258(0.050)	57 168.260(0.002)	23.547	94.165	6
0	22	−15	7		0	22	−14	8		57 192.761(0.050)	57 192.758(0.004)	32.105	160.510	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	17	13	5	+	1	17	11	6	−		57 204.340(0.010)	0.497	173.841	
1	17	12	6	−	1	17	11	7	+	57 210.320(0.050)	57 210.333(0.003)	25.760	172.145	7
0	12	8	5	−	0	12	6	6	+		57 279.967(0.001)	1.846	47.424	
0	20	−12	8		0	20	12	9		57 285.172(0.050)	57 285.165(0.004)	3.597	130.244	6
0	25	16	9	+	0	25	15	10	−	57 292.653(0.050)	57 292.648(0.003)	43.354	204.251	6
0	10	8	3		0	10	−6	4			57 330.601(0.004)	0.246	34.855	
0	9	−7	2		0	9	−5	4			57 359.577(0.002)	0.232	28.226	
1	15	10	5		1	15	9	6		57 464.435(0.050)	57 464.435(0.004)	18.207	149.202	7
1	24	14	10		1	24	−14	11			57 487.637(0.006)	4.513	259.849	
1	19	14	6	−	1	19	13	7	+	57 490.448(0.050)	57 490.449(0.005)	29.397	196.712	7
1	6	4	2		1	6	−3	4			57 522.317(0.005)	0.894	84.891	
1	23	15	8	−	1	23	15	9	+		57 561.664(0.011)	0.404	249.366	
1	5	2	3		1	4	3	1			57 564.800(0.007)	1.446	79.845	
1	20	13	7	−	1	20	12	8	+		57 573.177(0.004)	32.582	207.753	
1	10	4	6	+	1	10	3	7	−		57 590.849(0.001)	10.195	107.536	
1	5	0	5	+	1	4	1	4	+		57 597.310(0.002)	12.948	83.278	
1	5	1	5	+	1	4	0	4	+		57 597.835(0.002)	12.948	83.278	
1	10	5	6	+	1	10	4	7	−		57 601.139(0.001)	10.194	107.536	
0	11	−8	3		0	11	7	5			57 664.380(0.002)	1.505	41.320	
0	17	13	5		0	17	−12	5			57 677.311(0.007)	1.144	99.119	
1	14	13	2	+	1	14	12	3	−		57 705.236(0.005)	10.201	146.860	
1	14	8	6	+	1	14	7	7	−		57 741.768(0.002)	19.431	140.353	
1	16	11	6	+	1	16	10	7	−		57 768.822(0.002)	23.766	160.870	
1	22	−15	8		1	22	14	8			57 783.686(0.012)	1.977	234.876	
1	10	8	2		1	10	7	3			57 982.036(0.003)	10.857	109.631	
1	11	5	6	−	1	11	4	7	+		58 020.829(0.001)	12.392	114.711	
1	11	6	6	−	1	11	5	7	+		58 054.697(0.001)	12.388	114.711	
0	10	−7	3		0	10	6	5			58 117.980(0.001)	0.611	33.835	
1	9	−8	2		1	9	−7	3			58 123.644(0.004)	3.809	102.877	
1	15	10	6	−	1	15	9	7	+		58 193.280(0.002)	21.584	150.273	
1	13	7	6	−	1	13	6	7	+		58 193.827(0.001)	16.998	131.121	
0	11	8	4	−	0	11	6	5	+		58 206.619(0.002)	1.067	40.832	
1	12	6	6	+	1	12	6	7	−		58 239.035(0.001)	0.204	122.573	
0	5	0	5		0	4	1	4			58 242.638(0.001)	9.625	4.573	
0	5	1	5		0	4	1	4			58 243.949(0.001)	3.243	4.573	
1	12	6	6	+	1	12	5	7	−		58 247.732(0.001)	14.627	122.573	
0	5	0	5		0	4	0	4			58 253.031(0.001)	3.243	4.572	
0	5	1	5		0	4	0	4			58 254.342(0.001)	9.626	4.572	
0	5	0	5	+	0	4	1	4	+		58 285.339(0.001)	9.533	4.222	
0	5	1	5	+	0	4	1	4	+		58 287.299(0.001)	3.328	4.222	
0	5	0	5	+	0	4	0	4	+		58 299.854(0.001)	3.328	4.221	
0	5	1	5	+	0	4	0	4	+		58 301.814(0.001)	9.534	4.221	
1	12	7	6	+	1	12	6	7	−		58 350.371(0.001)	14.612	122.573	
1	12	7	6	+	1	12	5	7	−		58 359.068(0.001)	0.205	122.573	
0	13	10	4	−	0	13	9	5	+		58 368.670(0.001)	14.347	58.257	
0	4	−1	3		0	3	−1	2			58 378.146(0.001)	2.131	3.767	
0	20	−14	6		0	20	−13	7			58 386.571(0.004)	25.166	133.721	
1	14	9	6	+	1	14	8	7	−	58 424.772(0.010)	58 424.779(0.002)	19.306	140.356	7
1	21	13	8		1	21	12	9		58 439.975(0.010)	58 439.983(0.005)	33.629	217.968	7
1	13	8	6	−	1	13	7	7	+	58 475.225(0.010)	58 475.230(0.001)	16.954	131.122	7
0	15	11	5		0	15	10	6		58 517.722(0.010)	58 517.720(0.002)	15.664	76.242	6
1	17	12	6	−	1	17	10	7	+		58 552.609(0.005)	0.316	172.101	
0	4	1	3	−	0	3	1	2	−	58 634.283(0.050)	58 634.287(0.001)	2.197	3.416	6
0	24	15	9	−	0	24	14	10	+	58 640.615(0.010)	58 640.609(0.002)	40.008	187.704	6
1	5	0	5		1	4	−1	4		58 697.480(0.010)	58 697.482(0.002)	9.860	77.230	6
1	5	−1	5		1	4	−1	4		58 702.755(0.050)	58 702.763(0.002)	2.640	77.230	6
0	13	9	5		0	13	−7	6			58 719.018(0.003)	1.506	56.385	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	5	0	5		1	4	0	4		58 727.416(0.050)	58 727.408(0.002)	2.629	77.229	6
1	5	−1	5		1	4	0	4			58 732.690(0.002)	9.863	77.229	
0	11	10	2		0	11	9	3		58 755.724(0.010)	58 755.723(0.002)	7.640	44.489	6
0	4	−2	2		0	3	3	1			58 799.560(0.002)	0.823	4.474	
1	4	1	3		1	3	−2	2			58 876.149(0.003)	3.020	76.398	
0	4	2	3		0	3	−1	2		58 876.251(0.010)	58 876.273(0.001)	5.013	3.767	6
0	21	15	7		0	21	−14	7			58 894.174(0.009)	4.355	147.678	
0	14	−11	3		0	14	−10	4		58 903.190(0.010)	58 903.190(0.002)	14.110	68.311	6
0	23	−14	9		0	23	14	10			59 035.545(0.004)	4.072	171.992	
0	12	6	6	+	0	12	6	7	−	59 065.863(0.010)	59 065.854(0.001)	2.306	45.454	6
1	16	14	2	+	1	16	13	3	−	59 065.981(0.050)	59 066.011(0.005)	15.095	166.171	7
1	3	1	2		1	2	−1	2			59 128.145(0.003)	0.754	74.368	
0	19	14	6		0	19	−13	6			59 128.390(0.008)	2.837	122.147	
1	15	8	7		1	15	7	8		59 147.036(0.010)	59 147.036(0.002)	21.215	145.634	7
1	13	−8	6		1	13	−7	7		59 173.024(0.050)	59 173.024(0.003)	15.829	128.087	7
0	14	10	5	−	0	14	9	6	+	59 187.404(0.010)	59 187.401(0.001)	17.122	65.928	6
0	24	16	8	+	0	24	15	9	−	59 233.161(0.010)	59 233.159(0.004)	38.966	189.660	6
0	14	11	3	−	0	14	10	4	+	59 259.896(0.010)	59 259.892(0.002)	14.880	68.083	6
0	4	2	3	−	0	3	1	2	−	59 281.095(0.050)	59 281.097(0.001)	4.966	3.416	6
0	14	11	4		0	14	10	5		59 335.515(0.010)	59 335.508(0.002)	14.234	67.904	6
0	12	6	6	+	0	12	5	7	−	59 344.613(0.050)	59 344.607(0.001)	13.491	45.444	6
0	22	15	7	−	0	22	14	8	+	59 398.554(0.010)	59 398.555(0.004)	33.440	160.386	6
0	12	−6	6		0	12	6	7			59 472.967(0.001)	2.254	45.670	
1	17	−12	6		1	17	11	6			59 480.978(0.011)	0.755	171.536	
1	12	−9	4		1	12	−8	5		59 492.496(0.050)	59 492.490(0.004)	11.183	122.813	7
0	16	9	7	−	0	16	9	8	+		59 499.451(0.002)	3.044	82.609	
0	11	−10	1		0	11	−9	2		59 512.535(0.050)	59 512.527(0.002)	7.550	44.871	6
1	14	−9	6		1	14	−8	7		59 534.449(0.010)	59 534.460(0.003)	16.654	137.721	7
0	12	10	3	−	0	12	9	4	+	59 564.422(0.010)	59 564.437(0.001)	10.989	51.118	6
0	20	12	8	+	0	20	11	9	−	59 580.756(0.050)	59 580.761(0.002)	29.639	130.015	6
0	12	−6	6		0	12	−5	7		59 654.533(0.050)	59 654.538(0.001)	13.414	45.664	6
1	18	13	6	+	1	18	11	7	−		59 656.107(0.008)	0.670	184.001	
0	18	−13	5		0	18	−12	6			59 660.667(0.004)	19.987	109.420	
0	24	−15	9		0	24	−14	10		59 701.490(0.010)	59 701.502(0.002)	39.272	187.780	6
1	4	−2	3		1	3	−2	2			59 725.478(0.002)	2.237	76.398	
1	5	−3	3		1	4	3	1			59 743.446(0.005)	0.343	79.845	
0	3	3	1		0	2	−2	0			59 765.576(0.002)	1.192	2.481	
1	3	1	2		1	2	0	2			59 820.092(0.002)	0.278	74.345	
1	9	8	1		1	9	7	2			59 969.308(0.003)	8.435	104.238	
1	20	15	6	+	1	20	14	7	−	59 970.483(0.050)	59 970.473(0.006)	30.714	210.001	7
0	16	−12	4		0	16	−11	5		60 017.522(0.010)	60 017.514(0.003)	16.762	87.616	6
0	12	−9	3		0	12	8	5			60 029.341(0.003)	2.165	49.486	
1	11	5	6		1	11	−5	7			60 051.992(0.003)	0.721	110.782	
0	20	14	6	+	0	20	13	7	−	60 054.509(0.010)	60 054.507(0.003)	28.111	133.584	6
1	8	−4	5		1	7	5	2			60 063.530(0.007)	0.331	91.848	
1	21	−14	8		1	21	13	8			60 149.223(0.010)	6.774	219.917	
0	11	−9	2		0	11	8	4			60 239.492(0.004)	0.712	42.862	
1	11	5	6		1	11	4	7		60 311.376(0.050)	60 311.373(0.002)	13.031	110.773	7
1	19	15	5	+	1	19	14	6	−	60 392.762(0.050)	60 392.755(0.005)	26.235	198.629	7
0	16	12	4	+	0	16	11	5	−	60 408.042(0.050)	60 408.033(0.002)	18.884	87.431	6
1	18	15	3	−	1	18	14	4	+	60 419.725(0.010)	60 419.722(0.006)	20.049	187.963	7
0	18	13	5	−	0	18	12	6	+	60 564.628(0.010)	60 564.625(0.003)	23.253	109.264	6
1	4	1	3		1	3	1	2			60 617.101(0.002)	0.866	76.340	
1	12	−7	6		1	12	−6	7		60 702.392(0.050)	60 702.393(0.002)	14.538	119.107	7
1	3	−2	2		1	2	−1	2			60 869.096(0.002)	0.845	74.368	
0	14	9	6		0	14	8	7		60 872.933(0.010)	60 872.934(0.001)	17.228	64.026	6
0	11	10	1	+	0	11	9	2	−	60 976.141(0.010)	60 976.141(0.002)	7.440	44.574	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	20	16	4	+	1	20	15	5	−	61 003.965(0.010)	61 003.981(0.008)	25.149	212.271	7
0	10	10	1		0	10	9	2		61 043.776(0.010)	61 043.779(0.002)	3.876	38.491	6
0	13	8	6		0	13	7	7		61 075.550(0.010)	61 075.554(0.001)	15.344	54.516	6
0	16	9	7	−	0	16	8	8	+	61 076.880(0.010)	61 076.884(0.002)	20.721	82.556	6
0	9	−6	3		0	9	5	5			61 126.701(0.001)	0.173	27.026	
1	8	−8	1		1	8	7	1			61 180.660(0.003)	5.842	99.440	
1	16	14	3	−	1	16	13	4	+	61 225.002(0.010)	61 225.004(0.004)	15.229	166.095	7
0	12	9	4		0	12	−7	5			61 255.075(0.004)	0.523	49.073	
0	15	10	6		0	15	9	7		61 263.127(0.010)	61 263.129(0.001)	18.706	74.198	6
0	16	−9	7		0	16	9	8		61 324.542(0.010)	61 324.538(0.002)	2.950	82.732	6
1	3	3	0	−	1	2	2	1	−	61 396.868(0.010)	61 396.877(0.001)	3.582	80.949	7
0	20	−12	8		0	20	−11	9		61 452.228(0.010)	61 452.234(0.002)	28.904	130.105	6
1	23	15	8	−	1	23	14	9	+	61 455.823(0.010)	61 455.828(0.006)	38.554	249.236	7
1	4	−2	3		1	3	1	2			61 466.429(0.003)	4.335	76.340	
0	11	10	2	−	0	11	9	3	+	61 491.196(0.010)	61 491.199(0.002)	7.430	44.556	6
0	10	−10	0		0	10	−9	1		61 536.716(0.010)	61 536.713(0.002)	3.847	38.888	6
0	11	−5	6		0	11	5	7		61 575.820(0.010)	61 575.825(0.001)	2.013	37.487	6
1	12	−7	6		1	12	5	7			61 579.492(0.003)	0.871	119.078	
0	11	5	6	−	0	11	5	7	+	61 619.835(0.010)	61 619.836(0.001)	2.063	37.245	6
0	11	−5	6		0	11	−4	7		61 625.822(0.010)	61 625.825(0.001)	11.245	37.486	6
0	13	8	6		0	13	−6	7			61 642.073(0.001)	2.354	54.497	
1	19	12	7	+	1	19	11	8	−	61 650.365(0.010)	61 650.362(0.003)	29.763	194.476	7
0	12	7	6		0	12	6	7		61 653.945(0.010)	61 653.949(0.001)	13.303	45.670	6
1	18	10	8		1	18	9	9		61 656.634(0.010)	61 656.629(0.002)	26.961	177.890	7
1	12	9	3		1	12	8	4		61 664.529(0.010)	61 664.533(0.003)	13.652	124.007	7
0	11	5	6	−	0	11	4	7	+	61 698.939(0.010)	61 698.942(0.001)	11.280	37.243	6
0	13	8	6	−	0	13	7	7	+	61 710.882(0.010)	61 710.882(0.001)	15.363	54.326	6
1	13	−8	6		1	13	6	7			61 725.146(0.005)	0.674	128.002	
0	12	7	6		0	12	−5	7			61 835.521(0.001)	2.225	45.664	
0	14	9	6	+	0	14	8	7	−	61 914.422(0.010)	61 914.422(0.001)	17.261	63.862	6
1	7	7	0		1	7	−7	1			61 917.869(0.004)	3.063	95.213	
0	8	7	2	+	0	8	5	3	−		61 951.911(0.003)	0.213	22.761	
1	9	8	1	+	1	9	5	4	−		62 077.339(0.004)	0.325	105.870	
0	12	7	6	+	0	12	6	7	−	62 099.155(0.010)	62 099.156(0.001)	13.327	45.454	6
1	13	13	0	−	1	13	12	1	+	62 158.884(0.010)	62 158.882(0.005)	4.908	139.053	7
1	13	13	1	+	1	13	12	2	−	62 255.492(0.010)	62 255.488(0.005)	4.912	139.050	7
1	4	2	2	+	1	3	3	1	+	62 271.791(0.010)	62 271.798(0.002)	3.889	82.892	7
1	22	13	9		1	22	12	10		62 343.690(0.010)	62 343.689(0.004)	35.300	230.505	7
0	12	7	6	+	0	12	5	7	−	62 377.915(0.010)	62 377.909(0.001)	2.262	45.444	6
0	11	6	6		0	11	5	7		62 383.505(0.010)	62 383.506(0.001)	11.216	37.487	6
0	16	−9	7		0	16	−8	8		62 394.165(0.010)	62 394.168(0.002)	20.429	82.696	6
0	14	9	6		0	14	−7	7			62 419.078(0.001)	2.338	63.974	
0	16	11	6		0	16	10	7		62 420.905(0.010)	62 420.906(0.002)	19.359	85.039	6
0	11	6	6		0	11	−4	7			62 433.506(0.001)	2.005	37.486	
1	4	−4	1		1	3	3	0		62 490.567(0.050)	62 490.585(0.002)	1.419	78.854	7
0	4	3	2	+	0	3	3	1	+	62 522.766(0.010)	62 522.775(0.001)	1.307	4.214	6
0	13	8	6	−	0	13	6	7	+	62 552.843(0.010)	62 552.849(0.001)	2.369	54.298	6
1	11	−6	6		1	11	−5	7		62 578.673(0.010)	62 578.670(0.002)	12.742	110.782	7
0	11	6	6	−	0	11	5	7	+	62 780.480(0.010)	62 780.480(0.001)	11.237	37.245	6
1	9	−4	6		1	8	5	3			62 796.530(0.005)	0.281	96.216	
0	13	11	3		0	13	10	4		62 832.703(0.010)	62 832.712(0.002)	11.345	60.119	6
1	11	−6	6		1	11	4	7			62 838.051(0.002)	0.778	110.773	
0	10	−4	6		0	10	4	7		62 838.607(0.050)	62 838.600(0.001)	1.723	29.972	6
0	10	−4	6		0	10	−3	7		62 850.047(0.010)	62 850.047(0.001)	9.121	29.972	6
1	19	14	6	−	1	19	12	7	+		62 855.403(0.010)	0.718	196.533	
0	11	6	6	−	0	11	4	7	+	62 859.588(0.010)	62 859.586(0.001)	2.051	37.243	6
0	13	9	5	+	0	13	7	6	−	62 928.606(0.050)	62 928.596(0.002)	1.559	56.158	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	15	10	6	−	0	15	9	7	+	63 007.220(0.010)	63 007.222(0.001)	18.908	74.064	6
0	19	11	8	−	0	19	11	9	+	63 073.767(0.010)	63 073.769(0.003)	3.549	116.656	6
0	10	5	6		0	10	4	7		63 093.412(0.010)	63 093.417(0.001)	9.114	29.972	6
0	10	5	6		0	10	−3	7		63 104.867(0.010)	63 104.864(0.001)	1.721	29.972	6
0	3	3	1	+	0	2	2	0	+	63 124.660(0.010)	63 124.660(0.001)	4.747	2.108	6
0	10	4	6	+	0	10	4	7	−	63 144.030(0.010)	63 144.034(0.001)	1.771	29.704	6
0	10	4	6	+	0	10	3	7	−	63 162.662(0.010)	63 162.661(0.001)	9.137	29.703	6
0	10	10	0	+	0	10	9	1	−	63 223.526(0.010)	63 223.525(0.002)	3.783	38.593	6
1	20	13	7		1	20	12	8		63 252.819(0.010)	63 252.826(0.004)	27.259	205.874	7
0	10	10	1	−	0	10	9	2	+	63 288.680(0.010)	63 288.691(0.002)	3.783	38.591	6
1	18	12	6		1	18	11	7		63 316.300(0.010)	63 316.307(0.005)	21.854	181.681	7
0	23	14	9	+	0	23	13	10	−	63 356.556(0.010)	63 356.550(0.002)	35.369	171.727	6
1	10	4	6		1	10	−4	7			63 357.595(0.002)	0.615	103.117	
1	7	5	2		1	7	−4	4			63 362.677(0.007)	1.125	89.7350	
0	15	11	5	+	0	15	10	6	−	63 381.347(0.010)	63 381.348(0.001)	17.780	76.166	6
1	4	3	1		1	3	−3	1			63 414.798(0.002)	2.494	77.729	
0	16	12	5		0	16	11	6		63 417.865(0.010)	63 417.870(0.002)	16.614	87.121	6
1	10	4	6		1	10	3	7			63 423.461(0.002)	10.606	103.115	
0	13	−11	2		0	13	−10	3		63 450.913(0.010)	63 450.910(0.002)	11.219	60.503	6
0	10	5	6	+	0	10	4	7	−	63 520.802(0.010)	63 520.806(0.001)	9.127	29.704	6
0	10	5	6	+	0	10	3	7	−	63 539.429(0.010)	63 539.433(0.001)	1.768	29.703	6
1	15	−10	6		1	15	−9	7		63 568.145(0.010)	63 568.150(0.003)	17.134	148.025	7
1	9	9	0	−	1	9	6	3	+		63 603.305(0.010)	0.245	106.812	
0	9	−3	6		0	9	3	7		63 623.634(0.010)	63 623.643(0.001)	1.383	23.128	6
0	9	−3	6		0	9	−2	7		63 625.698(0.010)	63 625.699(0.001)	6.991	23.128	6
0	6	4	3	−	0	5	5	0	−		63 658.546(0.001)	0.277	10.864	
0	9	4	6		0	9	3	7		63 690.340(0.010)	63 690.342(0.001)	6.989	23.128	6
0	9	4	6		0	9	−2	7		63 692.393(0.010)	63 692.398(0.001)	1.382	23.128	6
0	4	3	2		0	3	3	1		63 881.951(0.010)	63 881.947(0.001)	1.138	4.474	6
1	14	7	7		1	14	−7	8			64 055.803(0.003)	1.175	135.377	
0	9	3	6	−	0	9	3	7	+	64 078.774(0.010)	64 078.771(0.001)	1.425	22.833	6
0	9	3	6	−	0	9	2	7	+	64 082.203(0.010)	64 082.207(0.001)	6.996	22.833	6
0	14	11	4	+	0	14	10	5	−	64 091.344(0.010)	64 091.346(0.001)	14.583	67.902	6
1	8	1	7	−	1	8	*	8	+	64 128.228(0.010)	64 128.217(0.002)	2.882	93.099	6
1	8	2	7	−	1	8	*	8	+	64 128.228(0.010)	64 128.233(0.002)	2.882	93.099	6
0	8	−2	6		0	8	2	7		64 131.945(0.050)	64 131.955(0.001)	0.989	16.959	6
0	14	9	6	+	0	14	7	7	−	64 132.073(0.050)	64 132.075(0.001)	2.324	63.788	6
0	8	−2	6		0	8	−1	7		64 132.209(0.050)	64 132.214(0.001)	4.806	16.959	6
0	8	3	6		0	8	2	7		64 145.689(0.010)	64 145.684(0.001)	4.806	16.959	6
0	8	3	6		0	8	−1	7		64 145.955(0.010)	64 145.943(0.001)	0.989	16.959	6
1	14	10	4		1	14	9	5		64 149.583(0.010)	64 149.587(0.003)	16.335	140.793	7
1	6	5	1		1	6	−4	3			64 157.035(0.009)	0.444	85.958	
0	9	4	6	−	0	9	3	7	+	64 179.911(0.010)	64 179.912(0.001)	6.994	22.833	6
0	9	4	6	−	0	9	2	7	+	64 183.345(0.010)	64 183.348(0.001)	1.424	22.833	6
0	3	3	1		0	2	2	1			64 215.421(0.001)	3.195	2.332	
1	10	−5	6		1	10	−4	7			64 257.754(0.001)	10.545	103.117	
0	11	−8	3		0	11	−6	5			64 267.998(0.002)	0.225	41.099	
1	11	−9	3		1	11	−8	4		64 323.428(0.010)	64 323.420(0.004)	7.455	116.166	7
1	10	−5	6		1	10	3	7			64 323.620(0.001)	0.638	103.115	
1	3	2	1		1	2	1	1			64 351.090(0.002)	0.276	74.754	
1	21	−15	7		1	21	14	7			64 429.605(0.013)	0.307	222.602	
1	10	9	1	−	1	10	7	4	+		64 429.633(0.005)	0.174	112.419	
1	11	9	2		1	11	8	3		64 431.171(0.010)	64 431.175(0.003)	11.311	117.478	7
1	18	11	7	−	1	18	10	8	+	64 438.486(0.010)	64 438.485(0.003)	27.114	181.851	7
0	7	−1	6		0	7	1	7			64 466.775(0.001)	0.534	11.467	
0	7	−1	6		0	7	0	7		64 466.791(0.010)	64 466.792(0.001)	2.507	11.467	6
0	7	2	6		0	7	1	7		64 468.775(0.010)	64 468.768(0.001)	2.507	11.467	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	7	2	6		0	7	0	7			64 468.786(0.001)	0.534	11.467	
0	17	12	6		0	17	11	7		64 607.137(0.010)	64 607.133(0.003)	19.130	96.556	6
1	7	5	2		1	6	−6	1			64 670.860(0.004)	0.756	89.691	
0	8	2	6	+	0	8	2	7	−	64 679.979(0.010)	64 679.971(0.001)	1.022	16.638	6
0	8	2	6	+	0	8	1	7	−	64 680.411(0.010)	64 680.415(0.001)	4.805	16.638	6
1	18	15	4	+	1	18	14	5	−	64 687.748(0.010)	64 687.751(0.005)	20.237	187.809	7
0	8	3	6	+	0	8	2	7	−	64 701.262(0.010)	64 701.264(0.001)	4.805	16.638	6
0	8	3	6	+	0	8	1	7	−	64 701.705(0.010)	64 701.708(0.001)	1.022	16.638	6
1	4	2	2		1	3	2	1			64 705.057(0.005)	0.298	76.901	
0	13	−10	3		0	13	9	5		64 735.859(0.010)	64 735.853(0.004)	1.800	58.343	6
1	8	7	1		1	7	7	0			64 807.260(0.005)	0.238	97.278	
1	21	15	7	+	1	21	14	8	−	64 808.374(0.010)	64 808.371(0.006)	32.586	221.815	7
1	23	14	9		1	23	13	10		64 824.795(0.010)	64 824.797(0.006)	35.393	245.805	7
1	21	16	6	−	1	21	15	7	+	64 830.268(0.010)	64 830.265(0.006)	30.879	223.977	7
0	13	11	2	−	0	13	10	3	+	64 838.381(0.010)	64 838.381(0.002)	11.100	60.248	6
1	14	7	7		1	14	6	8		64 911.152(0.010)	64 911.146(0.002)	18.047	135.349	7
1	16	11	5		1	16	10	6		64 945.912(0.010)	64 945.916(0.004)	18.695	160.004	7
0	15	10	6		0	15	−8	7			64 978.293(0.002)	2.102	74.074	
1	21	12	9		1	21	11	10		65 002.931(0.050)	65 002.923(0.003)	32.422	215.800	7
1	14	−10	5		1	14	−9	6		65 014.910(0.010)	65 014.912(0.004)	14.607	139.707	7
1	20	14	7	−	1	20	13	8	+	65 076.034(0.050)	65 076.041(0.004)	30.718	207.830	7
0	7	1	6	−	0	7	1	7	+	65 078.606(0.010)	65 078.582(0.001)	0.553	11.121	6
0	7	1	6	−	0	7	0	7	+	65 078.606(0.010)	65 078.613(0.001)	2.504	11.121	6
0	7	2	6	−	0	7	1	7	+	65 081.743(0.010)	65 081.737(0.001)	2.504	11.121	6
0	7	2	6	−	0	7	0	7	+	65 081.743(0.010)	65 081.767(0.001)	0.553	11.121	6
1	22	14	8	+	1	22	14	9	−		65 099.108(0.008)	0.176	234.011	
0	15	8	7	+	0	15	8	8	−	65 111.742(0.010)	65 111.742(0.001)	2.868	71.722	6
0	3	−3	0		0	2	−2	0			65 157.150(0.001)	3.477	2.481	
1	9	2	7	+	1	9	*	8	−	65 159.257(0.010)	65 159.251(0.002)	5.533	98.872	6
1	9	3	7	+	1	9	*	8	−	65 159.371(0.010)	65 159.369(0.002)	5.533	98.872	6
0	5	−3	2		0	4	−4	0			65 171.281(0.002)	0.346	7.583	
0	16	11	6	+	0	16	10	7	−	65 208.388(0.010)	65 208.386(0.001)	20.205	84.939	6
0	23	−14	9		0	23	−13	10		65 264.019(0.010)	65 264.025(0.002)	34.536	171.784	6
1	9	3	6		1	9	−3	7		65 385.761(0.050)	65 385.763(0.001)	0.531	96.121	7
1	9	3	6		1	9	2	7		65 399.338(0.010)	65 399.334(0.001)	8.120	96.120	6
1	4	3	2	+	1	3	2	1	+	65 434.544(0.010)	65 434.547(0.002)	5.540	82.807	6
1	20	11	9		1	20	−11	10		65 447.532(0.010)	65 447.544(0.004)	2.842	201.835	7
0	14	10	5		0	14	−8	6			65 528.959(0.004)	0.987	65.718	
1	17	9	8		1	17	−9	9		65 544.982(0.010)	65 544.987(0.003)	1.914	165.748	7
1	9	−4	6		1	9	−3	7		65 649.298(0.010)	65 649.295(0.001)	8.110	96.121	7
0	19	−11	8		0	19	11	9		65 657.873(0.010)	65 657.877(0.003)	3.412	116.716	6
1	9	−4	6		1	9	2	7			65 662.865(0.001)	0.538	96.120	
0	15	8	7	+	0	15	7	8	−	65 707.632(0.010)	65 707.631(0.001)	18.029	71.702	6
0	22	13	9	−	0	22	13	10	+	65 718.144(0.010)	65 718.146(0.003)	4.044	156.456	6
0	19	11	8	−	0	19	10	9	+	65 718.624(0.010)	65 718.624(0.002)	25.746	116.568	6
1	14	−9	6		1	14	7	7			65 747.136(0.007)	0.254	137.514	
1	10	9	1	−	1	10	6	4	+		65 803.293(0.006)	0.518	112.373	
0	12	11	2		0	12	10	3		65 806.459(0.050)	65 806.462(0.002)	7.645	52.971	6
1	19	13	7	+	1	19	12	8	−	65 939.194(0.050)	65 939.197(0.003)	28.781	194.512	7
0	10	8	3	−	0	10	6	4	+	65 955.264(0.050)	65 955.264(0.003)	0.437	34.561	6
1	18	14	5	−	1	18	12	6	+		66 007.279(0.012)	0.207	185.607	
1	10	3	7	−	1	10	2	8	+	66 047.305(0.010)	66 047.302(0.002)	8.033	105.333	6
1	10	4	7	−	1	10	3	8	+	66 047.892(0.050)	66 047.898(0.002)	8.033	105.333	6
0	13	11	3	+	0	13	10	4	−	66 068.597(0.010)	66 068.601(0.001)	11.065	60.204	6
0	15	−8	7		0	15	8	8		66 083.478(0.050)	66 083.475(0.001)	2.792	71.870	6
0	18	14	5		0	18	−13	5			66 087.788(0.009)	0.364	111.410	
1	15	14	1	+	1	15	13	2	−	66 102.003(0.050)	66 102.005(0.004)	9.703	157.113	7

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	22	16	7	−	1	22	15	8	+	66 113.540(0.010)	66 113.534(0.007)	34.312	236.464	7
1	10	9	1		1	10	8	2		66 117.815(0.050)	66 117.819(0.003)	8.750	111.565	7
1	5	1	4	−	1	4	2	3	−	66 148.940(0.050)	66 148.938(0.002)	10.133	84.270	6
0	12	−11	1		0	12	−10	2		66 162.954(0.050)	66 162.953(0.002)	7.591	53.369	6
1	5	2	4	−	1	4	1	3	−	66 185.163(0.050)	66 185.162(0.002)	10.142	84.269	6
1	17	10	7	+	1	17	9	8	−	66 234.318(0.050)	66 234.320(0.002)	24.546	169.891	7
0	5	−2	3		0	4	−3	1			66 239.069(0.001)	0.209	6.890	
1	15	14	2	−	1	15	13	3	+	66 450.563(0.010)	66 450.563(0.004)	9.724	157.101	7
0	15	12	4		0	15	11	5		66 458.899(0.010)	66 458.899(0.002)	14.880	78.194	6
0	15	−8	7		0	15	−7	8		66 472.336(0.010)	66 472.337(0.001)	17.906	71.857	6
0	15	−12	3		0	15	−11	4		66 683.703(0.010)	66 683.698(0.002)	14.736	78.579	6
1	8	2	6		1	8	−2	7		66 700.091(0.050)	66 700.093(0.001)	0.434	89.801	7
1	8	2	6		1	8	1	7		66 702.095(0.010)	66 702.088(0.001)	5.544	89.801	6
1	23	13	10		1	23	−13	11		66 735.333(0.010)	66 735.337(0.004)	3.776	243.579	7
1	8	−3	6		1	8	−2	7		66 761.622(0.010)	66 761.616(0.001)	5.543	89.801	6
1	8	−3	6		1	8	1	7			66 763.612(0.001)	0.435	89.801	
1	18	12	7	−	1	18	11	8	+	66 777.304(0.010)	66 777.313(0.002)	26.622	181.866	7
1	11	4	7	+	1	11	3	8	−	66 787.512(0.010)	66 787.514(0.001)	10.438	112.484	6
1	11	5	7	+	1	11	4	8	−	66 789.911(0.010)	66 789.912(0.001)	10.438	112.484	7
1	4	−3	2		1	3	2	1			66 971.324(0.004)	3.819	76.901	
0	26	16	10	+	0	26	15	11	−	67 002.830(0.010)	67 002.822(0.004)	41.256	219.156	6
0	4	−3	1		0	3	−3	0		67 024.994(0.050)	67 024.989(0.001)	1.211	4.654	6
1	22	14	8	+	1	22	13	9	−	67 026.117(0.010)	67 026.113(0.005)	35.255	233.947	7
1	9	−9	1		1	9	8	1			67 192.490(0.004)	6.046	106.239	
1	6	2	4		1	5	−4	2			67 208.242(0.004)	0.255	82.619	
1	16	9	7	−	1	16	8	8	+	67 291.487(0.010)	67 291.489(0.002)	22.041	158.606	7
0	3	3	0	−	0	2	2	1	−	67 338.920(0.010)	67 338.928(0.001)	3.981	2.016	6
0	23	−16	7		0	23	−15	8		67 346.394(0.010)	67 346.391(0.006)	28.642	175.714	6
1	12	5	7	−	1	12	4	8	+	67 365.922(0.010)	67 365.923(0.001)	12.773	120.326	7
1	12	6	7	−	1	12	5	8	+	67 374.054(0.010)	67 374.057(0.001)	12.772	120.326	7
1	20	14	7	−	1	20	12	8	+		67 390.371(0.008)	0.505	207.753	
1	17	11	7	+	1	17	10	8	−	67 403.290(0.010)	67 403.296(0.002)	24.330	169.897	7
0	4	−2	2		0	3	−2	1		67 483.365(0.050)	67 483.359(0.001)	2.099	4.184	6
0	19	−11	8		0	19	−10	9		67 484.283(0.010)	67 484.286(0.002)	25.324	116.655	6
0	25	15	10	−	0	25	15	11	+	67 508.951(0.010)	67 508.954(0.005)	4.538	201.999	6
0	12	−10	2		0	12	9	4			67 538.645(0.005)	0.215	51.116	
1	10	−9	2		1	10	−8	3		67 557.596(0.010)	67 557.599(0.004)	3.735	110.180	7
0	14	−10	4		0	14	9	6		67 593.193(0.010)	67 593.196(0.003)	2.019	66.056	6
1	7	1	6		1	7	−1	7			67 617.894(0.002)	0.269	84.166	
1	7	1	6		1	7	0	7			67 618.049(0.002)	2.864	84.166	
1	7	−2	6		1	7	−1	7		67 628.154(0.010)	67 628.138(0.002)	2.864	84.166	7
1	7	−2	6		1	7	0	7			67 628.294(0.002)	0.269	84.166	
0	5	3	2	−	0	4	4	1	−	67 634.024(0.010)	67 634.049(0.001)	0.693	7.158	6
0	4	2	2	+	0	3	2	1	+	67 699.351(0.010)	67 699.351(0.001)	2.180	3.829	6
1	13	6	7	+	1	13	5	8	−	67 758.662(0.010)	67 758.678(0.001)	15.016	128.861	7
1	13	7	7	+	1	13	6	8	−	67 783.818(0.010)	67 783.819(0.001)	15.013	128.861	7
1	15	8	7	+	1	15	8	8	−		67 784.062(0.001)	0.176	148.004	
1	15	8	7	+	1	15	7	8	−	67 805.634(0.010)	67 805.645(0.001)	19.565	148.003	7
1	16	10	7	−	1	16	9	8	+	67 811.998(0.010)	67 812.005(0.002)	21.958	158.608	7
0	15	12	3	+	0	15	11	4	−	67 842.222(0.010)	67 842.224(0.002)	14.806	78.373	6
1	8	8	0		1	8	−8	1			67 863.426(0.004)	3.159	101.481	
1	14	7	7	−	1	14	7	8	+		67 919.653(0.001)	0.190	138.088	
1	6	3	3		1	5	4	1			67 919.831(0.008)	1.253	83.580	
1	14	7	7	−	1	14	6	8	+	67 926.817(0.010)	67 926.821(0.001)	17.223	138.087	7
0	11	11	1		0	11	10	2		67 941.046(0.010)	67 941.054(0.002)	3.874	46.448	6
1	17	9	8		1	17	8	9		67 953.143(0.010)	67 953.138(0.002)	23.205	165.668	7
0	5	−1	4		0	4	2	3		67 974.950(0.010)	67 974.952(0.001)	7.031	5.731	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	12	11	1	−	0	12	10	2	+	68 000.818(0.010)	68 000.837(0.002)	7.465	53.112	6
1	14	8	7	−	1	14	7	8	+	68 000.896(0.010)	68 000.931(0.001)	17.213	138.088	7
1	14	8	7	−	1	14	6	8	+		68 008.099(0.001)	0.191	138.087	
1	15	9	7	+	1	15	8	8	−	68 011.637(0.010)	68 011.642(0.001)	19.535	148.004	7
1	13	10	3		1	13	9	4		68 025.950(0.010)	68 025.954(0.003)	14.218	133.104	7
0	5	1	4	−	0	4	2	3	−	68 026.824(0.010)	68 026.827(0.001)	6.932	5.393	6
1	15	9	7	+	1	15	7	8	−		68 033.225(0.002)	0.178	148.003	
0	5	2	4		0	4	2	3		68 066.437(0.010)	68 066.439(0.001)	2.747	5.731	6
0	11	−11	0		0	11	−10	1		68 075.555(0.010)	68 075.556(0.002)	3.860	46.856	6
0	10	−8	2		0	10	−6	4			68 089.147(0.003)	0.228	34.855	
0	13	−9	4		0	13	8	6			68 095.619(0.002)	0.919	56.554	
0	4	3	1	−	0	3	3	0	−	68 097.046(0.010)	68 097.046(0.001)	1.401	4.263	6
0	15	10	6	−	0	15	8	7	+	68 130.223(0.010)	68 130.216(0.002)	2.088	73.894	6
0	5	2	4	−	0	4	2	3	−	68 153.142(0.010)	68 153.142(0.001)	2.814	5.393	6
0	12	11	2	+	0	12	10	3	−	68 215.592(0.010)	68 215.596(0.002)	7.462	53.105	6
1	20	16	5	−	1	20	15	6	+	68 246.048(0.010)	68 246.056(0.006)	25.192	212.001	7
1	6	0	6	+	1	5	1	5	+		68 271.263(0.002)	15.699	85.200	
1	6	1	6	+	1	5	0	5	+		68 271.331(0.002)	15.699	85.200	
0	18	13	6		0	18	12	7		68 273.197(0.050)	68 273.194(0.003)	19.095	108.759	6
0	5	−1	4		0	4	−1	3			68 473.079(0.001)	2.762	5.714	
0	5	2	4		0	4	−1	3		68 564.561(0.010)	68 564.566(0.001)	7.092	5.714	6
0	16	12	5	−	0	16	11	6	+	68 566.427(0.050)	68 566.429(0.002)	18.156	87.115	6
0	17	12	6	−	0	17	11	7	+	68 602.300(0.010)	68 602.300(0.001)	21.115	96.499	6
0	6	4	3		0	5	5	1			68 625.219(0.002)	0.194	10.987	
0	5	1	4	−	0	4	1	3	−	68 673.642(0.010)	68 673.637(0.001)	2.832	5.372	6
1	22	14	8		1	22	13	9		68 697.121(0.010)	68 697.128(0.005)	28.823	232.584	7
0	26	−16	10		0	26	−15	11		68 740.560(0.010)	68 740.567(0.004)	40.423	219.194	6
0	5	2	4	−	0	4	1	3	−	68 799.951(0.050)	68 799.952(0.001)	6.999	5.372	6
0	14	7	7	−	0	14	7	8	+	68 802.941(0.050)	68 802.945(0.001)	2.678	61.493	6
1	19	−13	7		1	19	12	7			68 868.265(0.005)	7.462	194.426	
0	20	15	6		0	20	−14	6			68 880.713(0.010)	1.344	135.669	
0	6	0	6		0	5	1	5		68 898.907(0.010)	68 898.879(0.001)	11.840	6.515	6
0	6	1	6		0	5	1	5		68 899.077(0.010)	68 899.034(0.001)	3.936	6.515	6
0	6	0	6		0	5	0	5		68 900.169(0.010)	68 900.191(0.001)	3.936	6.515	6
0	6	1	6		0	5	0	5		68 900.332(0.010)	68 900.345(0.001)	11.840	6.515	6
0	17	−13	4		0	17	−12	5		68 923.023(0.010)	68 923.020(0.003)	17.776	99.119	6
0	6	0	6	+	0	5	1	5	+	68 942.861(0.010)	68 942.858(0.001)	11.715	6.166	6
0	6	1	6	+	0	5	1	5	+	68 943.117(0.010)	68 943.106(0.001)	4.054	6.166	6
0	6	0	6	+	0	5	0	5	+	68 944.811(0.010)	68 944.818(0.001)	4.054	6.166	6
0	6	1	6	+	0	5	0	5	+	68 945.066(0.010)	68 945.067(0.001)	11.715	6.166	6
0	22	−13	9		0	22	13	10		68 999.967(0.010)	68 999.969(0.004)	3.854	156.462	6
0	14	7	7	−	0	14	6	8	+	69 003.213(0.010)	69 003.216(0.001)	15.693	61.487	6
1	3	2	1	+	1	2	1	2	+	69 016.834(0.010)	69 016.858(0.002)	0.559	80.505	6
0	17	11	7		0	17	10	8		69 048.296(0.010)	69 048.296(0.001)	21.563	94.253	6
0	21	−15	6		0	21	−14	7		69 082.140(0.010)	69 082.136(0.005)	23.332	147.678	6
0	14	−7	7		0	14	7	8		69 139.825(0.050)	69 139.826(0.001)	2.604	61.668	6
1	15	−9	7		1	15	−8	8		69 152.844(0.050)	69 152.843(0.003)	18.505	145.719	7
0	16	10	7		0	16	9	8		69 169.052(0.010)	69 169.053(0.001)	19.737	82.732	6
0	12	9	4	+	0	12	7	5	−		69 229.108(0.003)	0.757	48.809	
0	14	−7	7		0	14	−6	8		69 265.841(0.050)	69 265.844(0.001)	15.643	61.664	6
1	6	0	6		1	5	−1	5		69 306.742(0.010)	69 306.743(0.002)	12.209	79.188	6
1	6	−1	6		1	5	−1	5		69 307.653(0.010)	69 307.653(0.002)	3.269	79.188	6
1	6	0	6		1	5	0	5		69 312.014(0.010)	69 312.025(0.002)	3.268	79.187	6
1	6	−1	6		1	5	0	5			69 312.935(0.002)	12.209	79.187	
1	21	15	7	+	1	21	13	8	−		69 366.015(0.011)	0.791	221.663	
1	6	2	4		1	5	3	2			69 380.555(0.003)	1.003	82.546	
1	13	6	7		1	13	−6	8			69 393.998(0.002)	0.946	125.687	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	17	15	2	−	1	17	14	3	+	69 412.306(0.050)	69 412.301(0.004)	14.431	177.664	7
1	5	1	4		1	4	−2	3		69 557.968(0.010)	69 557.966(0.002)	6.413	78.390	7
0	3	−3	0		0	2	2	1		69 606.988(0.050)	69 606.995(0.002)	0.814	2.332	6
1	16	−10	7		1	16	−9	8		69 620.380(0.010)	69 620.382(0.003)	19.288	156.714	7
1	13	6	7		1	13	5	8			69 646.594(0.002)	15.578	125.678	
0	23	16	7	+	0	23	15	8	−	69 652.841(0.010)	69 652.843(0.004)	31.734	175.628	6
0	18	12	7		0	18	11	8		69 666.643(0.010)	69 666.642(0.002)	22.881	106.436	6
0	19	−14	5		0	19	−13	6		69 767.310(0.010)	69 767.304(0.004)	20.244	122.147	6
1	5	−2	4		1	4	−2	3		69 785.943(0.010)	69 785.933(0.002)	2.445	78.390	6
1	20	15	6	+	1	20	13	7	−		69 787.667(0.013)	0.411	209.673	
0	15	9	7		0	15	8	8		69 798.636(0.010)	69 798.640(0.001)	17.694	71.870	6
0	22	13	9	−	0	22	12	10	+	69 821.711(0.050)	69 821.711(0.002)	31.002	156.319	6
0	17	13	4	−	0	17	12	5	+	69 848.359(0.050)	69 848.363(0.002)	18.614	98.962	6
0	16	10	7	−	0	16	9	8	+	69 870.724(0.050)	69 870.722(0.001)	19.731	82.609	6
0	17	13	5		0	17	12	6		69 907.986(0.010)	69 907.986(0.002)	17.871	98.711	6
0	11	11	0	−	0	11	10	1	+	69 990.241(0.050)	69 990.244(0.002)	3.794	46.608	6
0	11	11	1	+	0	11	10	2	−	70 014.365(0.050)	70 014.369(0.002)	3.794	46.607	6
1	13	−10	4		1	13	−9	5		70 051.179(0.050)	70 051.181(0.003)	11.027	131.924	7
0	15	−11	4		0	15	10	6		70 060.942(0.010)	70 060.936(0.004)	2.692	76.242	6
0	14	12	3		0	14	11	4		70 084.627(0.010)	70 084.631(0.002)	11.382	69.883	6
0	7	6	2		0	7	−3	4			70 147.830(0.003)	0.175	16.841	
0	15	9	7		0	15	−7	8			70 187.502(0.001)	2.737	71.857	
0	18	10	8	+	0	18	10	9	−	70 225.615(0.010)	70 225.621(0.002)	3.386	103.762	6
0	17	11	7	+	0	17	10	8	−	70 234.063(0.010)	70 234.065(0.001)	21.580	94.156	6
0	15	9	7	+	0	15	8	8	−	70 234.735(0.010)	70 234.736(0.001)	17.703	71.722	6
0	16	10	7		0	16	−8	8			70 238.683(0.001)	2.777	82.696	
0	16	11	6		0	16	−9	7			70 265.421(0.004)	1.613	84.778	
1	14	−8	7		1	14	−7	8		70 268.485(0.010)	70 268.480(0.002)	17.147	135.377	7
1	12	10	2		1	12	9	3		70 289.950(0.050)	70 289.958(0.003)	11.701	126.064	7
1	6	−3	4		1	5	3	2			70 293.717(0.003)	0.358	82.546	
0	14	−12	2		0	14	−11	3		70 312.735(0.050)	70 312.734(0.002)	11.306	70.276	6
1	17	15	3	+	1	17	14	4	−	70 332.881(0.050)	70 332.885(0.004)	14.499	177.632	7
0	15	12	4	−	0	15	11	5	+	70 371.655(0.050)	70 371.657(0.002)	14.705	78.280	6
1	4	3	1	−	1	3	3	0	−		70 403.256(0.002)	0.201	82.997	
1	5	1	4		1	4	1	3		70 407.288(0.050)	70 407.295(0.002)	2.029	78.362	6
0	21	15	6	−	0	21	14	7	+	70 617.282(0.010)	70 617.283(0.003)	26.936	147.583	6
1	15	11	4		1	15	10	5		70 624.068(0.010)	70 624.071(0.003)	17.070	151.119	7
1	5	−2	4		1	4	1	3		70 635.266(0.010)	70 635.262(0.002)	6.672	78.362	7
0	14	8	7		0	14	7	8		70 685.969(0.010)	70 685.970(0.001)	15.581	61.668	6
1	20	11	9		1	20	10	10		70 691.484(0.010)	70 691.479(0.002)	28.579	201.660	7
0	19	14	5	+	0	19	13	6	−	70 762.119(0.010)	70 762.121(0.003)	22.613	122.029	6
1	14	14	0	+	1	14	13	1	−	70 799.566(0.050)	70 799.562(0.005)	4.719	148.786	7
0	14	8	7		0	14	−6	8			70 811.988(0.001)	2.587	61.664	
0	7	4	4		0	6	−5	1			70 819.077(0.002)	0.213	14.528	
0	15	9	7	+	0	15	7	8	−	70 830.628(0.050)	70 830.625(0.001)	2.781	71.702	6
1	14	14	1	−	1	14	13	2	+	70 832.239(0.050)	70 832.250(0.005)	4.720	148.785	7
1	25	16	9	+	1	25	15	10	−	70 833.292(0.010)	70 833.298(0.008)	41.050	279.256	7
1	8	5	3		1	8	−4	5			70 881.279(0.005)	0.960	93.852	
1	7	4	3		1	7	−3	5			71 012.002(0.003)	0.347	88.285	
0	14	8	7	−	0	14	7	8	+	71 020.595(0.010)	71 020.598(0.001)	15.595	61.493	6
0	13	−6	7		0	13	6	8		71 055.056(0.010)	71 055.059(0.001)	2.371	52.127	6
1	8	2	6		1	7	3	4			71 076.753(0.003)	0.206	89.655	
0	13	−6	7		0	13	−5	8		71 090.992(0.010)	71 090.989(0.001)	13.477	52.126	6
1	21	13	8	−	1	21	12	9	+	71 091.659(0.010)	71 091.659(0.003)	32.498	219.291	7
0	14	−11	3		0	14	10	5			71 096.629(0.005)	0.874	67.904	
0	13	6	7	+	0	13	6	8	−	71 120.225(0.050)	71 120.217(0.001)	2.446	51.926	6
1	14	−8	7		1	14	6	8			71 123.823(0.003)	1.205	135.349	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	13	6	7	+	0	13	5	8	−	71 179.347(0.010)	71 179.353(0.001)	13.497	51.924	6
0	19	13	7		0	19	12	8		71 209.142(0.010)	71 209.138(0.003)	23.253	119.287	6
0	14	8	7	−	0	14	6	8	+	71 220.871(0.050)	71 220.869(0.001)	2.651	61.487	6
1	7	4	3		1	7	2	5			71 268.984(0.003)	0.198	88.277	
1	6	−4	3		1	5	4	1			71 289.624(0.008)	0.276	83.580	
1	16	−11	6		1	16	−10	7		71 322.557(0.010)	71 322.562(0.003)	17.435	159.037	7
0	18	10	8	+	0	18	9	9	−	71 323.884(0.010)	71 323.889(0.002)	22.707	103.726	6
0	25	−15	10		0	25	15	11		71 349.957(0.010)	71 349.941(0.005)	4.286	201.962	6
0	6	5	1	−	0	6	2	4	+		71 411.273(0.001)	0.221	11.771	
0	16	10	7	−	0	16	8	8	+	71 448.152(0.010)	71 448.155(0.001)	2.788	82.556	6
1	24	14	10		1	24	13	11		71 495.496(0.010)	71 495.488(0.004)	36.431	259.382	7
0	12	−8	4		0	12	7	6			71 559.903(0.002)	0.296	47.726	
0	18	12	7	−	0	18	11	8	+	71 599.416(0.010)	71 599.413(0.001)	23.136	106.367	6
1	3	3	1	+	1	2	0	2	+		71 607.482(0.002)	0.411	80.503	
0	13	7	7		0	13	6	8		71 621.573(0.010)	71 621.578(0.001)	13.461	52.127	6
0	13	7	7		0	13	−5	8			71 657.508(0.001)	2.366	52.126	
1	15	−9	7		1	15	7	8			71 681.108(0.004)	1.177	145.634	
0	17	11	7		0	17	−9	8			71 685.234(0.002)	2.645	94.165	
1	11	10	1		1	11	9	2		71 741.595(0.010)	71 741.603(0.004)	9.037	119.627	7
1	17	12	5		1	17	11	6		71 786.048(0.050)	71 786.052(0.003)	19.562	171.536	7
0	18	−10	8		0	18	10	9		71 852.721(0.010)	71 852.721(0.002)	3.281	103.845	6
0	22	−13	9		0	22	−12	10			71 909.072(0.002)	30.448	156.365	
1	13	−7	7		1	13	−6	8			71 946.120(0.002)	15.336	125.687	
0	13	7	7	+	0	13	6	8	−		71 962.184(0.001)	13.469	51.926	
0	13	7	7	+	0	13	5	8	−		72 021.319(0.001)	2.438	51.924	
0	5	−3	2		0	4	4	1			72 050.182(0.002)	0.404	7.354	
1	13	−7	7		1	13	5	8			72 198.716(0.002)	0.976	125.678	
0	14	12	2	+	0	14	11	3	−		72 206.037(0.002)	11.125	70.059	
0	14	10	5	−	0	14	8	6	+		72 283.147(0.003)	1.181	65.491	
1	12	−5	8		1	11	6	5			72 288.489(0.005)	0.201	114.238	
0	12	−5	7		0	12	5	8		72 290.492(0.010)	72 290.496(0.001)	2.094	43.252	6
0	12	−5	7		0	12	−4	8		72 299.314(0.010)	72 299.312(0.001)	11.350	43.252	6
0	4	−3	1		0	3	3	1			72 416.563(0.002)	0.173	4.474	
0	12	−9	3		0	12	−7	5			72 420.750(0.003)	0.302	49.073	
0	12	6	7		0	12	5	8		72 472.067(0.010)	72 472.068(0.001)	11.346	43.252	6
1	3	−3	1		1	2	−2	1			72 479.883(0.002)	2.308	75.312	
0	12	6	7		0	12	−4	8			72 480.883(0.001)	2.093	43.252	
1	20	−14	7		1	20	13	7			72 533.282(0.010)	6.347	207.984	
1	9	−5	5		1	8	6	2			72 555.858(0.008)	0.336	97.661	
0	4	3	2		0	3	−2	1			72 565.746(0.001)	3.782	4.184	
0	18	−10	8		0	18	−9	9			72 579.349(0.002)	22.526	103.821	
0	12	5	7	−	0	12	5	8	+		72 596.959(0.001)	2.167	43.023	
0	12	5	7	−	0	12	4	8	+		72 611.966(0.001)	11.352	43.022	
0	3	2	1	+	0	2	1	2	+		72 619.980(0.001)	0.713	1.407	
1	10	−10	1		1	10	9	1			72 686.800(0.004)	6.237	113.770	
1	8	6	2		1	8	−5	4			72 687.322(0.010)	0.823	95.237	
0	3	−2	1		0	2	1	2			72 704.687(0.001)	0.658	1.759	
1	11	10	1	+	1	11	7	4	−		72 705.533(0.008)	0.612	119.528	
1	19	13	6		1	19	12	7			72 723.521(0.007)	16.019	194.426	
0	14	12	3	−	0	14	11	4	+		72 760.145(0.002)	11.114	70.040	
1	9	*	8	−	1	9	*	9	+		72 780.391(0.003)	5.796	96.445	
0	13	−12	1		0	13	−11	2			72 786.884(0.002)	7.622	62.619	
0	8	4	5		0	7	−5	2			72 788.460(0.002)	0.187	18.462	
1	12	5	7		1	12	−5	8			72 794.105(0.002)	0.717	116.650	
0	13	12	2		0	13	11	3			72 820.531(0.002)	7.645	62.215	
1	12	5	7		1	12	4	8			72 860.423(0.002)	13.263	116.647	
0	12	6	7	−	0	12	5	8	+		72 875.712(0.001)	11.345	43.023	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	7	2	5		1	6	3	3			72 886.975(0.003)	0.427	85.846	
0	12	6	7	−	0	12	4	8	+	72 890.710(0.050)	72 890.719(0.001)	2.165	43.022	6
1	25	15	10		1	25	14	11			72 902.422(0.007)	36.997	276.055	
1	17	−11	7		1	17	−10	8		72 935.544(0.010)	72 935.550(0.003)	19.644	168.381	7
0	18	13	6	+	0	18	12	7	−	73 122.757(0.010)	73 122.760(0.002)	21.681	108.756	6
0	11	−4	7		0	11	4	8		73 127.443(0.010)	73 127.428(0.001)	1.774	35.046	6
0	11	−4	7		0	11	−3	8		73 129.220(0.010)	73 129.224(0.001)	9.226	35.046	6
0	3	3	0	−	0	2	11	−		73 149.677(0.010)	73 149.660(0.001)	0.218	1.823	6
0	11	5	7		0	11	4	8		73 177.425(0.010)	73 177.427(0.001)	9.225	35.046	6
0	11	5	7		0	11	−3	8		73 179.233(0.010)	73 179.223(0.001)	1.774	35.046	6
0	7	4	4	−	0	6	5	1	−		73 234.024(0.001)	0.400	14.154	
1	9	9	0		1	9	−9	1			73 281.029(0.005)	3.251	108.480	
1	26	15	11		1	26	−15	12		73 283.486(0.010)	73 283.487(0.007)	3.953	290.930	7
1	16	8	8		1	16	−8	9			73 317.928(0.003)	1.655	154.057	
0	13	10	4		0	13	−8	5			73 340.339(0.005)	0.282	57.673	
1	8	6	2		1	7	−7	1			73 408.339(0.005)	0.691	95.213	
0	25	15	10	−	0	25	14	11	+	73 517.996(0.010)	73 517.991(0.003)	36.489	201.798	6
1	22	15	8	+	1	22	14	9	−	73 555.316(0.010)	73 555.326(0.005)	33.796	234.011	7
0	11	4	7	+	0	11	4	8	−	73 585.695(0.050)	73 585.700(0.001)	1.842	34.788	6
0	11	4	7	+	0	11	3	8	−	73 588.855(0.010)	73 588.858(0.001)	9.219	34.788	6
0	11	5	7	+	0	11	4	8	−	73 664.804(0.010)	73 664.806(0.001)	9.217	34.788	6
0	11	5	7	+	0	11	3	8	−	73 667.968(0.010)	73 667.965(0.001)	1.842	34.788	6
0	19	14	6		0	19	13	7		73 670.628(0.010)	73 670.624(0.003)	20.096	121.662	6
1	12	−6	7		1	12	−5	8			73 671.204(0.001)	13.204	116.650	
1	14	11	3		1	14	10	4		73 687.544(0.010)	73 687.549(0.003)	14.690	142.933	7
1	9	6	3		1	9	−5	5			73 697.263(0.007)	1.475	100.082	
0	10	−3	7		0	10	3	8		73 716.358(0.010)	73 716.360(0.001)	1.411	27.513	6
0	10	−3	7		0	10	−2	8		73 716.642(0.010)	73 716.646(0.001)	7.076	27.513	6
0	10	4	7		0	10	3	8		73 727.804(0.010)	73 727.806(0.001)	7.075	27.513	6
0	10	4	7		0	10	−2	8		73 728.090(0.010)	73 728.093(0.001)	1.411	27.513	6
1	12	−6	7		1	12	4	8			73 737.521(0.001)	0.730	116.647	
0	16	13	4		0	16	12	5		73 882.976(0.050)	73 882.978(0.002)	15.082	89.237	6
1	20	12	8	+	1	20	11	9	−	73 886.649(0.050)	73 886.646(0.002)	29.812	205.288	7
0	5	2	3	+	0	4	3	2	+	73 891.392(0.010)	73 891.383(0.001)	3.624	6.299	6
0	20	14	7		0	20	13	8		73 923.036(0.010)	73 923.030(0.004)	22.728	132.816	6
0	16	−13	3		0	16	−12	4		73 936.120(0.010)	73 936.121(0.002)	14.989	89.618	6
0	17	11	7	+	0	17	9	8	−	73 966.161(0.050)	73 966.158(0.002)	2.621	94.031	6
1	19	16	4	−	1	19	15	5	+	73 996.099(0.010)	73 996.112(0.005)	19.267	200.644	7
0	4	3	2	+	0	3	2	1	+	74 041.920(0.010)	74 041.920(0.001)	4.333	3.829	6
1	10	2	8	+	1	10	*	9	−	74 056.299(0.010)	74 056.290(0.002)	5.591	102.863	6
1	10	3	8	+	1	10	*	9	−	74 056.299(0.010)	74 056.310(0.002)	5.591	102.863	6
1	12	−10	3		1	12	−9	4		74 067.865(0.050)	74 067.865(0.003)	7.327	124.797	7
0	9	−2	7		0	9	2	8		74 136.705(0.010)	74 136.681(0.001)	1.000	20.655	6
0	9	−2	7		0	9	−1	8		74 136.705(0.010)	74 136.713(0.001)	4.859	20.655	6
0	9	3	7		0	9	2	8		74 138.737(0.010)	74 138.737(0.001)	4.859	20.655	6
0	9	3	7		0	9	−1	8		74 138.737(0.010)	74 138.769(0.001)	1.000	20.655	6
0	19	13	7	+	0	19	12	8	−	74 140.682(0.010)	74 140.683(0.002)	24.319	119.252	6
1	16	8	8		1	16	7	9		74 142.155(0.010)	74 142.150(0.002)	20.274	154.029	7
0	8	4	5	−	0	7	5	2	−		74 160.368(0.001)	0.238	18.128	
0	10	3	7	−	0	10	3	8	+	74 280.178(0.010)	74 280.180(0.001)	1.469	27.225	6
0	10	3	7	−	0	10	2	8	+	74 280.694(0.010)	74 280.699(0.001)	7.063	27.225	6
0	10	4	7	−	0	10	3	8	+	74 298.804(0.010)	74 298.807(0.001)	7.063	27.225	6
0	10	4	7	−	0	10	2	8	+	74 299.326(0.010)	74 299.326(0.001)	1.469	27.225	6
0	8	−1	7		0	8	*	8		74 434.035(0.010)	74 434.035(0.001)	3.060	14.476	6
0	8	2	7		0	8	*	8		74 434.291(0.010)	74 434.294(0.001)	3.060	14.476	6
0	21	12	9	+	0	21	12	10	−	74 437.927(0.010)	74 437.930(0.003)	3.876	141.562	6
1	24	15	9		1	24	14	10		74 457.120(0.010)	74 457.124(0.006)	32.335	261.767	7

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	5	2	3	+	1	4	3	2	+	74 493.684(0.010)	74 493.682(0.002)	7.405	84.990	7
0	17	13	5	+	0	17	12	6	−		74 503.254(0.002)	18.353	98.787	
0	12	−12	0		0	12	−11	1		74 621.795(0.010)	74 621.797(0.003)	3.871	55.576	6
0	6	−4	2		0	5	−5	0		74 624.613(0.050)	74 624.641(0.002)	0.284	11.266	6
0	5	−2	3		0	4	3	2		74 773.684(0.010)	74 773.685(0.001)	3.617	6.605	6
1	9	8	1		1	8	8	0			74 777.569(0.006)	0.219	103.744	
1	21	14	8	−	1	21	13	9	+	74 778.353(0.010)	74 778.362(0.003)	31.733	219.321	7
0	9	2	7	+	0	9	2	8	−	74 780.780(0.050)	74 780.733(0.001)	1.044	20.339	6
0	9	2	7	+	0	9	1	8	−	74 780.780(0.050)	74 780.793(0.001)	4.846	20.339	6
0	9	3	7	+	0	9	2	8	−	74 784.176(0.050)	74 784.169(0.001)	4.846	20.339	6
0	9	3	7	+	0	9	1	8	−	74 784.176(0.050)	74 784.228(0.001)	1.044	20.339	6
0	12	12	1		0	12	11	2		74 838.408(0.010)	74 838.413(0.003)	3.872	55.166	6
0	16	−12	4		0	16	11	6		74 846.815(0.010)	74 846.810(0.005)	2.154	87.121	6
0	13	12	1	+	0	13	11	2	−	74 869.927(0.010)	74 869.926(0.002)	7.489	62.411	6
1	4	4	1	−	1	3	3	0	−	74 950.731(0.010)	74 950.734(0.002)	7.549	82.997	7
0	13	12	2	−	0	13	11	3	+	74 955.940(0.010)	74 955.944(0.002)	7.488	62.408	6
1	11	4	7		1	11	−4	8			74 959.836(0.001)	0.580	108.273	
1	11	4	7		1	11	3	8		74 975.077(0.010)	74 975.073(0.001)	10.838	108.272	7
1	23	13	10		1	23	12	11		75 006.567(0.010)	75 006.563(0.003)	33.576	243.303	7
1	11	3	8	−	1	11	*	9	+	75 134.271(0.010)	75 134.272(0.002)	8.143	109.977	6
1	11	4	8	−	1	11	*	9	+	75 134.330(0.010)	75 134.393(0.002)	8.143	109.977	6
0	8	1	7	−	0	8	*	8	+	75 142.034(0.010)	75 142.035(0.001)	3.076	14.131	6
0	8	2	7	−	0	8	*	8	+	75 142.472(0.010)	75 142.480(0.001)	3.076	14.131	6
0	17	9	8	−	0	17	9	9	+	75 195.288(0.010)	75 195.290(0.001)	3.238	91.523	6
1	11	−5	7		1	11	−4	8		75 219.227(0.010)	75 219.216(0.001)	10.826	108.273	7
1	5	3	3	+	1	4	2	2	+	75 233.303(0.010)	75 233.310(0.002)	7.598	84.969	6
1	11	−5	7		1	11	3	8			75 234.454(0.001)	0.585	108.272	
1	19	10	9		1	19	−10	10		75 303.984(0.010)	75 303.988(0.003)	2.503	188.159	7
1	16	15	1	−	1	16	14	2	+	75 375.832(0.010)	75 375.836(0.004)	9.327	168.141	7
1	15	−11	5		1	15	−10	6		75 475.590(0.010)	75 475.594(0.003)	14.502	150.146	7
0	18	12	7		0	18	−10	8			75 482.226(0.004)	2.273	106.242	
1	22	15	8	+	1	22	13	9	−		75 482.331(0.008)	0.312	233.947	
1	16	15	2	+	1	16	14	3	−	75 500.671(0.010)	75 500.673(0.004)	9.334	168.137	7
0	16	11	6	+	0	16	9	7	−	75 579.659(0.010)	75 579.657(0.003)	1.693	84.594	6
1	13	11	2		1	13	10	3		75 581.316(0.010)	75 581.321(0.003)	12.061	135.373	7
0	17	9	8	−	0	17	8	9	+	75 608.932(0.010)	75 608.934(0.001)	20.193	91.509	6
1	19	11	8	−	1	19	10	9	+	75 725.368(0.010)	75 725.366(0.002)	27.228	191.950	7
0	25	−15	10		0	25	−14	11		75 747.892(0.010)	75 747.897(0.003)	35.826	201.816	6
0	16	13	3	−	0	16	12	4	+	75 750.346(0.010)	75 750.350(0.002)	14.808	89.446	6
0	7	5	3	+	0	6	6	0	+		75 774.976(0.002)	0.278	15.312	
1	20	13	8	+	1	20	12	9	−	75 843.215(0.010)	75 843.222(0.002)	29.446	205.300	7
1	3	2	1		1	2	−1	2		75 934.322(0.050)	75 934.301(0.003)	0.380	74.368	7
1	16	−10	7		1	16	8	8			75 970.814(0.006)	0.800	156.502	
0	17	−9	8		0	17	9	9		76 022.012(0.010)	76 022.015(0.001)	3.136	91.629	6
1	12	4	8	+	1	12	3	9	−	76 030.368(0.010)	76 030.369(0.002)	10.597	117.790	6
1	12	5	8	+	1	12	4	9	−	76 030.909(0.010)	76 030.910(0.002)	10.597	117.790	6
0	15	11	5		0	15	−9	6			76 087.880(0.005)	0.556	75.656	
0	5	3	3	+	0	4	3	2	+	76 229.987(0.010)	76 229.983(0.001)	2.281	6.299	6
1	16	12	4		1	16	11	5		76 262.180(0.010)	76 262.185(0.003)	17.672	162.171	7
0	21	12	9	+	0	21	11	10	−	76 271.873(0.010)	76 271.873(0.002)	27.546	141.501	6
0	17	−9	8		0	17	−8	9		76 284.615(0.010)	76 284.616(0.001)	20.127	91.620	6
1	24	15	9	−	1	24	14	10	+	76 440.346(0.010)	76 440.338(0.005)	38.015	262.587	7
1	10	3	7		1	10	−3	8			76 447.690(0.001)	0.514	100.565	
1	10	3	7		1	10	2	8		76 450.546(0.010)	76 450.544(0.001)	8.280	100.565	6
1	10	−4	7		1	10	−3	8		76 513.561(0.010)	76 513.555(0.001)	8.278	100.565	7
1	10	−4	7		1	10	2	8			76 516.409(0.001)	0.515	100.565	
0	5	3	3		0	4	3	2		76 599.392(0.010)	76 599.388(0.001)	2.191	6.605	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	7	4	3		1	6	5	1			76 629.131(0.007)	1.221	88.098	
1	19	12	8	−	1	19	11	9	+	76 665.478(0.010)	76 665.484(0.002)	27.075	191.955	7
0	12	12	0	+	0	12	11	1	−	76 706.251(0.010)	76 706.255(0.002)	3.804	55.380	6
0	12	12	1	−	0	12	11	2	+	76 714.961(0.010)	76 714.963(0.002)	3.804	55.380	6
0	21	−12	9		0	21	12	10		76 744.415(0.010)	76 744.415(0.003)	3.733	141.586	6
1	13	5	8	−	1	13	4	9	+	76 745.961(0.010)	76 745.964(0.001)	12.991	126.301	6
1	13	6	8	−	1	13	5	9	+	76 748.014(0.010)	76 748.016(0.001)	12.991	126.301	7
1	11	−10	2		1	11	−9	3		76 758.062(0.010)	76 758.065(0.004)	3.680	118.312	7
0	6	4	2	+	0	5	5	1	+	76 806.489(0.050)	76 806.491(0.002)	0.457	10.855	6
1	12	11	1		1	12	10	2		76 828.773(0.010)	76 828.782(0.004)	9.312	128.408	7
0	17	−12	5		0	17	11	7		76 837.803(0.010)	76 837.808(0.003)	2.528	96.556	6
1	18	10	8	+	1	18	9	9	−	76 850.962(0.010)	76 850.963(0.002)	24.686	179.288	7
1	6	1	5	−	1	5	2	4	−	76 861.834(0.010)	76 861.838(0.002)	13.014	86.477	6
1	6	2	5	−	1	5	1	4	−	76 866.641(0.010)	76 866.646(0.002)	13.015	86.477	6
0	18	−14	4		0	18	−13	5		76 901.613(0.010)	76 901.611(0.003)	18.493	111.410	6
1	22	12	10		1	22	−12	11		76 920.816(0.010)	76 920.807(0.004)	3.318	227.939	7
0	16	13	4	+	0	16	12	5	−	76 976.207(0.010)	76 976.210(0.002)	14.774	89.402	6
0	19	12	8		0	19	11	9		77 060.419(0.010)	77 060.421(0.001)	24.180	116.716	6
0	15	−13	2		0	15	−12	3		77 084.649(0.010)	77 084.648(0.002)	11.354	80.803	6
0	20	13	8		0	20	12	9		77 108.711(0.050)	77 108.710(0.002)	25.930	130.244	6
0	16	−11	5		0	16	10	7			77 250.202(0.002)	1.243	85.039	
1	18	11	8	+	1	18	10	9	−	77 253.792(0.010)	77 253.796(0.002)	24.628	179.289	7
0	15	13	3		0	15	12	4		77 270.314(0.010)	77 270.318(0.002)	11.384	80.411	6
0	18	14	5		0	18	13	6		77 271.822(0.010)	77 271.820(0.002)	18.589	111.037	6
1	14	6	8	+	1	14	5	9	−	77 272.293(0.010)	77 272.299(0.001)	15.349	135.510	7
1	14	7	8	+	1	14	6	9	−	77 278.960(0.010)	77 278.962(0.001)	15.348	135.510	7
0	7	6	1	+	0	7	3	4	−		77 399.262(0.002)	0.299	16.531	
1	17	9	8	−	1	17	9	9	+		77 434.951(0.002)	0.184	167.308	
1	17	9	8	−	1	17	8	9	+	77 452.572(0.010)	77 452.573(0.002)	22.203	167.308	7
1	19	10	9		1	19	9	10		77 464.882(0.010)	77 464.879(0.002)	25.111	188.087	7
1	9	2	7		1	9	−2	8			77 542.821(0.002)	0.436	93.534	
1	9	2	7		1	9	1	8		77 543.200(0.010)	77 543.200(0.002)	5.627	93.534	6
1	18	−13	6		1	18	12	6			77 549.809(0.003)	17.606	183.793	
1	9	−3	7		1	9	−2	8		77 556.395(0.010)	77 556.391(0.002)	5.627	93.534	6
1	9	−3	7		1	9	1	8			77 556.771(0.002)	0.437	93.534	
1	15	7	8	−	1	15	6	9	+	77 590.638(0.010)	77 590.641(0.001)	17.659	145.415	7
1	17	10	8	−	1	17	9	9	+	77 608.248(0.010)	77 608.252(0.002)	22.182	167.308	7
1	15	8	8	−	1	15	7	9	+	77 610.355(0.010)	77 610.360(0.001)	17.656	145.415	7
1	17	10	8	−	1	17	8	9	+		77 625.873(0.002)	0.186	167.308	
1	11	−11	1		1	11	10	1			77 644.744(0.004)	6.423	122.020	
1	8	−6	3		1	8	3	5			77 658.400(0.006)	0.191	93.821	
1	17	6	11		1	16	−9	8			77 661.736(0.016)	0.174	156.714	
0	18	11	8		0	18	10	9		77 668.304(0.010)	77 668.306(0.001)	22.148	103.845	6
1	16	8	8	+	1	16	7	9	−	77 668.889(0.010)	77 668.895(0.001)	19.895	156.016	7
0	14	−10	4		0	14	−8	6			77 722.398(0.003)	0.291	65.718	
1	16	9	8	+	1	16	8	9	−	77 725.129(0.010)	77 725.132(0.002)	19.887	156.016	7
0	24	14	10	+	0	24	14	11	−	77 784.945(0.010)	77 784.944(0.004)	4.346	185.110	6
0	19	12	8	−	0	19	11	9	+	77 824.679(0.010)	77 824.676(0.001)	24.131	116.656	6
0	20	14	7	−	0	20	13	8	+	77 888.817(0.010)	77 888.817(0.002)	25.119	132.823	6
1	7	6	1		1	7	−5	3			77 966.828(0.012)	0.173	90.788	
0	21	−12	9		0	21	−11	10		77 986.307(0.010)	77 986.309(0.002)	27.291	141.545	6
0	21	14	8		0	21	13	9		78 051.697(0.010)	78 051.695(0.003)	27.081	144.432	6
0	18	11	8	+	0	18	10	9	−	78 099.585(0.010)	78 099.584(0.001)	22.123	103.762	6
0	21	15	7		0	21	14	8		78 152.818(0.010)	78 152.814(0.004)	22.524	147.036	6
1	10	10	0		1	10	−10	1			78 152.814(0.005)	3.343	116.195	
0	15	−12	3		0	15	11	5		78 226.885(0.050)	78 226.913(0.006)	0.275	78.194	6
1	5	−5	1		1	4	4	0		78 316.358(0.010)	78 316.358(0.002)	1.440	82.316	7

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	8	1	7		1	8	−1	8		78 380.040(0.010)	78 380.008(0.002)	0.276	87.186	7
1	8	1	7		1	8	0	8			78 380.034(0.002)	2.887	87.186	
1	8	−2	7		1	8	−1	8		78 382.007(0.010)	78 382.003(0.002)	2.887	87.186	7
1	8	−2	7		1	8	0	8			78 382.029(0.002)	0.276	87.186	
0	18	11	8		0	18	−9	9			78 394.934(0.001)	3.183	103.821	
0	20	13	8	+	0	20	12	9	−	78 403.562(0.010)	78 403.562(0.001)	25.914	130.207	6
0	16	8	8	+	0	16	8	9	−	78 443.091(0.010)	78 443.098(0.001)	3.056	79.940	6
0	18	14	4	+	0	18	13	5	−	78 507.213(0.010)	78 507.216(0.002)	18.546	111.284	6
0	19	14	6	−	0	19	13	7	+	78 580.814(0.010)	78 580.815(0.002)	21.993	121.725	6
0	16	8	8	+	0	16	7	9	−	78 583.818(0.010)	78 583.818(0.001)	17.906	79.935	6
1	15	7	8		1	15	−7	9			78 656.994(0.002)	1.303	143.010	
0	17	10	8		0	17	9	9		78 658.952(0.010)	78 658.953(0.001)	20.011	91.629	6
0	16	−8	8		0	16	8	9		78 717.104(0.010)	78 717.101(0.001)	2.951	80.071	6
1	15	12	3		1	15	11	4		78 737.734(0.010)	78 737.739(0.003)	15.121	153.475	7
0	16	−8	8		0	16	−7	9		78 802.893(0.010)	78 802.894(0.001)	17.888	80.068	6
0	6	−1	5		0	5	2	4		78 834.686(0.010)	78 834.688(0.001)	9.279	8.002	6
0	6	2	5		0	5	2	4		78 848.915(0.010)	78 848.918(0.001)	3.438	8.002	6
1	5	2	3		1	4	−3	2		78 852.361(0.010)	78 852.350(0.005)	1.455	79.135	7
0	19	12	8		0	19	−10	9			78 886.831(0.002)	3.131	116.655	
1	15	7	8		1	15	6	9		78 902.865(0.010)	78 902.864(0.002)	17.955	143.002	7
0	20	−15	5		0	20	−14	6		78 918.330(0.010)	78 918.328(0.003)	21.421	135.669	6
0	17	10	8		0	17	−8	9			78 921.554(0.001)	3.104	91.620	
1	17	−10	8		1	17	−9	9		78 924.868(0.010)	78 924.864(0.002)	21.231	165.748	7
0	6	−1	5		0	5	−1	4		78 926.173(0.010)	78 926.175(0.001)	3.440	7.998	6
0	17	10	8	−	0	17	9	9	+	78 927.386(0.050)	78 927.383(0.001)	20.002	91.523	6
0	6	2	5		0	5	−1	4		78 940.403(0.010)	78 940.405(0.001)	9.287	7.998	6
1	7	*	7	+	1	6	1	6	+	78 944.031(0.010)	78 944.030(0.002)	18.748	87.477	6
1	7	*	7	+	1	6	0	6	+	78 944.031(0.010)	78 944.038(0.002)	18.748	87.477	6
0	6	1	5	−	0	5	2	4	−	78 956.473(0.010)	78 956.472(0.001)	9.161	7.667	6
0	6	2	5	−	0	5	2	4	−	78 977.448(0.010)	78 977.447(0.001)	3.528	7.667	6
0	8	7	2		0	8	−4	4			78 999.228(0.004)	0.177	22.223	
0	6	1	5	−	0	5	1	4	−	79 082.794(0.010)	79 082.787(0.001)	3.531	7.662	6
0	6	2	5	−	0	5	1	4	−	79 103.765(0.010)	79 103.762(0.001)	9.170	7.662	6
0	17	12	6		0	17	−10	7			79 124.106(0.006)	1.023	96.072	
0	18	11	8	+	0	18	9	9	−	79 197.854(0.050)	79 197.852(0.001)	3.235	103.726	6
1	5	4	1		1	4	−4	1			79 200.814(0.002)	2.614	80.938	
0	15	13	2	−	0	15	12	3	+	79 280.649(0.010)	79 280.654(0.002)	11.155	80.636	6
0	17	10	8	−	0	17	8	9	+	79 341.028(0.010)	79 341.027(0.001)	3.186	91.509	6
0	14	−13	1		0	14	−12	2		79 404.053(0.010)	79 404.053(0.002)	7.646	72.621	6
0	18	−13	5		0	18	12	7		79 457.227(0.010)	79 457.227(0.005)	3.217	108.759	6
0	18	12	7	−	0	18	10	8	+		79 473.377(0.003)	2.262	106.105	
1	18	16	2	+	1	18	15	3	−	79 485.409(0.010)	79 485.418(0.005)	13.875	189.979	7
1	18	−12	7		1	18	−11	8		79 485.892(0.010)	79 485.899(0.003)	20.189	180.750	7
0	15	13	3	+	0	15	12	4	−	79 518.629(0.010)	79 518.631(0.002)	11.151	80.628	6
0	7	0	7		0	6	1	6		79 551.357(0.010)	79 551.353(0.001)	14.061	8.814	6
0	7	1	7		0	6	1	6		79 551.357(0.010)	79 551.370(0.001)	4.620	8.814	6
0	7	0	7		0	6	0	6		79 551.520(0.010)	79 551.508(0.001)	4.620	8.814	6
0	7	1	7		0	6	0	6		79 551.520(0.010)	79 551.525(0.001)	14.061	8.814	6
0	22	−16	6		0	22	−15	7		79 564.306(0.050)	79 564.307(0.005)	23.675	162.418	6
0	7	0	7	+	0	6	1	6	+	79 594.892(0.050)	79 594.882(0.001)	13.892	8.466	6
0	7	1	7	+	0	6	1	6	+	79 594.892(0.050)	79 594.912(0.001)	4.783	8.466	6
0	7	0	7	+	0	6	0	6	+	79 595.154(0.050)	79 595.131(0.001)	4.783	8.466	6
0	7	1	7	+	0	6	0	6	+	79 595.154(0.050)	79 595.161(0.001)	13.892	8.466	6
1	15	15	0	−	1	15	14	1	+	79 605.219(0.010)	79 605.212(0.005)	4.561	159.318	7
1	15	15	1	+	1	15	14	2	−	79 615.562(0.010)	79 615.554(0.005)	4.562	159.318	7
1	16	−9	8		1	16	−8	9		79 668.364(0.010)	79 668.360(0.002)	19.620	154.057	7
1	18	13	5		1	18	12	6		79 691.571(0.010)	79 691.570(0.010)	3.079	183.793	7

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	18	−11	8		1	18	−10	9		79 721.164(0.010)	79 721.163(0.002)	22.527	178.091	7
1	4	2	2		1	3	−2	2			79 770.262(0.004)	1.828	76.398	
0	16	9	8		0	16	8	9		79 786.730(0.010)	79 786.730(0.001)	17.854	80.071	6
0	14	13	2		0	14	12	3		79 808.783(0.010)	79 808.790(0.002)	7.643	72.221	6
1	18	16	3	−	1	18	15	4	+	79 835.650(0.010)	79 835.660(0.005)	13.900	189.966	7
0	5	−2	3		0	4	−2	2		79 856.066(0.010)	79 856.072(0.001)	2.557	6.435	6
0	16	9	8		0	16	−7	9			79 872.524(0.001)	2.941	80.068	
0	5	4	2	−	0	4	4	1	−	79 880.682(0.010)	79 880.684(0.001)	1.376	7.158	6
1	20	7	13		1	19	−10	10			79 892.758(0.029)	0.172	188.159	
1	19	−14	6		1	19	13	6			79 910.845(0.011)	3.136	196.851	
1	10	7	3		1	10	−6	5			79 918.910(0.009)	1.315	106.965	
1	7	0	7		1	6	−1	6		79 929.654(0.010)	79 929.655(0.002)	14.514	81.499	6
1	7	−1	7		1	6	−1	6		79 929.808(0.010)	79 929.811(0.002)	3.913	81.499	6
1	7	0	7		1	6	0	6		79 930.579(0.010)	79 930.565(0.002)	3.913	81.499	6
1	7	−1	7		1	6	0	6			79 930.721(0.002)	14.514	81.499	
1	5	3	2	−	1	4	4	1	−	79 956.488(0.010)	79 956.488(0.004)	3.319	85.497	7
0	16	9	8	+	0	16	8	9	−	80 020.531(0.010)	80 020.531(0.001)	17.846	79.940	6
0	22	15	8		0	22	14	9		80 070.807(0.010)	80 070.799(0.004)	27.206	159.291	6
0	21	14	8	−	0	21	13	9	+	80 079.950(0.010)	80 079.946(0.002)	27.369	144.423	6
1	14	−11	4		1	14	−10	5		80 111.088(0.010)	80 111.094(0.003)	10.856	141.876	7
0	16	9	8	+	0	16	7	9	−	80 161.255(0.010)	80 161.251(0.001)	3.040	79.935	6
1	6	1	5		1	5	−2	4		80 175.606(0.010)	80 175.604(0.002)	9.091	80.718	7
1	12	10	2	+	1	12	8	5	−		80 211.702(0.004)	0.243	126.158	
1	6	−2	5		1	5	−2	4		80 225.967(0.010)	80 225.970(0.002)	2.966	80.718	6
0	5	2	3	+	0	4	2	2	+	80 233.952(0.010)	80 233.952(0.001)	2.655	6.088	6
0	20	15	5	−	0	20	14	6	+	80 326.643(0.010)	80 326.647(0.003)	22.378	135.587	6
1	14	12	2		1	14	11	3		80 330.569(0.010)	80 330.575(0.004)	12.409	145.391	7
1	3	3	0		1	2	2	0			80 381.691(0.003)	4.774	76.172	
1	6	1	5		1	5	1	4		80 403.575(0.010)	80 403.570(0.002)	2.882	80.711	6
1	6	−2	5		1	5	1	4		80 453.937(0.010)	80 453.937(0.002)	9.130	80.711	6
0	19	12	8	−	0	19	10	9	+		80 469.531(0.002)	3.137	116.568	
1	21	14	7		1	21	13	8		80 473.825(0.010)	80 473.825(0.006)	20.183	219.917	7
1	23	14	9	+	1	23	13	10	−	80 488.431(0.010)	80 488.421(0.003)	35.230	246.551	7
0	15	−7	8		0	15	7	9		80 488.649(0.010)	80 488.637(0.001)	2.723	69.172	6
1	16	−9	8		1	16	7	9			80 492.581(0.002)	1.647	154.029	
0	20	15	6		0	20	14	7		80 494.484(0.010)	80 494.479(0.003)	21.466	135.282	6
0	15	−7	8		0	15	−6	9		80 513.722(0.010)	80 513.723(0.001)	15.720	69.172	6
1	4	4	0	+	1	3	3	1	+	80 556.789(0.010)	80 556.787(0.002)	5.880	82.892	7
0	15	7	8	−	0	15	7	9	+	80 562.063(0.050)	80 562.123(0.001)	2.831	69.014	6
0	15	7	8	−	0	15	6	9	+	80 604.948(0.010)	80 604.945(0.001)	15.713	69.013	6
0	24	14	10	+	0	24	13	11	−	80 637.086(0.010)	80 637.084(0.002)	32.566	185.015	6
1	26	16	10		1	26	15	11		80 689.615(0.010)	80 689.614(0.010)	35.370	293.375	7
0	24	−14	10		0	24	14	11		80 721.404(0.010)	80 721.403(0.004)	4.157	185.088	6
1	11	9	2	−	1	11	6	5	+		80 778.388(0.003)	0.266	118.269	
0	20	11	9	−	0	20	11	10	+	80 802.027(0.010)	80 802.032(0.002)	3.756	127.320	6
0	15	8	8		0	15	7	9		80 877.498(0.010)	80 877.499(0.001)	15.711	69.172	6
0	15	8	8		0	15	−6	9			80 902.584(0.001)	2.720	69.172	
1	25	14	11		1	25	−14	12		80 913.008(0.010)	80 913.010(0.005)	3.768	273.356	7
0	18	14	5	−	0	18	13	6	+	80 934.300(0.010)	80 934.300(0.002)	18.454	111.195	6
0	15	−10	5		0	15	9	7		80 939.216(0.010)	80 939.219(0.002)	0.436	74.198	6
0	4	4	1		0	3	−3	0		80 943.801(0.050)	80 943.820(0.003)	0.296	4.654	6
0	17	−14	3		0	17	−13	4		80 948.010(0.010)	80 948.009(0.002)	15.084	101.418	6
0	11	9	3	+	0	11	7	4	−		80 966.294(0.003)	0.303	41.856	
1	5	3	2		1	4	3	1			80 992.632(0.004)	1.859	79.845	
1	5	−3	3		1	4	−3	2		81 031.003(0.010)	81 030.996(0.002)	3.073	79.135	6
1	22	12	10		1	22	11	11		81 074.889(0.010)	81 074.887(0.003)	30.085	227.800	7
0	22	16	6	+	0	22	15	7	−	81 078.392(0.010)	81 078.396(0.004)	26.373	162.368	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	4	−3	1		0	3	−2	1			81 100.362(0.001)	0.587	4.184	
0	7	5	3		0	6	6	1			81 104.614(0.002)	0.231	15.377	
1	17	−12	6		1	17	−11	7		81 117.368(0.010)	81 117.370(0.003)	17.592	170.814	7
1	5	2	3		1	4	2	2		81 118.609(0.010)	81 118.617(0.002)	1.046	79.059	6
0	17	−13	4		0	17	12	6		81 153.688(0.010)	81 153.695(0.006)	1.048	98.711	6
0	15	8	8	−	0	15	7	9	+	81 158.014(0.010)	81 158.012(0.001)	15.695	69.014	6
0	13	−13	0		0	13	−12	1		81 181.490(0.010)	81 181.493(0.003)	3.879	65.047	6
1	15	−8	8		1	15	−7	9		81 185.263(0.010)	81 185.259(0.001)	17.766	143.010	7
0	15	8	8	−	0	15	6	9	+	81 200.840(0.050)	81 200.834(0.001)	2.826	69.013	6
1	17	−13	5		1	17	12	5			81 217.499(0.003)	18.068	173.930	
1	12	10	2	+	1	12	7	5	−		81 228.864(0.005)	0.530	126.125	
0	20	13	8		0	20	−11	9			81 275.779(0.003)	2.879	130.105	
0	17	14	4		0	17	13	5		81 280.159(0.010)	81 280.164(0.002)	15.119	101.043	6
1	17	−10	8		1	17	8	9			81 333.015(0.003)	1.761	165.668	
1	13	12	1		1	13	11	2		81 387.587(0.010)	81 387.595(0.004)	9.583	137.895	7
1	11	−5	7		1	10	6	4			81 392.721(0.005)	0.337	108.067	
1	15	−8	8		1	15	6	9			81 431.129(0.002)	1.313	143.002	
1	10	*	9	−	1	10	*	10	+	81 448.130(0.010)	81 448.125(0.003)	5.822	100.146	6
1	4	2	2		1	3	1	2			81 511.213(0.002)	0.283	76.340	
0	20	11	9	−	0	20	10	10	+	81 553.683(0.010)	81 553.683(0.002)	24.794	127.295	6
1	10	−5	6		1	9	6	3			81 570.466(0.007)	0.434	102.540	
0	5	4	2		0	4	4	1		81 593.008(0.010)	81 593.005(0.001)	1.267	7.354	6
0	14	13	1	−	0	14	12	2	+	81 644.454(0.010)	81 644.454(0.002)	7.511	72.468	6
0	14	13	2	+	0	14	12	3	−	81 677.851(0.010)	81 677.854(0.002)	7.511	72.467	6
0	5	3	3		0	4	−2	2		81 681.773(0.010)	81 681.775(0.001)	4.958	6.435	6
0	14	−6	8		0	14	6	9		81 710.505(0.010)	81 710.498(0.001)	2.456	58.938	6
0	14	−6	8		0	14	−5	9		81 716.956(0.010)	81 716.958(0.001)	13.587	58.938	6
0	13	13	1		0	13	12	2		81 736.443(0.010)	81 736.445(0.003)	3.869	64.644	6
1	10	−6	5		1	9	7	2			81 748.212(0.010)	0.235	104.238	
0	14	7	8		0	14	6	9		81 836.517(0.010)	81 836.516(0.001)	13.584	58.938	6
0	14	7	8		0	14	−5	9			81 842.976(0.001)	2.455	58.938	
0	11	−9	2		0	11	−7	4			81 928.215(0.004)	0.196	42.139	
0	14	6	8	+	0	14	6	9	−	82 004.261(0.010)	82 004.261(0.001)	2.562	58.751	6
1	22	−15	8		1	22	−14	9		82 010.926(0.010)	82 010.924(0.004)	25.015	234.068	7
0	14	6	8	+	0	14	5	9	−	82 015.735(0.010)	82 015.733(0.001)	13.565	58.751	6
1	4	−3	2		1	3	−2	2			82 036.528(0.002)	2.160	76.398	
1	20	−8	13		1	19	9	10			82 057.294(0.029)	0.175	188.087	
1	12	−12	1		1	12	11	1			82 072.535(0.005)	6.609	130.971	
1	14	6	8		1	14	−6	9			82 078.708(0.002)	0.927	132.611	
1	14	6	8		1	14	5	9		82 144.098(0.010)	82 144.095(0.002)	15.786	132.609	7
1	24	16	9	−	1	24	15	10	+	82 165.266(0.010)	82 165.274(0.005)	36.855	262.641	7
1	27	16	11		1	27	15	12		82 171.769(0.010)	82 171.759(0.008)	39.345	308.681	7
0	20	−11	9		0	20	11	10		82 188.061(0.010)	82 188.057(0.002)	3.622	127.363	6
0	14	7	8	+	0	14	6	9	−	82 204.534(0.010)	82 204.531(0.001)	13.560	58.751	6
0	14	7	8	+	0	14	5	9	−	82 216.004(0.010)	82 216.004(0.001)	2.561	58.751	6
1	24	−16	9		1	24	−15	10		82 218.065(0.010)	82 218.060(0.006)	28.517	262.868	7
0	5	−4	1		0	4	−4	0		82 308.904(0.010)	82 308.910(0.001)	1.302	7.583	6
1	20	−14	7		1	20	−13	8		82 341.891(0.010)	82 341.894(0.005)	17.571	207.657	7
1	26	15	11		1	26	14	12		82 415.062(0.010)	82 415.050(0.004)	37.703	290.626	7
1	11	11	0		1	11	−11	1			82 488.120(0.006)	3.437	124.610	
0	5	3	3	+	0	4	2	2	+	82 572.549(0.010)	82 572.553(0.001)	4.977	6.088	6
0	13	−5	8		0	13	5	9		82 594.676(0.050)	82 594.679(0.001)	2.150	49.371	6
0	13	−5	8		0	13	−4	9		82 596.108(0.010)	82 596.109(0.001)	11.464	49.371	6
0	19	13	7		0	19	−11	8			82 611.683(0.006)	1.676	118.906	
0	13	6	8		0	13	5	9		82 630.609(0.010)	82 630.609(0.001)	11.463	49.371	6
0	13	6	8		0	13	−4	9			82 632.039(0.001)	2.150	49.371	
1	9	7	2		1	8	−8	1			82 671.687(0.005)	0.639	101.481	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	20	−11	9		0	20	−10	10		82 674.789(0.010)	82 674.789(0.002)	24.708	127.347	6
1	19	−12	8		1	19	−11	9		82 697.469(0.010)	82 697.470(0.002)	23.868	191.098	7
0	24	−14	10		0	24	−13	11		82 712.242(0.010)	82 712.245(0.003)	32.228	185.021	6
1	13	11	2	−	1	13	9	5	+		82 713.248(0.005)	0.305	134.709	
0	21	15	7	+	0	21	14	8	−	82 731.269(0.010)	82 731.271(0.002)	25.598	147.094	6
1	18	9	9		1	18	−9	10		82 783.397(0.010)	82 783.405(0.002)	2.185	175.128	7
0	7	−5	2		0	6	−6	0			82 811.198(0.002)	0.259	15.699	
1	4	−2	3		1	3	−1	3			82 929.932(0.002)	0.213	75.624	
1	14	−7	8		1	14	−6	9		82 934.058(0.010)	82 934.051(0.001)	15.734	132.611	7
0	22	15	8	+	0	22	14	9	−	82 979.768(0.010)	82 979.767(0.002)	28.435	159.313	6
0	6	−4	2		0	5	5	1			82 984.048(0.003)	0.201	10.987	
1	11	*	9	+	1	11	*	10	−	82 988.808(0.010)	82 988.807(0.002)	11.278	107.209	6
1	14	−7	8		1	14	5	9			82 999.438(0.001)	0.933	132.609	
0	13	5	8	−	0	13	5	9	+	83 039.988(0.010)	83 039.986(0.001)	2.252	49.154	6
0	13	5	8	−	0	13	4	9	+	83 042.626(0.010)	83 042.628(0.001)	11.434	49.154	6
0	4	3	2		0	3	2	2			83 085.108(0.001)	0.322	3.834	
0	13	6	8	−	0	13	5	9	+	83 099.120(0.010)	83 099.122(0.001)	11.433	49.154	6
0	13	6	8	−	0	13	4	9	+	83 101.767(0.010)	83 101.763(0.001)	2.252	49.154	6
1	5	−4	2		1	4	3	1			83 164.946(0.008)	1.893	79.845	
0	17	14	3	+	0	17	13	4	−	83 170.722(0.010)	83 170.725(0.002)	14.832	101.292	6
1	21	−14	8		1	21	−13	9		83 189.907(0.010)	83 189.913(0.005)	19.700	219.149	7
1	16	−13	4		1	16	12	4			83 253.654(0.003)	15.537	164.714	
0	12	−4	8		0	12	4	9		83 254.075(0.010)	83 254.086(0.001)	1.808	40.475	6
0	12	−4	8		0	12	−3	9		83 254.343(0.010)	83 254.349(0.001)	9.329	40.475	6
0	12	5	8		0	12	4	9		83 262.900(0.010)	83 262.902(0.001)	9.329	40.475	6
0	12	5	8		0	12	−3	9		83 263.184(0.050)	83 263.164(0.001)	1.808	40.475	6
1	23	−15	9		1	23	−14	10		83 290.434(0.010)	83 290.441(0.004)	25.421	246.738	7
1	5	−3	3		1	4	2	2		83 297.265(0.010)	83 297.263(0.004)	3.772	79.059	7
1	22	13	9	−	1	22	12	10	+	83 299.539(0.010)	83 299.533(0.002)	32.516	231.168	7
0	23	16	8		0	23	15	9		83 364.837(0.010)	83 364.826(0.005)	26.415	174.831	6
0	13	13	0	−	0	13	12	1	+	83 382.296(0.010)	83 382.294(0.003)	3.813	64.909	6
0	13	13	1	+	0	13	12	2	−	83 385.374(0.010)	83 385.376(0.003)	3.813	64.908	6
1	13	−11	3		1	13	−10	4		83 435.702(0.010)	83 435.708(0.003)	7.228	134.260	7
0	5	4	1	+	0	4	4	0	+	83 517.914(0.050)	83 517.928(0.001)	1.415	7.180	6
1	18	9	9		1	18	8	10		83 550.584(0.010)	83 550.585(0.002)	22.402	175.103	7
0	13	10	4	−	0	13	8	5	+	83 571.160(0.050)	83 571.139(0.004)	0.529	57.417	6
1	12	11	1	−	1	12	8	4	+		83 590.271(0.011)	0.536	127.323	
1	18	−14	5		1	18	13	5			83 591.520(0.013)	0.478	186.451	
1	11	7	4		1	11	−6	6			83 611.084(0.007)	1.685	112.869	
1	23	15	9	+	1	23	14	10	−	83 670.713(0.010)	83 670.724(0.003)	34.631	246.575	7
0	6	−3	3		0	5	−4	1			83 674.314(0.001)	0.487	10.329	
0	17	14	4	−	0	17	13	5	+	83 732.407(0.010)	83 732.407(0.002)	14.820	101.272	6
0	11	−3	8		0	11	3	9		83 750.771(0.050)	83 750.750(0.001)	1.427	32.253	6
0	11	−3	8		0	11	−2	9		83 750.771(0.050)	83 750.787(0.001)	7.154	32.253	6
0	11	4	8		0	11	3	9		83 752.547(0.050)	83 752.546(0.001)	7.154	32.253	6
0	11	4	8		0	11	−2	9		83 752.547(0.050)	83 752.583(0.001)	1.427	32.253	6
1	19	−14	6		1	19	−13	7		83 766.093(0.050)	83 766.101(0.004)	18.238	196.723	7
1	4	−3	2		1	3	1	2			83 777.480(0.005)	1.016	76.340	
0	12	4	8	+	0	12	4	9	−		83 814.653(0.001)	1.900	40.227	
0	12	4	8	+	0	12	3	9	−	83 815.147(0.050)	83 815.156(0.001)	9.295	40.227	6
0	16	−14	2		0	16	−13	3		83 818.220(0.050)	83 818.227(0.002)	11.388	92.084	6
0	12	5	8	+	0	12	4	9	−	83 829.657(0.050)	83 829.660(0.001)	9.294	40.227	6
0	12	5	8	+	0	12	3	9	−	83 830.181(0.050)	83 830.163(0.001)	1.900	40.227	6
1	17	−7	11		1	16	8	8			84 027.858(0.017)	0.188	156.502	
0	10	−2	8		0	10	*	9			84 122.590(0.001)	5.912	24.707	
0	10	3	8		0	10	*	9			84 122.876(0.001)	5.912	24.707	
1	10	6	4		1	10	−5	6			84 132.610(0.005)	0.940	105.261	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	20	13	8	+	0	20	11	9	−		84 171.445(0.003)	2.849	130.015	
1	12	3	9	−	1	12	*	10	+		84 265.138(0.002)	8.235	114.979	
1	12	4	9	−	1	12	*	10	+		84 265.160(0.002)	8.235	114.979	
0	19	−14	5		0	19	13	7			84 309.538(0.007)	2.539	121.662	
0	19	−15	4		0	19	−14	5		84 323.248(0.010)	84 323.251(0.003)	18.778	124.474	6
1	13	5	8		1	13	−5	9			84 352.003(0.001)	0.656	122.865	
1	13	5	8		1	13	4	9		84 367.763(0.010)	84 367.760(0.001)	13.505	122.864	7
1	9	7	2		1	9	−6	4			84 392.608(0.012)	0.363	101.423	
0	16	14	3		0	16	13	4		84 394.030(0.010)	84 394.035(0.002)	11.380	91.701	6
0	9	−1	8		0	9	*	9		84 396.128(0.010)	84 396.110(0.001)	3.076	17.840	6
0	9	2	8		0	9	*	9		84 396.128(0.010)	84 396.142(0.001)	3.076	17.840	6
0	11	3	8	−	0	11	3	9	+	84 405.597(0.050)	84 405.591(0.001)	1.505	31.972	6
0	11	3	8	−	0	11	2	9	+	84 405.673(0.050)	84 405.666(0.001)	7.121	31.972	6
0	11	4	8	−	0	11	3	9	+	84 408.732(0.050)	84 408.750(0.001)	7.121	31.972	6
0	11	4	8	−	0	11	2	9	+	84 408.801(0.050)	84 408.825(0.001)	1.505	31.972	6
0	9	7	3		0	9	−4	5			84 425.175(0.003)	0.203	26.989	
0	7	5	2	−	0	6	6	1	−		84 514.372(0.002)	0.338	15.308	
1	15	−13	3		1	15	12	3			84 580.689(0.004)	12.758	156.101	
1	13	−6	8		1	13	−5	9		84 604.600(0.010)	84 604.599(0.001)	13.492	122.865	7
1	13	−6	8		1	13	4	9			84 620.356(0.001)	0.659	122.864	
0	3	3	1	+	0	2	0	2	+		84 675.164(0.001)	0.201	1.389	
1	17	16	1	+	1	17	15	2	−	84 679.459(0.050)	84 679.456(0.006)	9.013	179.979	7
1	17	16	2	−	1	17	15	3	+	84 720.924(0.010)	84 720.921(0.006)	9.015	179.978	7
0	20	15	6	+	0	20	14	7	−	84 723.555(0.010)	84 723.557(0.002)	22.151	135.421	6
1	21	−15	7		1	21	−14	8		84 754.211(0.010)	84 754.207(0.004)	24.227	221.924	7
1	8	5	3		1	7	6	1			84 765.273(0.005)	1.250	93.389	
0	22	14	9		0	22	13	10		84 811.083(0.010)	84 811.078(0.002)	28.662	156.462	6
0	13	−10	3		0	13	−8	5			84 833.990(0.004)	0.294	57.673	
0	19	15	5		0	19	14	6		84 851.138(0.010)	84 851.138(0.003)	18.816	124.119	6
0	10	2	8	+	0	10	2	9	−	84 857.317(0.010)	84 857.307(0.001)	1.063	24.395	6
0	10	2	8	+	0	10	1	9	−	84 857.317(0.010)	84 857.315(0.001)	4.879	24.395	6
0	10	3	8	+	0	10	2	9	−	84 857.831(0.010)	84 857.827(0.001)	4.879	24.395	6
0	10	3	8	+	0	10	1	9	−	84 857.831(0.010)	84 857.834(0.001)	1.063	24.395	6
1	13	11	2	−	1	13	8	5	+		84 859.202(0.007)	0.818	134.638	
1	22	14	9	−	1	22	13	10	+	84 938.484(0.010)	84 938.487(0.003)	32.234	231.178	7
1	25	−16	10		1	25	−15	11		85 088.088(0.010)	85 088.091(0.006)	29.831	276.710	7
0	16	−11	5		0	16	−9	7			85 094.717(0.002)	0.192	84.778	
0	23	15	9		0	23	14	10		85 111.391(0.010)	85 111.386(0.003)	30.323	171.992	6
0	19	10	9	+	0	19	10	10	−	85 116.361(0.010)	85 116.368(0.001)	3.618	113.729	6
1	21	12	9	+	1	21	11	10	−	85 196.668(0.010)	85 196.664(0.002)	29.935	216.450	7
0	9	1	8	−	0	9	*	9	+	85 199.168(0.050)	85 199.134(0.001)	3.092	17.497	6
0	9	2	8	−	0	9	*	9	+	85 199.168(0.050)	85 199.194(0.001)	3.092	17.497	6
1	23	15	8		1	23	14	9		85 213.977(0.010)	85 213.975(0.006)	26.405	247.968	7
1	7	3	4		1	6	4	2		85 296.604(0.010)	85 296.595(0.007)	1.645	86.810	6
1	13	4	9	+	1	13	*	10	−		85 319.163(0.002)	10.738	123.455	
1	13	5	9	+	1	13	*	10	−		85 319.280(0.002)	10.738	123.455	
0	21	13	9		0	21	12	10		85 322.007(0.010)	85 322.006(0.001)	26.658	141.586	6
1	10	9	1		1	9	9	0			85 324.150(0.007)	0.205	110.924	
0	19	10	9	+	0	19	9	10	−	85 399.027(0.010)	85 399.026(0.001)	22.383	113.719	6
1	23	−16	8		1	23	−15	9		85 423.988(0.010)	85 423.961(0.006)	27.380	249.517	7
0	15	11	5	+	0	15	9	6	−		85 429.077(0.004)	0.844	75.431	
1	14	−13	2		1	14	12	2			85 454.777(0.004)	9.858	148.070	
1	6	2	4	+	1	5	3	3	+	85 522.717(0.010)	85 522.715(0.002)	10.236	87.479	7
0	20	−14	6		0	20	13	8			85 536.797(0.005)	2.995	132.816	
0	23	13	10	−	0	23	13	11	+	85 629.316(0.010)	85 629.318(0.003)	4.243	168.871	6
0	22	14	9	−	0	22	13	10	+	85 633.097(0.010)	85 633.095(0.002)	28.549	156.456	6
1	6	3	4	+	1	5	2	3	+	85 670.660(0.050)	85 670.669(0.002)	10.270	87.474	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	18	−14	5		1	18	−13	6		85 733.281(0.010)	85 733.281(0.004)	18.238	186.380	7
1	16	−12	5		1	16	−11	6		85 743.731(0.010)	85 743.735(0.003)	14.331	161.416	7
1	18	−11	8		1	18	9	9			85 747.873(0.004)	1.574	177.890	
0	19	−13	6		0	19	12	8		85 751.363(0.050)	85 751.372(0.003)	1.547	119.287	6
0	21	13	9	+	0	21	12	10	−	85 760.888(0.010)	85 760.885(0.001)	26.578	141.562	6
1	12	−11	2		1	12	−10	3		85 780.522(0.010)	85 780.524(0.004)	3.640	127.268	7
1	21	11	10		1	21	−11	11		85 780.833(0.010)	85 780.843(0.003)	3.023	212.939	7
0	19	−10	9		0	19	10	10		85 806.501(0.010)	85 806.501(0.001)	3.479	113.793	6
1	26	16	10	+	1	26	15	11	−	85 816.404(0.010)	85 816.402(0.007)	40.780	293.675	7
0	8	5	4		0	7	−6	1			85 851.322(0.002)	0.224	19.488	
1	19	−13	7		1	19	−12	8			85 930.399(0.007)	15.475	193.857	
1	5	4	2	−	1	4	3	1	−	85 952.152(0.010)	85 952.160(0.003)	6.425	85.345	7
1	21	13	9	+	1	21	12	10	−	85 958.141(0.010)	85 958.144(0.002)	29.824	216.453	7
0	5	−3	2		0	4	−3	1		85 969.010(0.010)	85 969.012(0.001)	2.412	6.890	6
0	19	−10	9		0	19	−9	10		85 981.582(0.010)	85 981.585(0.001)	22.373	113.787	6
1	12	4	8		1	12	−4	9			85 995.980(0.001)	0.542	113.779	
1	12	4	8		1	12	3	9		85 999.345(0.010)	85 999.341(0.001)	11.027	113.779	7
1	13	−13	1		1	13	12	1			86 009.095(0.005)	6.800	140.609	
1	20	−13	8		1	20	−12	9			86 009.576(0.004)	23.775	204.788	
0	15	−14	1		0	15	−13	2		86 025.739(0.010)	86 025.743(0.003)	7.665	83.374	6
1	12	−5	8		1	12	−4	9		86 062.299(0.010)	86 062.298(0.001)	11.024	113.779	7
1	12	−5	8		1	12	3	9			86 065.658(0.001)	0.543	113.779	
1	14	5	9	−	1	14	4	10	+	86 168.350(0.010)	86 168.352(0.002)	13.174	132.635	6
1	14	6	9	−	1	14	5	10	+	86 168.831(0.010)	86 168.833(0.002)	13.174	132.635	7
0	16	14	2	+	0	16	13	3	−	86 180.197(0.010)	86 180.198(0.002)	11.186	91.973	6
1	12	8	4		1	12	−7	6			86 194.061(0.009)	1.853	121.132	
0	16	14	3	−	0	16	13	4	+	86 278.747(0.010)	86 278.750(0.002)	11.184	91.969	6
1	9	−7	3		1	9	4	5			86 284.785(0.008)	0.288	99.999	
1	17	−11	7		1	17	9	8			86 315.426(0.007)	0.391	167.935	
1	12	12	0		1	12	−12	1			86 331.694(0.007)	3.534	133.709	
0	4	4	1		0	3	3	1			86 335.394(0.001)	6.158	4.474	
0	5	3	2	−	0	4	3	1	−	86 336.280(0.010)	86 336.283(0.001)	2.532	6.534	6
0	20	12	9		0	20	11	10		86 355.125(0.010)	86 355.126(0.001)	24.504	127.363	6
1	20	11	9	−	1	20	10	10	+	86 406.597(0.010)	86 406.596(0.002)	27.369	202.406	7
0	19	15	4	−	0	19	14	5	+	86 455.420(0.010)	86 455.424(0.002)	18.544	124.390	6
0	23	15	9	+	0	23	14	10	−	86 473.442(0.010)	86 473.440(0.002)	30.253	172.006	6
1	25	14	11		1	25	13	12		86 559.723(0.010)	86 559.721(0.003)	34.888	273.168	7
0	21	13	9		0	21	−11	10			86 563.901(0.002)	3.571	141.545	
0	20	12	9	−	0	20	11	10	+	86 569.915(0.010)	86 569.914(0.001)	24.454	127.320	6
0	21	14	8		0	21	−12	9			86 629.286(0.005)	2.385	144.146	
0	8	6	3	−	0	7	7	0	−		86 641.340(0.002)	0.260	20.521	
1	20	12	9	−	1	20	11	10	+	86 723.924(0.010)	86 723.927(0.002)	27.327	202.407	7
0	15	14	2		0	15	13	3		86 778.419(0.010)	86 778.427(0.003)	7.642	82.988	6
0	27	−16	11		0	27	−15	12		86 792.965(0.010)	86 792.969(0.005)	37.366	234.240	6
0	4	4	1	−	0	3	3	0	−	86 799.279(0.010)	86 799.280(0.001)	6.663	4.263	6
1	15	6	9	+	1	15	5	10	−	86 816.612(0.010)	86 816.615(0.002)	15.566	142.519	7
1	15	7	9	+	1	15	6	10	−	86 818.365(0.010)	86 818.371(0.002)	15.566	142.519	7
0	20	12	9		0	20	−10	10			86 841.859(0.001)	3.567	127.347	
0	23	13	10	−	0	23	12	11	+	86 879.011(0.010)	86 879.010(0.002)	29.508	168.829	6
0	17	12	6	−	0	17	10	7	+		87 038.963(0.004)	1.264	95.884	
0	21	−16	5		0	21	−15	6		87 077.261(0.010)	87 077.261(0.004)	22.242	149.983	6
0	23	16	8	−	0	23	15	9	+	87 083.231(0.010)	87 083.234(0.003)	29.129	174.891	6
1	19	10	9	+	1	19	9	10	−	87 113.367(0.010)	87 113.363(0.002)	24.900	189.045	7
1	14	−6	9		1	13	7	6			87 149.526(0.009)	0.232	129.704	
1	9	5	4		1	9	−4	6			87 201.950(0.003)	0.329	98.311	
1	19	11	9	+	1	19	10	10	−	87 234.678(0.010)	87 234.680(0.002)	24.885	189.045	7
1	16	7	9	−	1	16	6	10	+	87 257.677(0.010)	87 257.677(0.002)	17.938	153.105	7

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	16	8	9	−	1	16	7	10	+	87 263.230(0.010)	87 263.236(0.002)	17.937	153.105	7
1	11	3	8		1	11	−3	9		87 264.663(0.010)	87 264.643(0.002)	0.512	105.362	7
1	11	3	8		1	11	2	9		87 265.231(0.010)	87 265.226(0.002)	8.392	105.362	6
1	11	−4	8		1	11	−3	9		87 279.882(0.010)	87 279.880(0.002)	8.391	105.362	7
1	11	−4	8		1	11	2	9			87 280.463(0.002)	0.512	105.362	
1	17	−14	4		1	17	−13	5		87 320.314(0.010)	87 320.313(0.004)	15.946	176.639	7
0	20	12	9	−	0	20	10	10	+		87 321.565(0.001)	3.667	127.295	
1	18	9	9	−	1	18	8	10	+	87 443.286(0.010)	87 443.287(0.002)	22.599	176.371	7
1	9	5	4		1	9	3	6			87 465.481(0.003)	0.172	98.302	
1	17	8	9	+	1	17	7	10	−	87 475.774(0.010)	87 475.778(0.002)	20.303	164.390	7
1	18	10	9	−	1	18	9	10	+	87 487.683(0.010)	87 487.685(0.002)	22.593	176.371	7
1	17	9	9	+	1	17	8	10	−	87 491.790(0.010)	87 491.792(0.002)	20.301	164.390	7
1	7	1	6	−	1	6	2	5	−	87 558.481(0.050)	87 558.486(0.002)	15.735	89.041	6
1	7	2	6	−	1	6	1	5	−	87 559.184(0.050)	87 559.190(0.002)	15.735	89.041	6
1	21	11	10		1	21	10	11		87 579.484(0.010)	87 579.485(0.002)	27.025	212.879	7
0	23	−13	10		0	23	13	11		87 592.113(0.010)	87 592.110(0.002)	4.071	168.862	6
0	21	13	9	+	0	21	11	10	−		87 594.829(0.002)	3.629	141.501	
1	4	3	1	−	1	3	2	2	−	87 608.748(0.050)	87 608.748(0.002)	1.386	82.423	7
0	8	7	1	−	0	8	4	4	+		87 630.719(0.002)	0.262	21.919	
0	15	−11	4		0	15	−9	6			87 631.095(0.004)	0.365	75.656	
0	19	11	9		0	19	10	10		87 632.910(0.010)	87 632.910(0.001)	22.310	113.793	6
0	19	15	5	+	0	19	14	6	−	87 639.614(0.010)	87 639.617(0.002)	18.511	124.346	6
1	22	−14	9		1	22	−13	10		87 652.561(0.010)	87 652.568(0.004)	24.981	231.144	7
1	20	−15	6		1	20	−14	7		87 672.778(0.010)	87 672.769(0.004)	21.912	210.404	7
1	7	−4	4		1	6	4	2			87 681.011(0.006)	0.333	86.810	
0	22	14	9		0	22	−12	10			87 720.181(0.003)	3.419	156.365	
0	14	−14	0		0	14	−13	1		87 759.311(0.010)	87 759.310(0.003)	3.886	75.270	6
0	19	11	9	+	0	19	10	10	−	87 761.223(0.010)	87 761.223(0.001)	22.270	113.729	6
0	19	11	9		0	19	−9	10			87 807.995(0.001)	3.461	113.787	
0	4	−4	0		0	3	−3	0			87 822.720(0.001)	6.299	4.654	
0	6	2	4	+	0	5	3	3	+	87 823.675(0.010)	87 823.676(0.001)	6.370	8.842	6
0	18	−15	3		0	18	−14	4		87 854.056(0.010)	87 854.060(0.003)	15.130	113.975	6
1	17	8	9		1	17	−8	10			87 873.890(0.002)	1.776	162.737	
0	6	−2	4		0	5	3	3		87 930.495(0.010)	87 930.493(0.001)	6.511	9.160	6
0	18	9	9	−	0	18	9	10	+	87 985.330(0.010)	87 985.327(0.001)	3.440	100.791	6
0	19	11	9	+	0	19	9	10	−	88 043.883(0.010)	88 043.881(0.001)	3.588	113.719	6
0	21	16	6		0	21	15	7		88 046.021(0.010)	88 046.019(0.004)	22.274	149.643	6
0	18	9	9	−	0	18	8	10	+	88 082.472(0.010)	88 082.475(0.001)	20.119	100.787	6
0	18	−14	4		0	18	13	6			88 085.644(0.008)	0.346	111.037	
1	19	−11	9		1	19	−10	10		88 097.335(0.010)	88 097.332(0.002)	23.790	188.159	7
1	17	8	9		1	17	7	10		88 110.404(0.010)	88 110.402(0.002)	20.172	162.729	7
0	18	−9	9		0	18	9	10		88 214.389(0.010)	88 214.390(0.001)	3.294	100.878	6
1	4	3	1		1	3	2	1			88 258.874(0.002)	1.498	76.901	
0	18	−9	9		0	18	−8	10		88 271.940(0.010)	88 271.943(0.001)	20.145	100.876	6
1	10	2	8		1	10	−2	9			88 274.642(0.002)	0.453	97.620	
1	10	2	8		1	10	1	9		88 274.722(0.010)	88 274.713(0.002)	5.674	97.620	6
1	10	−3	8		1	10	−2	9		88 277.504(0.010)	88 277.495(0.002)	5.674	97.620	6
1	10	−3	8		1	10	1	9			88 277.566(0.002)	0.453	97.620	
0	21	−15	6		0	21	14	8			88 340.777(0.007)	3.736	147.036	
0	15	14	1	+	0	15	13	2	−	88 355.357(0.010)	88 355.356(0.002)	7.533	83.281	6
0	15	14	2	−	0	15	13	3	+	88 368.022(0.050)	88 368.008(0.002)	7.533	83.280	6
0	6	3	4		0	5	3	3		88 368.022(0.050)	88 368.052(0.001)	2.992	9.160	6
1	16	−14	3		1	16	−13	4		88 399.867(0.010)	88 399.868(0.004)	13.116	167.491	7
1	5	4	1	+	1	4	4	0	+		88 411.535(0.003)	0.369	85.579	
0	6	3	4	+	0	5	3	3	+	88 418.595(0.010)	88 418.599(0.001)	3.067	8.842	6
0	23	−13	10		0	23	−12	11		88 424.568(0.010)	88 424.569(0.002)	29.399	168.835	6
0	22	16	7	−	0	22	15	8	+	88 451.098(0.010)	88 451.105(0.003)	25.851	162.081	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	24	16	9	−	0	24	15	10	+	88 489.048(0.010)	88 489.047(0.003)	31.598	188.221	6
1	20	−12	9		1	20	−11	10		88 534.312(0.010)	88 534.313(0.002)	25.547	201.835	7
1	16	16	0	+	1	16	15	1	−	88 548.660(0.010)	88 548.651(0.006)	4.430	170.656	7
1	16	16	1	−	1	16	15	2	+	88 551.765(0.010)	88 551.750(0.006)	4.430	170.656	7
0	18	15	4		0	18	14	5		88 584.609(0.010)	88 584.614(0.003)	15.115	113.614	6
1	14	12	2	+	1	14	10	5	−		88 617.865(0.007)	0.241	143.935	
0	14	14	1		0	14	13	2		88 633.961(0.010)	88 633.960(0.003)	3.867	74.883	6
1	16	6	10		1	15	−9	7			88 701.970(0.013)	0.189	148.025	
1	11	8	3		1	11	−7	5			88 707.379(0.012)	0.704	114.519	
1	18	−10	9		1	18	−9	10		88 810.124(0.010)	88 810.115(0.002)	21.943	175.128	7
0	19	13	7	+	0	19	11	8	−		88 891.590(0.004)	1.785	118.760	
0	4	4	0	+	0	3	3	1	+	88 919.280(0.010)	88 919.277(0.001)	6.386	4.214	6
0	18	10	9		0	18	9	10		88 941.020(0.010)	88 941.018(0.001)	20.125	100.878	6
0	6	3	3	−	0	5	4	2	−	88 953.394(0.010)	88 953.387(0.001)	2.583	9.822	6
0	18	10	9		0	18	−8	10			88 998.571(0.001)	3.288	100.876	
0	21	16	5	+	0	21	15	6	−	89 012.597(0.010)	89 012.600(0.003)	22.313	149.939	6
0	18	10	9	−	0	18	9	10	+	89 083.598(0.010)	89 083.595(0.001)	20.083	100.791	6
1	25	16	9		1	25	15	10		89 085.995(0.010)	89 085.996(0.008)	30.843	278.487	7
1	9	1	8		1	9	*	9		89 087.434(0.010)	89 087.411(0.002)	3.185	90.562	
1	9	−2	8		1	9	*	9		89 087.787(0.010)	89 087.791(0.002)	3.185	90.562	
1	15	−14	2		1	15	−13	3		89 099.887(0.010)	89 099.893(0.005)	10.141	158.922	7
0	8	5	4	+	0	7	6	1	+		89 163.508(0.001)	0.548	19.112	
0	18	10	9	−	0	18	8	10	+	89 180.745(0.010)	89 180.743(0.001)	3.430	100.787	6
1	22	−16	7		1	22	−15	8		89 197.394(0.010)	89 197.374(0.006)	25.158	236.803	7
1	18	−13	6		1	18	−12	7			89 298.102(0.011)	3.124	183.401	
1	24	13	11		1	24	−13	12			89 391.924(0.012)	3.559	256.400	
0	18	−12	6		0	18	11	8		89 463.192(0.050)	89 463.202(0.003)	0.578	106.436	6
1	21	−13	9		1	21	−12	10			89 513.911(0.002)	26.794	216.163	
0	7	−1	6		0	6	2	5		89 516.958(0.010)	89 516.955(0.001)	11.491	10.632	6
0	7	2	6		0	6	2	5		89 518.953(0.010)	89 518.949(0.001)	4.122	10.632	6
1	14	−14	1		1	14	−13	2			89 530.384(0.007)	6.997	150.921	
0	7	−1	6		0	6	−1	5		89 531.185(0.010)	89 531.185(0.001)	4.122	10.631	6
0	7	2	6		0	6	−1	5		89 533.178(0.010)	89 533.179(0.001)	11.492	10.631	6
1	18	−10	9		1	18	8	10			89 577.295(0.002)	2.151	175.103	
1	8	*	8	+	1	7	*	7	+	89 615.795(0.050)	89 615.799(0.002)	43.291	90.110	6
0	7	1	6	−	0	6	2	5	−	89 653.277(0.010)	89 653.275(0.001)	11.345	10.301	6
0	7	2	6	−	0	6	2	5	−	89 656.432(0.010)	89 656.430(0.001)	4.244	10.301	6
1	15	−12	4		1	15	−11	5		89 674.053(0.010)	89 674.059(0.003)	10.717	152.663	7
0	7	1	6	−	0	6	1	5	−	89 674.250(0.010)	89 674.250(0.001)	4.244	10.300	6
0	7	2	6	−	0	6	1	5	−	89 677.405(0.010)	89 677.405(0.001)	11.346	10.300	6
0	26	15	11	−	0	26	15	12	+	89 684.472(0.010)	89 684.474(0.005)	4.705	216.165	6
1	19	−15	5		1	19	−14	6		89 695.729(0.010)	89 695.717(0.004)	19.210	199.517	7
0	22	14	9	−	0	22	12	10	+		89 736.660(0.003)	3.422	156.319	
0	6	−2	4		0	5	−2	3		89 756.195(0.010)	89 756.197(0.001)	3.059	9.099	6
1	13	13	0		1	13	−13	1			89 768.151(0.009)	3.635	143.478	
1	19	13	6		1	19	−12	8			89 785.655(0.003)	6.629	193.857	
0	8	6	2	+	0	8	3	5	−		89 810.873(0.001)	0.290	20.585	
1	25	15	10	−	1	25	14	11	+	89 839.116(0.010)	89 839.109(0.004)	37.959	276.260	7
0	17	−8	9		0	17	8	10		89 884.587(0.010)	89 884.585(0.001)	3.069	88.622	6
0	17	−8	9		0	17	−7	10		89 901.734(0.010)	89 901.735(0.001)	17.973	88.622	6
0	17	8	9	+	0	17	8	10	−	89 951.464(0.010)	89 951.463(0.001)	3.218	88.509	6
0	17	8	9	+	0	17	7	10	−	89 981.741(0.010)	89 981.740(0.001)	17.927	88.508	6
0	14	14	0	+	0	14	13	1	−	90 023.835(0.010)	90 023.832(0.003)	3.822	75.191	6
0	14	14	1	−	0	14	13	2	+	90 024.905(0.010)	90 024.905(0.003)	3.822	75.191	6
1	11	*	10	−	1	11	*	11	+	90 129.485(0.010)	90 129.482(0.003)	5.843	104.203	6
0	17	9	9		0	17	8	10		90 147.182(0.010)	90 147.185(0.001)	17.967	88.622	6
0	6	2	4	+	0	5	2	3	+	90 162.278(0.010)	90 162.276(0.001)	3.148	8.764	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	17	9	9		0	17	−7	10			90 164.335(0.001)	3.067	88.622	
0	6	3	4		0	5	−2	3		90 193.751(0.010)	90 193.755(0.001)	6.771	9.099	6
0	8	*	8		0	7	1	7		90 203.444(0.010)	90 203.439(0.001)	21.585	11.467	6
0	8	*	8		0	7	0	7		90 203.444(0.010)	90 203.456(0.001)	21.585	11.467	6
0	8	*	8	+	0	7	1	7	+	90 246.250(0.050)	90 246.236(0.001)	21.579	11.121	6
0	8	*	8	+	0	7	0	7	+	90 246.250(0.050)	90 246.266(0.001)	21.579	11.121	6
1	19	−11	9		1	19	9	10			90 258.224(0.003)	2.341	188.087	
1	17	−9	9		1	17	−8	10		90 282.043(0.010)	90 282.041(0.001)	20.029	162.737	7
0	18	15	3	−	0	18	14	4	+	90 286.202(0.010)	90 286.205(0.002)	14.863	113.903	6
0	10	5	6		0	9	−6	3			90 290.147(0.002)	0.197	29.065	
0	16	12	5		0	16	−10	6			90 356.497(0.006)	0.310	86.223	
0	17	9	9	+	0	17	8	10	−	90 365.108(0.010)	90 365.107(0.001)	17.916	88.509	6
0	17	9	9	+	0	17	7	10	−	90 395.392(0.010)	90 395.384(0.001)	3.215	88.508	6
1	9	7	2		1	9	5	4			90 500.535(0.008)	0.221	101.219	
1	24	−15	10		1	24	−14	11		90 502.683(0.010)	90 502.689(0.005)	28.770	259.849	7
1	17	−9	9		1	17	7	10			90 518.553(0.002)	1.772	162.729	
0	20	−15	5		0	20	14	7			90 532.095(0.009)	1.266	135.282	
0	18	15	4	+	0	18	14	5	−	90 532.933(0.010)	90 532.933(0.002)	14.858	113.894	6
0	17	−15	2		0	17	−14	3		90 537.499(0.010)	90 537.498(0.003)	11.415	104.118	6
1	8	0	8		1	7	−1	7		90 562.124(0.010)	90 562.115(0.002)	16.767	84.166	6
1	8	−1	8		1	7	−1	7		90 562.124(0.010)	90 562.141(0.002)	4.593	84.166	6
1	8	0	8		1	7	0	7		90 562.292(0.010)	90 562.270(0.002)	4.593	84.166	6
1	8	−1	8		1	7	0	7			90 562.297(0.002)	16.767	84.166	
1	6	2	4		1	5	−3	3		90 629.746(0.010)	90 629.742(0.003)	4.798	81.838	7
1	7	1	6		1	6	−2	5		90 742.374(0.010)	90 742.366(0.002)	11.532	83.394	7
1	7	−2	6		1	6	−2	5		90 752.621(0.010)	90 752.611(0.002)	3.549	83.394	6
0	6	3	4	+	0	5	2	3	+	90 757.204(0.010)	90 757.199(0.001)	6.662	8.764	6
1	19	7	12		1	18	−10	9			90 790.433(0.024)	0.202	178.091	
1	7	1	6		1	6	1	5		90 792.739(0.010)	90 792.733(0.002)	3.534	83.393	6
1	7	−2	6		1	6	1	5		90 802.979(0.010)	90 802.978(0.002)	11.537	83.393	6
0	10	8	3		0	10	−5	5			90 898.335(0.003)	0.290	33.736	
0	8	−6	2		0	7	−7	0			90 901.789(0.002)	0.252	20.884	
1	18	−15	4		1	18	−14	5		91 021.450(0.010)	91 021.435(0.004)	16.402	189.240	7
0	4	3	1	−	0	3	2	2	−	91 024.627(0.010)	91 024.623(0.001)	2.021	3.498	6
0	8	−6	2		0	8	−3	5			91 071.237(0.002)	0.196	20.878	
0	16	−7	9		0	16	7	10		91 104.923(0.050)	91 104.880(0.001)	2.808	77.029	6
0	16	−7	9		0	16	−6	10		91 109.459(0.010)	91 109.457(0.001)	15.833	77.029	6
0	22	12	10	+	0	22	12	11	−	91 139.447(0.010)	91 139.444(0.002)	4.142	153.279	6
0	16	8	9		0	16	7	10		91 190.674(0.010)	91 190.673(0.001)	15.832	77.029	6
0	16	8	9		0	16	−6	10			91 195.250(0.001)	2.807	77.029	
1	16	7	9		1	16	−7	10			91 231.717(0.002)	1.292	150.986	
1	18	12	6		1	18	−11	8			91 234.191(0.008)	1.961	180.750	
1	13	9	4		1	13	−8	6			91 254.846(0.011)	1.283	130.060	
0	6	−3	3		0	5	4	2		91 269.116(0.010)	91 269.119(0.002)	2.318	10.076	6
1	16	7	9		1	16	6	10		91 295.954(0.010)	91 295.951(0.001)	18.118	150.984	7
0	21	16	6	−	0	21	15	7	+	91 299.045(0.010)	91 299.050(0.003)	22.230	149.854	6
0	23	15	9		0	23	−13	10			91 339.865(0.005)	3.049	171.784	
0	17	−12	5		0	17	−10	7			91 354.782(0.004)	0.347	96.072	
0	16	7	9	−	0	16	7	10	+	91 372.168(0.010)	91 372.165(0.001)	2.957	76.887	6
0	16	7	9	−	0	16	6	10	+	91 380.621(0.010)	91 380.620(0.001)	15.776	76.887	6
0	21	14	8	−	0	21	12	9	+		91 402.901(0.004)	2.383	144.045	
1	18	13	5		1	18	−12	7			91 439.863(0.003)	14.954	183.401	
0	17	15	3		0	17	14	4		91 470.313(0.010)	91 470.315(0.003)	11.376	103.754	6
0	20	−16	4		0	20	−15	5		91 487.314(0.010)	91 487.316(0.004)	18.877	138.301	6
0	16	8	9	−	0	16	7	10	+	91 512.884(0.010)	91 512.885(0.001)	15.772	76.887	6
0	16	8	9	−	0	16	6	10	+	91 521.339(0.010)	91 521.340(0.001)	2.956	76.887	6
1	6	−3	4		1	5	−3	3		91 542.903(0.010)	91 542.903(0.002)	3.159	81.838	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	4	−3	1		0	3	2	2		91 619.722(0.010)	91 619.725(0.001)	1.620	3.834	6
0	26	15	11	−	0	26	14	12	+	91 630.327(0.010)	91 630.322(0.003)	34.352	216.100	6
0	22	12	10	+	0	22	11	11	−	91 646.680(0.010)	91 646.683(0.002)	26.938	153.262	6
0	8	6	3		0	7	7	1			91 733.144(0.003)	0.246	20.526	
0	8	6	2	+	0	7	7	1	+	91 759.672(0.050)	91 759.618(0.002)	0.277	20.520	6
1	21	−16	6		1	21	−15	7		91 772.470(0.010)	91 772.448(0.006)	22.503	224.751	7
1	17	−15	3		1	17	−14	4		91 881.324(0.010)	91 881.322(0.005)	13.488	179.552	7
0	10	5	6	+	0	9	6	3	+		91 891.379(0.002)	0.240	28.757	
1	12	*	10	+	1	12	*	11	−	91 954.378(0.010)	91 954.376(0.002)	11.359	111.912	6
0	18	13	6		0	18	−11	7			91 976.734(0.007)	0.581	107.969	
0	15	−6	9		0	15	6	10		92 033.240(0.010)	92 033.232(0.001)	2.513	66.102	6
0	15	−6	9		0	15	−5	10		92 034.309(0.010)	92 034.308(0.001)	13.709	66.102	6
1	16	−8	9		1	16	−7	10		92 055.943(0.010)	92 055.939(0.001)	18.075	150.986	7
0	15	7	9		0	15	6	10		92 058.316(0.010)	92 058.317(0.001)	13.708	66.102	6
0	15	7	9		0	15	−5	10			92 059.393(0.001)	2.513	66.102	
1	14	9	5		1	14	−8	7			92 083.947(0.008)	2.215	137.721	
1	16	−8	9		1	16	6	10			92 120.173(0.001)	1.293	150.984	
0	26	−15	11		0	26	15	12		92 183.785(0.010)	92 183.778(0.004)	4.488	216.119	6
0	22	−12	10		0	22	12	11		92 290.659(0.010)	92 290.644(0.002)	3.965	153.286	6
1	4	4	1	−	1	3	1	2	−	92 360.133(0.010)	92 360.135(0.003)	0.796	82.416	7
1	24	13	11		1	24	12	12		92 366.493(0.010)	92 366.487(0.003)	31.746	256.301	7
0	20	16	5		0	20	15	6		92 368.362(0.010)	92 368.360(0.004)	18.855	137.967	6
1	20	14	6		1	20	13	7		92 421.656(0.010)	92 421.649(0.005)	16.020	207.984	7
1	16	−15	2		1	16	−14	3		92 424.133(0.010)	92 424.150(0.006)	10.435	170.440	7
0	15	6	9	+	0	15	6	10	−	92 450.150(0.010)	92 450.143(0.001)	2.658	65.929	6
0	15	6	9	+	0	15	5	10	−	92 452.222(0.010)	92 452.222(0.001)	13.644	65.929	6
1	20	10	10		1	20	−10	11		92 455.237(0.050)	92 455.282(0.002)	2.715	198.576	7
0	25	16	10		0	25	15	11		92 469.015(0.010)	92 469.007(0.003)	33.171	201.962	6
1	10	8	2		1	9	−9	1			92 487.360(0.006)	0.597	108.480	
0	15	7	9	+	0	15	6	10	−	92 492.964(0.010)	92 492.964(0.001)	13.643	65.929	6
0	15	7	9	+	0	15	5	10	−	92 495.040(0.010)	92 495.043(0.001)	2.658	65.929	6
1	14	−12	3		1	14	−11	4		92 528.914(0.010)	92 528.912(0.003)	7.157	144.548	7
1	25	16	10	−	1	25	15	11	+	92 587.596(0.010)	92 587.612(0.004)	37.490	276.279	7
0	22	−12	10		0	22	−11	11		92 613.015(0.050)	92 613.045(0.002)	26.939	153.276	6
0	16	−15	1		0	16	−14	2		92 659.386(0.010)	92 659.410(0.003)	7.681	94.880	6
1	24	14	10	+	1	24	13	11	−		92 688.368(0.003)	35.263	259.495	
0	9	7	2	−	0	9	4	5	+		92 707.649(0.002)	0.461	26.711	
1	15	10	5		1	15	−9	7			92 743.570(0.009)	2.085	148.025	
1	15	−15	1		1	15	−14	2			92 747.876(0.009)	7.200	161.894	
0	14	−5	9		0	14	5	10		92 755.355(0.100)	92 755.221(0.001)	2.186	55.844	6
0	14	−5	9		0	14	−4	10		92 755.355(0.100)	92 755.438(0.001)	11.581	55.844	6
0	14	6	9		0	14	5	10			92 761.682(0.001)	11.581	55.844	
0	14	6	9		0	14	−4	10			92 761.899(0.001)	2.186	55.844	
1	14	12	2	+	1	14	9	5	−		92 798.282(0.009)	0.936	143.795	
1	6	2	4		1	5	2	3			92 808.387(0.002)	2.091	81.765	
0	24	15	10		0	24	14	11			92 809.409(0.002)	31.211	185.088	
1	7	5	3	+	1	6	6	0	+		92 869.250(0.004)	0.236	92.776	
1	14	14	0		1	14	−14	1			92 919.790(0.012)	3.739	153.907	
1	9	6	3		1	8	7	1			92 936.332(0.005)	1.205	99.440	
0	17	15	2	−	0	17	14	3	+		92 971.204(0.002)	11.216	104.067	
0	17	15	3	+	0	17	14	4	−	93 010.912(0.050)	93 010.851(0.002)	11.215	104.065	6
1	20	10	10		1	20	9	11			93 129.981(0.002)	24.479	198.554	
1	22	8	14		1	21	−11	11			93 192.912(0.040)	0.193	212.939	
0	4	−4	0		0	3	3	1			93 214.295(0.002)	0.234	4.474	
0	9	5	5		0	8	−6	2			93 245.837(0.002)	0.317	23.916	
0	24	15	10	+	0	24	14	11	−		93 273.045(0.002)	31.059	185.110	
0	14	5	9	−	0	14	5	10	+		93 294.433(0.001)	2.322	55.639	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	14	5	9	−	0	14	4	10	+		93 294.872(0.001)	11.512	55.639	
0	14	6	9	−	0	14	5	10	+		93 305.905(0.001)	11.512	55.639	
0	14	6	9	−	0	14	4	10	+		93 306.344(0.001)	2.322	55.639	
0	13	−4	9		0	13	4	10		93 320.310(0.050)	93 320.269(0.001)	1.826	46.258	6
0	13	−4	9		0	13	−3	10		93 320.310(0.050)	93 320.305(0.001)	9.429	46.258	6
0	13	5	9		0	13	4	10		93 321.664(0.050)	93 321.700(0.001)	9.429	46.258	6
0	13	5	9		0	13	−3	10		93 321.664(0.050)	93 321.736(0.001)	1.826	46.258	6
1	10	3	7		1	9	4	5			93 421.812(0.003)	0.203	99.999	
1	17	12	5		1	17	−11	7			93 422.444(0.011)	0.797	170.814	
1	13	*	10	−	1	13	*	11	+		93 436.954(0.002)	16.630	120.338	
0	4	3	1	−	0	3	1	2	−		93 478.974(0.001)	0.351	3.416	
0	26	−15	11		0	26	−14	12		93 525.254(0.050)	93 525.258(0.003)	34.214	216.074	6
1	6	3	3	−	1	5	4	2	−	93 543.380(0.010)	93 543.374(0.002)	7.374	88.212	7
1	15	6	9		1	15	−6	10			93 572.715(0.001)	0.850	139.881	
1	15	6	9		1	15	5	10		93 588.495(0.010)	93 588.489(0.001)	16.024	139.881	7
1	13	8	5		1	13	−7	7			93 604.972(0.006)	1.623	128.087	
0	4	−3	1		0	3	−1	2			93 608.796(0.001)	0.310	3.767	
1	6	−3	4		1	5	2	3		93 721.552(0.010)	93 721.549(0.003)	5.832	81.765	7
0	16	15	2		0	16	14	3		93 732.676(0.010)	93 732.676(0.003)	7.641	94.516	6
0	20	14	7		0	20	−12	8			93 746.575(0.008)	1.047	132.155	
0	22	−15	7		0	22	14	9			93 758.527(0.005)	1.782	159.291	
0	12	−3	9		0	12	*	10		93 760.426(0.010)	93 760.425(0.001)	8.662	37.348	6
0	12	4	9		0	12	*	10		93 760.684(0.010)	93 760.688(0.001)	8.662	37.348	6
1	20	−12	9		1	20	10	10			93 778.248(0.004)	2.319	201.660	
1	15	−7	9		1	15	−6	10		93 818.593(0.010)	93 818.585(0.001)	16.013	139.881	7
0	23	14	10		0	23	13	11		93 820.595(0.010)	93 820.590(0.001)	29.055	168.862	6
1	15	−7	9		1	15	5	10			93 834.359(0.001)	0.850	139.881	
0	20	16	4	+	0	20	15	5	−	93 912.882(0.010)	93 912.883(0.003)	18.564	138.267	6
1	16	11	5		1	16	−10	7			93 954.894(0.011)	1.427	159.037	
0	13	4	9	+	0	13	4	10	−	93 965.340(0.050)	93 965.281(0.001)	1.949	46.020	6
0	13	4	9	+	0	13	3	10	−	93 965.340(0.010)	93 965.358(0.001)	9.362	46.020	6
0	13	5	9	+	0	13	4	10	−	93 967.939(0.050)	93 967.923(0.001)	9.362	46.020	6
0	13	5	9	+	0	13	3	10	−	93 967.939(0.050)	93 967.999(0.001)	1.949	46.020	6
0	23	14	10	−	0	23	13	11	+	94 006.917(0.010)	94 006.911(0.002)	28.945	168.871	6
1	24	15	10	+	1	24	14	11	−	94 065.465(0.010)	94 065.468(0.003)	35.058	259.503	7
0	11	−2	9		0	11	*	10		94 099.123(0.050)	94 099.105(0.001)	5.955	29.114	6
0	11	3	9		0	11	*	10		94 099.123(0.050)	94 099.143(0.001)	5.955	29.114	6
1	6	−6	1		1	5	5	0			94 168.889(0.002)	1.449	86.550	
1	28	16	12		1	28	15	13		94 230.409(0.010)	94 230.417(0.007)	40.110	324.217	7
1	10	−7	4		1	10	4	6			94 331.868(0.006)	0.270	105.231	
0	10	*	9		0	10	*	10		94 354.969(0.010)	94 354.971(0.001)	6.177	21.560	6
0	15	−15	0		0	15	−14	1		94 358.844(0.010)	94 358.845(0.004)	3.891	86.244	6
0	9	−7	2		0	9	−4	5			94 432.155(0.002)	0.259	26.989	
0	20	16	5	−	0	20	15	6	+	94 462.952(0.010)	94 462.957(0.003)	18.551	138.247	6
1	19	−16	4		1	19	−15	5		94 469.484(0.010)	94 469.463(0.005)	16.857	202.509	7
0	12	3	9	−	0	12	3	10	+	94 499.323(0.010)	94 499.318(0.001)	1.536	37.074	6
0	12	3	9	−	0	12	2	10	+	94 499.323(0.010)	94 499.328(0.001)	7.170	37.074	6
0	12	4	9	−	0	12	3	10	+	94 499.819(0.010)	94 499.822(0.001)	7.170	37.074	6
0	12	4	9	−	0	12	2	10	+	94 499.819(0.010)	94 499.832(0.001)	1.536	37.074	6
1	17	11	6		1	17	−10	8			94 571.942(0.007)	2.370	168.381	
1	13	−12	2		1	13	−11	3		94 631.510(0.010)	94 631.510(0.004)	3.611	137.043	7
1	23	13	10	−	1	23	12	11	+	94 642.749(0.010)	94 642.746(0.002)	32.665	243.395	7
1	14	4	10	+	1	14	*	11	−	94 651.424(0.010)	94 651.414(0.002)	10.860	129.478	6
1	14	5	10	+	1	14	*	11	−	94 651.424(0.010)	94 651.438(0.002)	10.860	129.478	6
0	23	14	10		0	23	−12	11			94 653.048(0.002)	3.979	168.835	
1	23	−14	10		1	23	−13	11		94 709.108(0.010)	94 709.108(0.003)	29.024	243.579	7
0	19	−16	3		0	19	−15	4		94 710.797(0.010)	94 710.796(0.004)	15.161	127.287	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	24	15	10		0	24	−13	11			94 800.251(0.003)	3.903	185.021	
0	23	15	9	+	0	23	13	10	−		94 851.033(0.005)	3.017	171.727	
0	21	11	10	−	0	21	11	11	+	94 873.282(0.010)	94 873.282(0.001)	4.006	138.336	6
0	6	4	3	−	0	5	4	2	−	94 875.436(0.010)	94 875.435(0.001)	2.463	9.822	6
0	11	2	9	+	0	11	*	10	−	94 921.873(0.050)	94 921.840(0.001)	5.985	28.806	6
0	11	3	9	+	0	11	*	10	−	94 921.873(0.050)	94 921.914(0.001)	5.985	28.806	6
1	8	3	5		1	7	4	3		94 941.584(0.010)	94 941.581(0.003)	0.989	90.654	6
1	22	−9	14		1	21	10	11			94 995.074(0.040)	0.194	212.879	
1	6	5	1		1	5	−5	1			95 010.687(0.002)	2.683	84.929	
0	16	15	1	−	0	16	14	2	+	95 018.538(0.010)	95 018.536(0.003)	7.553	94.848	6
0	16	15	2	+	0	16	14	3	−	95 023.236(0.010)	95 023.233(0.003)	7.553	94.847	6
0	8	5	4		0	7	6	2			95 060.045(0.002)	0.313	19.181	
0	21	11	10	−	0	21	10	11	+		95 063.921(0.001)	24.583	138.330	
1	18	−16	3		1	18	−15	4		95 138.500(0.010)	95 138.491(0.006)	13.874	192.276	7
0	22	13	10		0	22	12	11		95 199.745(0.010)	95 199.747(0.001)	26.828	153.286	6
0	22	13	10	+	0	22	12	11	−	95 243.010(0.010)	95 243.008(0.001)	26.740	153.279	6
0	10	1	9	−	0	10	*	10	+	95 252.324(0.010)	95 252.323(0.001)	3.104	21.218	6
0	10	2	9	−	0	10	*	10	+	95 252.324(0.010)	95 252.331(0.001)	3.104	21.218	6
0	23	14	10	−	0	23	12	11	+		95 256.603(0.002)	4.098	168.829	
1	23	14	10	−	1	23	13	11	+	95 264.729(0.010)	95 264.730(0.002)	32.583	243.398	7
1	27	15	12		1	27	−15	13		95 274.125(0.010)	95 274.124(0.006)	3.358	305.503	7
1	26	−16	11		1	26	−15	12		95 330.360(0.010)	95 330.363(0.007)	33.001	290.930	7
1	25	9	16		1	24	−12	13			95 342.471(0.063)	0.182	252.559	
1	14	5	9		1	14	−5	10		95 348.407(0.050)	95 348.403(0.001)	0.587	129.428	7
1	14	5	9		1	14	4	10		95 351.974(0.010)	95 351.972(0.001)	13.722	129.428	7
1	6	4	3	−	1	5	3	2	−	95 362.598(0.010)	95 362.605(0.002)	7.877	88.164	7
0	9	5	5	+	0	8	6	2	+		95 377.437(0.001)	0.477	23.581	
1	8	−5	4		1	7	−6	2			95 402.611(0.008)	0.183	92.054	
1	14	−6	9		1	14	−5	10		95 413.796(0.010)	95 413.790(0.001)	13.720	129.428	7
1	14	−6	9		1	14	4	10			95 417.359(0.001)	0.587	129.428	
0	21	−11	10		0	21	11	11		95 452.874(0.010)	95 452.873(0.001)	3.818	138.361	6
1	19	−12	8		1	19	10	9			95 490.814(0.005)	1.302	190.671	
1	17	13	4		1	17	−12	6			95 497.617(0.003)	14.050	173.520	
0	5	4	2		0	4	−3	1		95 511.891(0.050)	95 511.836(0.002)	3.233	6.890	6
0	22	13	10		0	22	−11	11			95 522.148(0.001)	3.933	153.276	
0	15	15	1		0	15	14	2		95 528.755(0.010)	95 528.756(0.004)	3.865	85.883	6
1	17	−16	2		1	17	−15	3		95 553.354(0.010)	95 553.372(0.008)	10.738	182.617	7
0	21	−11	10		0	21	−10	11		95 568.402(0.010)	95 568.405(0.001)	24.635	138.357	6
1	15	5	10	−	1	15	*	11	+	95 632.810(0.050)	95 632.780(0.002)	13.339	139.329	6
1	15	6	10	−	1	15	*	11	+		95 632.890(0.002)	13.339	139.329	
0	22	13	10	+	0	22	11	11	−		95 750.247(0.001)	4.090	153.262	
1	25	−10	16		1	24	11	13			95 760.484(0.063)	0.182	252.545	
1	5	5	1	+	1	4	4	0	+	95 797.437(0.010)	95 797.435(0.003)	9.522	85.579	7
1	20	13	7		1	20	−12	9			95 818.188(0.004)	1.273	204.788	
1	8	−4	5		1	7	4	3			95 860.970(0.003)	0.316	90.654	
0	22	15	8		0	22	−13	9			95 881.908(0.008)	1.712	158.763	
1	15	15	0		1	15	−15	1			95 936.465(0.016)	3.843	164.988	
0	6	4	3		0	5	4	2		95 945.210(0.010)	95 945.207(0.001)	2.263	10.076	6
1	22	12	10	+	1	22	11	11	−	95 948.486(0.010)	95 948.485(0.002)	30.088	227.968	7
1	22	−13	10		1	22	−12	11			96 081.817(0.002)	27.978	227.939	
0	24	15	10	+	0	24	13	11	−		96 125.185(0.003)	3.967	185.015	
1	9	3	6		1	8	4	4		96 159.056(0.050)	96 159.093(0.003)	0.414	95.094	6
0	17	−11	6		0	17	10	8			96 172.137(0.003)	0.189	94.253	
1	4	−4	1		1	3	−3	1			96 193.106(0.003)	4.098	77.729	
1	22	13	10	+	1	22	12	11	−	96 202.855(0.010)	96 202.883(0.002)	30.058	227.969	7
1	7	2	5	+	1	6	3	4	+	96 321.471(0.010)	96 321.497(0.002)	13.119	90.332	7
1	7	3	5	+	1	6	2	4	+	96 346.300(0.010)	96 346.336(0.002)	13.124	90.331	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	16	6	10	+	1	16	5	11	−	96 397.286(0.010)	96 397.314(0.002)	15.772	149.890	7
1	16	7	10	+	1	16	6	11	−	96 397.708(0.010)	96 397.739(0.002)	15.772	149.890	7
1	11	10	1		1	10	10	0			96 473.070(0.008)	0.195	118.802	
0	25	14	11	+	0	25	14	12	−	96 507.667(0.050)	96 507.701(0.003)	4.633	198.579	6
0	15	15	0	−	0	15	14	1	+	96 634.440(0.010)	96 634.456(0.004)	3.830	86.228	6
0	15	15	1	+	0	15	14	2	−	96 634.799(0.010)	96 634.825(0.004)	3.830	86.228	6
0	6	5	2	+	0	5	5	1	+	96 642.606(0.050)	96 642.636(0.001)	1.419	10.855	6
1	8	7	1		1	8	5	3			96 646.668(0.007)	0.210	96.216	
1	21	−12	10		1	21	−11	11		96 669.152(0.010)	96 669.148(0.002)	26.126	212.939	7
0	9	7	3	+	0	8	8	0	+		96 680.474(0.002)	0.237	26.490	
1	6	4	2	+	1	5	5	1	+	96 682.641(0.010)	96 682.634(0.005)	2.496	88.774	7
0	21	12	10		0	21	11	11		96 694.766(0.010)	96 694.767(0.001)	24.600	138.361	6
1	23	12	11		1	23	−12	12		96 695.850(0.010)	96 695.851(0.003)	3.449	240.078	7
1	14	10	4		1	14	−9	6			96 699.074(0.012)	0.588	139.707	
0	21	12	10	−	0	21	11	11	+	96 707.221(0.010)	96 707.225(0.001)	24.515	138.336	6
1	6	3	3		1	5	−4	2			96 734.007(0.006)	0.631	82.619	
1	21	11	10	−	1	21	10	11	+	96 771.817(0.010)	96 771.816(0.002)	27.636	213.222	7
1	13	4	9		1	13	−4	10			96 777.537(0.001)	0.520	119.636	
1	13	4	9		1	13	3	10		96 778.260(0.010)	96 778.256(0.001)	11.171	119.636	7
1	13	−5	9		1	13	−4	10		96 793.297(0.010)	96 793.293(0.002)	11.171	119.636	7
1	13	−5	9		1	13	3	10			96 794.012(0.002)	0.520	119.636	
0	21	12	10		0	21	−10	11			96 810.299(0.001)	3.808	138.357	
1	6	4	2		1	5	4	1		96 829.549(0.010)	96 829.544(0.002)	3.482	83.580	6
1	19	−8	12		1	18	9	9			96 832.581(0.024)	0.212	177.890	
1	21	12	10	−	1	21	11	11	+	96 868.876(0.010)	96 868.875(0.002)	27.624	213.222	7
0	21	12	10	−	0	21	10	11	+		96 897.864(0.001)	3.987	138.330	
1	17	7	10	−	1	17	6	11	+	96 948.939(0.010)	96 948.939(0.002)	18.165	161.156	7
1	17	8	10	−	1	17	7	11	+	96 950.446(0.010)	96 950.446(0.002)	18.165	161.156	7
1	19	9	10		1	19	−9	11		97 084.348(0.010)	97 084.348(0.002)	2.310	184.849	7
1	11	−6	6		1	10	7	3			97 091.331(0.008)	0.490	109.631	
1	11	8	3		1	11	6	5			97 109.780(0.008)	0.318	114.238	
0	19	−13	6		0	19	−11	8			97 153.916(0.003)	0.233	118.906	
0	19	16	3	+	0	19	15	4	−	97 216.518(0.010)	97 216.518(0.003)	14.895	127.273	6
1	20	10	10	+	1	20	9	11	−	97 226.713(0.010)	97 226.713(0.002)	25.312	199.163	7
0	18	−16	2		0	18	−15	3		97 255.953(0.010)	97 255.953(0.004)	11.437	116.906	6
1	20	11	10	+	1	20	10	11	−	97 262.790(0.010)	97 262.788(0.002)	25.307	199.163	7
1	18	8	10	+	1	18	7	11	−	97 282.250(0.010)	97 282.249(0.002)	20.544	173.126	7
1	18	9	10	+	1	18	8	11	−	97 286.942(0.010)	97 286.940(0.002)	20.544	173.126	7
1	19	9	10		1	19	8	11		97 304.001(0.010)	97 303.999(0.002)	22.282	184.842	7
0	21	−14	7		0	21	13	9			97 310.335(0.003)	0.698	144.432	
0	7	−4	3		0	6	−5	1		97 316.512(0.010)	97 316.515(0.002)	0.642	14.528	6
1	8	4	4		1	7	5	2			97 318.714(0.008)	1.731	91.848	
0	19	16	4	−	0	19	15	5	+	97 321.366(0.010)	97 321.364(0.003)	14.894	127.270	6
0	25	14	11	+	0	25	13	12	−	97 347.312(0.010)	97 347.308(0.002)	31.576	198.551	6
1	22	15	7		1	22	14	8		97 358.683(0.010)	97 358.679(0.005)	23.520	234.876	7
1	19	9	10	−	1	19	8	11	+	97 382.995(0.010)	97 382.992(0.002)	22.950	185.796	7
1	19	10	10	−	1	19	9	11	+	97 396.281(0.010)	97 396.282(0.002)	22.948	185.796	7
0	20	10	10	+	0	20	10	11	−	97 442.792(0.010)	97 442.789(0.001)	3.827	124.044	6
1	12	9	3		1	12	−8	5			97 472.124(0.014)	0.232	122.813	
1	28	10	18		1	27	−13	15			97 496.452(0.095)	0.170	296.934	
0	20	10	10	+	0	20	9	11	−	97 508.894(0.010)	97 508.892(0.001)	22.331	124.042	6
1	28	−11	18		1	27	12	15			97 579.739(0.095)	0.171	296.931	
1	4	2	2	+	1	3	1	3	+	97 608.924(0.010)	97 608.929(0.003)	0.368	81.713	6
0	12	−10	2		0	12	−8	4			97 610.535(0.004)	0.174	50.113	
0	20	−10	10		0	20	10	11		97 647.511(0.010)	97 647.505(0.001)	3.631	124.090	6
0	12	10	3	−	0	12	8	4	+	97 649.792(0.050)	97 649.814(0.003)	0.229	49.847	6
1	12	7	5		1	12	−6	7			97 683.192(0.004)	0.808	119.107	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	20	−10	10		0	20	−9	11		97 685.662(0.010)	97 685.662(0.001)	22.410	124.089	6
1	20	−11	10		1	20	−10	11		97 699.223(0.010)	97 699.217(0.002)	24.147	198.576	7
0	6	−5	1		0	5	−5	0		97 803.499(0.010)	97 803.498(0.001)	1.393	11.266	6
1	12	3	9		1	12	−3	10			97 958.601(0.002)	0.531	110.511	
1	12	3	9		1	12	2	10		97 958.721(0.010)	97 958.718(0.002)	8.461	110.511	6
1	12	−4	9		1	12	−3	10		97 961.980(0.010)	97 961.961(0.002)	8.461	110.511	6
1	12	−4	9		1	12	2	10			97 962.078(0.002)	0.531	110.511	
1	23	12	11		1	23	11	12		98 073.036(0.010)	98 073.048(0.002)	29.020	240.032	7
0	6	5	2		0	5	5	1		98 089.950(0.010)	98 089.943(0.001)	1.376	10.987	6
0	25	−14	11		0	25	14	12			98 125.364(0.002)	4.414	198.543	
0	20	11	10		0	20	10	11			98 134.237(0.001)	22.399	124.090	
0	20	11	10		0	20	−9	11			98 172.394(0.001)	3.628	124.089	
0	20	11	10	+	0	20	10	11	−	98 194.443(0.010)	98 194.440(0.001)	22.308	124.044	6
1	4	3	2	+	1	3	0	3	+	98 226.625(0.010)	98 226.608(0.002)	0.357	81.713	7
1	8	1	7	−	1	7	2	6	−	98 250.294(0.010)	98 250.293(0.002)	18.271	91.961	6
1	8	2	7	−	1	7	2	6	−	98 250.294(0.010)	98 250.308(0.002)	0.484	91.961	6
1	8	1	7	−	1	7	1	6	−	98 250.407(0.010)	98 250.393(0.002)	0.484	91.961	6
1	8	2	7	−	1	7	1	6	−	98 250.407(0.010)	98 250.409(0.002)	18.271	91.961	6
0	20	11	10	+	0	20	9	11	−	98 260.545(0.010)	98 260.543(0.001)	3.821	124.042	6
1	20	−11	10		1	20	9	11			98 373.915(0.002)	2.670	198.554	
1	15	12	3	+	1	15	10	6	−		98 390.076(0.004)	0.384	152.214	
1	21	−12	10		1	21	10	11			98 467.790(0.003)	2.870	212.879	
0	18	16	3		0	18	15	4		98 509.270(0.010)	98 509.265(0.004)	11.373	116.569	6
0	5	4	2	−	0	4	3	1	−	98 582.920(0.010)	98 582.918(0.001)	5.466	6.534	6
0	6	5	1	−	0	5	5	0	−	98 626.454(0.010)	98 626.451(0.001)	1.429	10.864	6
1	16	10	6		1	16	−9	8			98 629.360(0.006)	1.959	156.714	
0	25	−14	11		0	25	−13	12		98 677.034(0.010)	98 677.030(0.002)	31.591	198.524	6
0	9	6	4		0	8	−7	1		98 737.041(0.050)	98 737.061(0.003)	0.188	25.203	6
1	27	15	12		1	27	14	13		98 776.417(0.010)	98 776.413(0.004)	36.953	305.386	7
1	15	6	9		1	14	−9	6			98 782.478(0.012)	0.170	139.707	
1	12	*	11	−	1	12	*	12	+	98 822.631(0.010)	98 822.624(0.003)	5.860	108.616	6
1	16	13	3		1	16	−12	5			98 856.153(0.003)	10.614	164.276	
1	6	3	3		1	5	3	2		98 906.340(0.050)	98 906.321(0.003)	1.468	82.546	6
1	11	2	9		1	11	−2	10			98 941.810(0.002)	0.484	102.061	
1	11	2	9		1	11	1	10		98 941.828(0.010)	98 941.823(0.002)	5.694	102.061	7
1	11	−3	9		1	11	−2	10		98 942.399(0.010)	98 942.393(0.002)	5.694	102.061	6
1	11	−3	9		1	11	1	10			98 942.406(0.002)	0.484	102.061	
1	13	12	1	+	1	13	9	4	−		99 082.290(0.013)	0.364	135.748	
1	27	16	11	+	1	27	15	12	−	99 119.632(0.010)	99 119.626(0.005)	40.600	308.418	7
1	19	−10	10		1	19	−9	11		99 245.240(0.010)	99 245.240(0.001)	22.172	184.849	7
0	19	−9	10		0	19	9	11		99 250.835(0.010)	99 250.835(0.001)	3.407	110.476	6
0	19	−9	10		0	19	−8	11		99 262.372(0.010)	99 262.374(0.001)	20.234	110.476	6
1	14	11	3	−	1	14	9	6	+		99 283.362(0.004)	0.249	142.305	
0	19	9	10	−	0	19	9	11	+	99 296.803(0.050)	99 296.799(0.001)	3.608	110.407	6
0	17	−16	1		0	17	−15	2		99 310.261(0.010)	99 310.256(0.004)	7.694	107.138	6
0	19	9	10	−	0	19	8	11	+	99 317.812(0.010)	99 317.809(0.001)	20.138	110.406	6
0	9	7	2	−	0	8	8	1	−		99 328.640(0.003)	0.242	26.490	
0	7	−2	5		0	6	3	4		99 341.571(0.010)	99 341.570(0.001)	8.911	12.108	6
0	7	3	5		0	6	3	4		99 424.727(0.010)	99 424.723(0.001)	3.682	12.108	6
0	19	10	10		0	19	9	11		99 425.920(0.010)	99 425.919(0.001)	20.231	110.476	6
0	19	10	10		0	19	−8	11			99 437.458(0.001)	3.406	110.476	
1	19	−10	10		1	19	8	11			99 464.891(0.002)	2.298	184.842	
0	7	2	5	+	0	6	3	4	+	99 487.502(0.010)	99 487.498(0.001)	8.758	11.791	6
0	9	−7	2		0	8	−8	0			99 536.630(0.003)	0.240	26.819	
1	13	−6	8		1	12	7	5			99 573.344(0.007)	0.384	122.365	
0	19	10	10	−	0	19	9	11	+	99 579.461(0.010)	99 579.457(0.001)	20.130	110.407	6
0	19	10	10	−	0	19	8	11	+		99 600.467(0.001)	3.607	110.406	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	7	3	5	+	0	6	3	4	+	99 607.997(0.010)	99 607.993(0.001)	3.779	11.791	6
1	6	5	2	+	1	5	5	1	+		99 635.949(0.003)	0.230	88.774	
0	18	16	2	+	0	18	15	3	−	99 689.286(0.010)	99 689.271(0.003)	11.245	116.915	6
0	18	16	3	−	0	18	15	4	+	99 704.861(0.010)	99 704.848(0.003)	11.245	116.914	6
1	19	12	7		1	19	−11	9			99 759.604(0.005)	0.606	191.098	
1	10	1	9		1	10	*	10			99 759.663(0.002)	3.202	94.293	
1	10	−2	9		1	10	*	10			99 759.734(0.002)	3.202	94.293	
0	7	−2	5		0	6	−2	4		99 779.138(0.050)	99 779.129(0.001)	3.692	12.093	6
1	15	11	4		1	15	−10	6			99 799.491(0.013)	0.209	150.146	
0	7	3	5		0	6	−2	4		99 862.289(0.010)	99 862.281(0.001)	8.950	12.093	6
1	5	5	0	−	1	4	4	1	−	100 009.742(0.010)	100 009.737(0.002)	8.535	85.497	7
0	10	8	2	+	0	10	5	5	−		100 024.342(0.002)	0.497	33.466	
1	6	−5	2		1	5	4	1			100 046.203(0.012)	0.288	83.580	
1	14	11	3	−	1	14	8	6	+		100 047.650(0.004)	0.453	142.279	
1	15	12	3	+	1	15	9	6	−		100 078.849(0.006)	0.835	152.158	
0	7	2	5	+	0	6	2	4	+	100 082.430(0.010)	100 082.422(0.001)	3.792	11.771	6
1	6	−4	3		1	5	−4	2		100 103.813(0.010)	100 103.800(0.003)	2.510	82.619	6
0	8	−1	7		0	7	2	6		100 168.708(0.010)	100 168.706(0.001)	13.704	13.618	6
0	8	2	7		0	7	2	6		100 168.969(0.010)	100 168.965(0.001)	4.800	13.618	6
0	8	−1	7		0	7	−1	6		100 170.695(0.010)	100 170.699(0.001)	4.800	13.618	6
0	8	2	7		0	7	−1	6		100 170.959(0.010)	100 170.959(0.001)	13.704	13.618	6
1	19	14	5		1	19	13	6		100 174.224(0.010)	100 174.218(0.003)	15.113	196.851	7
0	7	3	5	+	0	6	2	4	+	100 202.920(0.010)	100 202.916(0.001)	8.805	11.771	6
0	14	−11	3		0	14	−9	5			100 206.197(0.005)	0.261	66.933	
1	22	−13	10		1	22	11	11			100 235.897(0.004)	2.880	227.800	
1	18	8	10		1	18	−8	11			100 283.913(0.001)	1.794	171.758	
1	9	*	9	+	1	8	*	8	+	100 286.615(0.010)	100 286.618(0.002)	49.086	93.099	6
0	8	1	7	−	0	7	2	6	−	100 306.540(0.010)	100 306.534(0.001)	13.517	13.292	6
0	8	2	7	−	0	7	2	6	−	100 306.985(0.010)	100 306.978(0.001)	4.963	13.292	6
0	14	11	4	+	0	14	9	5	−		100 309.109(0.004)	0.388	66.694	
0	8	1	7	−	0	7	1	6	−	100 309.699(0.010)	100 309.689(0.001)	4.963	13.292	6
0	8	2	7	−	0	7	1	6	−	100 310.137(0.010)	100 310.133(0.001)	13.517	13.292	6
1	18	8	10		1	18	7	11		100 346.255(0.010)	100 346.256(0.001)	20.274	171.755	7
1	21	−13	9		1	21	11	10			100 402.216(0.005)	2.210	215.800	
0	4	4	0	+	0	3	2	1	+		100 438.423(0.001)	0.186	3.829	
0	18	−8	10		0	18	8	11		100 478.633(0.010)	100 478.638(0.001)	3.150	97.525	6
0	18	−8	10		0	18	−7	11		100 481.807(0.010)	100 481.803(0.001)	18.090	97.524	6
0	18	9	10		0	18	8	11		100 536.193(0.010)	100 536.191(0.001)	18.089	97.525	6
0	18	9	10		0	18	−7	11			100 539.356(0.001)	3.150	97.524	
1	25	−15	11		1	25	−14	12		100 544.102(0.010)	100 544.100(0.004)	31.930	273.356	7
0	17	16	2		0	17	15	3		100 672.259(0.010)	100 672.258(0.004)	7.640	106.805	6
0	18	8	10	+	0	18	8	11	−	100 706.738(0.010)	100 706.729(0.001)	3.353	97.428	6
0	18	8	10	+	0	18	7	11	−	100 712.794(0.010)	100 712.793(0.001)	17.982	97.428	6
1	24	16	8		1	24	15	9		100 783.669(0.050)	100 783.647(0.007)	27.678	264.251	7
0	18	9	10	+	0	18	8	11	−	100 803.894(0.050)	100 803.876(0.001)	17.980	97.428	6
0	18	9	10	+	0	18	7	11	−	100 809.934(0.010)	100 809.940(0.001)	3.352	97.428	6
0	6	−3	3		0	5	−3	2		100 811.955(0.010)	100 811.943(0.001)	3.076	9.757	6
0	9	*	9		0	8	*	8		100 855.437(0.010)	100 855.430(0.001)	48.977	14.476	6
0	9	*	9	+	0	8	*	8	+	100 897.459(0.010)	100 897.454(0.001)	48.964	14.131	6
1	13	*	11	+	1	13	*	12	−	100 950.747(0.010)	100 950.740(0.002)	11.428	116.971	6
0	16	−16	0		0	16	−15	1		100 982.790(0.010)	100 982.768(0.005)	3.895	97.971	6
0	7	4	3	+	0	6	5	2	+	101 027.893(0.050)	101 027.871(0.002)	1.725	14.079	6
1	18	−9	10		1	18	−8	11		101 051.098(0.010)	101 051.093(0.001)	20.240	171.758	7
0	9	7	3		0	8	8	1			101 077.461(0.003)	0.238	26.434	
1	18	−9	10		1	18	7	11			101 113.436(0.001)	1.792	171.755	
1	16	13	3	−	1	16	11	6	+		101 143.154(0.006)	0.417	162.797	
1	5	2	3		1	4	−2	3			101 163.401(0.003)	0.556	78.390	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	18	7	11		1	17	−10	8			101 164.658(0.020)	0.228	168.381	
0	6	3	3	−	0	5	3	2	−		101 200.022(0.001)	3.199	9.414	
1	9	*	9		1	8	−1	8			101 200.299(0.002)	24.284	87.186	
1	9	*	9		1	8	0	8		101 200.323(0.050)	101 200.325(0.002)	24.284	87.186	
0	24	13	11	−	0	24	13	12	+		101 226.444(0.002)	4.536	181.638	
0	26	16	11	−	0	26	15	12	+	101 287.151(0.010)	101 287.141(0.003)	33.467	216.165	6
1	16	−7	10		1	15	8	7			101 300.276(0.013)	0.258	147.607	
1	8	1	7		1	7	−2	6		101 314.018(0.010)	101 314.011(0.002)	13.899	86.421	7
1	8	−2	7		1	7	−2	6		101 316.013(0.010)	101 316.006(0.002)	4.148	86.421	6
1	8	1	7		1	7	1	6		101 324.269(0.010)	101 324.255(0.002)	4.146	86.421	6
1	8	−2	7		1	7	1	6		101 326.257(0.010)	101 326.251(0.002)	13.900	86.421	6
1	11	−8	4		1	11	5	6			101 359.919(0.008)	0.452	112.785	
1	15	13	2		1	15	−12	4			101 380.865(0.003)	7.108	155.654	
1	10	−8	3		1	10	5	5			101 434.624(0.010)	0.189	106.796	
0	17	−7	10		0	17	7	11		101 448.709(0.010)	101 448.715(0.001)	2.863	85.238	6
0	17	−7	10		0	17	−6	11		101 449.496(0.010)	101 449.492(0.001)	15.963	85.238	6
0	17	8	10		0	17	7	11		101 465.868(0.010)	101 465.865(0.001)	15.963	85.238	6
0	17	8	10		0	17	−6	11			101 466.642(0.001)	2.863	85.238	
1	7	2	5		1	6	−3	4		101 499.587(0.010)	101 499.580(0.002)	8.083	84.891	7
0	24	13	11	−	0	24	12	12	+	101 564.736(0.010)	101 564.743(0.001)	29.109	181.627	6
1	8	−5	4		1	7	5	2			101 587.366(0.008)	0.200	91.848	
0	11	9	3		0	11	−6	5			101 606.004(0.004)	0.257	41.099	
0	17	16	1	+	0	17	15	2	−	101 643.144(0.010)	101 643.129(0.004)	7.572	107.168	6
0	17	16	2	−	0	17	15	3	+	101 644.857(0.050)	101 644.844(0.004)	7.572	107.168	6
0	10	−8	2		0	10	−5	5			101 656.881(0.003)	0.254	33.736	
0	16	12	5	−	0	16	10	6	+		101 697.556(0.005)	0.611	86.009	
1	10	7	3		1	9	8	1			101 697.813(0.005)	1.144	106.239	
1	7	−3	5		1	6	−3	4		101 756.574(0.010)	101 756.562(0.002)	3.451	84.891	6
0	16	−12	4		0	16	−10	6			101 785.437(0.005)	0.353	86.223	
0	17	7	10	−	0	17	7	11	+	101 823.018(0.010)	101 823.012(0.001)	3.063	85.111	6
0	17	7	10	−	0	17	6	11	+	101 824.585(0.010)	101 824.580(0.001)	15.848	85.111	6
0	17	8	10	−	0	17	7	11	+	101 853.294(0.010)	101 853.289(0.001)	15.848	85.111	6
0	17	8	10	−	0	17	6	11	+	101 854.870(0.010)	101 854.858(0.001)	3.063	85.111	6
1	13	9	4		1	13	7	6			101 937.262(0.008)	0.430	129.704	
1	26	14	12		1	26	−14	13		101 942.967(0.050)	101 942.972(0.004)	3.675	287.225	7
1	9	−6	4		1	8	−7	2			101 961.987(0.008)	0.197	98.022	
1	26	15	11	−	1	26	14	12	+	102 034.479(0.010)	102 034.475(0.003)	38.020	290.272	7
0	24	−13	11		0	24	13	12		102 177.485(0.010)	102 177.489(0.002)	4.304	181.613	6
0	16	−6	10		0	16	6	11		102 226.966(0.050)	102 227.006(0.001)	2.546	73.619	6
0	16	−6	10		0	16	−5	11		102 227.176(0.010)	102 227.174(0.001)	13.838	73.619	6
1	20	14	6		1	20	−13	8			102 230.261(0.008)	5.517	207.657	
0	16	7	10		0	16	6	11		102 231.590(0.010)	102 231.583(0.001)	13.838	73.619	6
0	16	7	10		0	16	−5	11			102 231.751(0.001)	2.546	73.619	
0	18	13	6	+	0	18	11	7	−		102 254.219(0.005)	0.919	107.784	
0	9	8	1	+	0	9	5	4	−		102 275.760(0.003)	0.172	27.925	
1	6	−4	3		1	5	3	2		102 276.131(0.010)	102 276.114(0.005)	3.533	82.546	7
1	5	3	2		1	4	−3	2			102 280.182(0.004)	2.095	79.135	
1	22	11	11		1	22	−11	12		102 288.661(0.050)	102 288.671(0.002)	3.206	224.388	7
0	24	−13	11		0	24	−12	12		102 389.083(0.010)	102 389.075(0.001)	29.196	181.606	6
1	7	2	5		1	6	2	4		102 412.753(0.010)	102 412.741(0.002)	3.118	84.861	6
0	16	16	1		0	16	15	2		102 418.070(0.010)	102 418.056(0.005)	3.863	97.643	6
0	20	14	7	−	0	20	12	8	+		102 479.500(0.005)	1.329	132.002	
0	25	15	11	+	0	25	14	12	−	102 516.750(0.010)	102 516.739(0.002)	31.251	198.579	6
0	25	15	11		0	25	14	12		102 523.328(0.010)	102 523.320(0.002)	31.405	198.543	6
1	17	7	10		1	17	−7	11			102 639.089(0.001)	1.224	159.305	
1	14	*	11	−	1	14	*	12	+	102 646.830(0.010)	102 646.829(0.002)	16.768	126.054	6
1	17	7	10		1	17	6	11		102 654.786(0.010)	102 654.778(0.001)	18.328	159.305	7

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	7	−3	5		1	6	2	4		102 669.735(0.010)	102 669.723(0.002)	8.315	84.861	7
0	6	−4	2		0	5	−4	1		102 709.242(0.050)	102 709.231(0.001)	2.468	10.329	6
0	16	6	10	+	0	16	6	11	−	102 728.022(0.010)	102 728.031(0.001)	2.740	73.460	6
0	16	6	10	+	0	16	5	11	−	102 728.392(0.010)	102 728.388(0.001)	13.721	73.460	6
0	16	7	10	+	0	16	6	11	−	102 736.493(0.010)	102 736.486(0.001)	13.721	73.460	6
0	16	7	10	+	0	16	5	11	−	102 736.838(0.010)	102 736.843(0.001)	2.740	73.460	6
0	9	6	4	−	0	8	7	1	−		102 809.695(0.002)	0.611	24.842	
1	13	10	3	+	1	13	7	6	−		102 837.009(0.004)	0.207	133.062	
1	22	11	11		1	22	10	12		102 840.700(0.010)	102 840.697(0.002)	26.554	224.370	7
0	15	−5	10		0	15	5	11		102 853.769(0.010)	102 853.737(0.001)	2.201	62.671	6
0	15	−5	10		0	15	−4	11		102 853.769(0.010)	102 853.768(0.001)	11.700	62.671	6
0	15	6	10		0	15	5	11		102 854.822(0.010)	102 854.813(0.001)	11.700	62.671	6
0	15	6	10		0	15	−4	11		102 854.822(0.010)	102 854.844(0.001)	2.201	62.671	6
1	17	−8	10		1	17	−7	11		102 875.611(0.010)	102 875.601(0.001)	18.319	159.305	7
1	11	9	2		1	10	−10	1			102 884.281(0.007)	0.565	116.195	
1	17	−8	10		1	17	6	11			102 891.291(0.001)	1.224	159.305	
0	22	15	8	+	0	22	13	9	−		102 894.716(0.006)	1.849	158.648	
1	4	2	2		1	3	−1	3		102 974.688(0.050)	102 974.716(0.003)	0.377	75.624	7
1	23	−14	10		1	23	12	11			102 980.334(0.005)	2.732	243.303	
0	25	15	11		0	25	−13	12			103 074.986(0.002)	4.362	198.524	
0	5	−4	1		0	4	−3	1			103 106.641(0.001)	2.219	6.890	
0	18	−13	5		0	18	−11	7			103 160.766(0.006)	0.417	107.969	
1	26	16	11	−	1	26	15	12	+	103 193.874(0.010)	103 193.873(0.003)	37.864	290.278	7
0	16	16	0	+	0	16	15	1	−	103 217.314(0.010)	103 217.301(0.004)	3.837	98.017	6
0	16	16	1	−	0	16	15	2	+	103 217.442(0.010)	103 217.426(0.004)	3.837	98.017	6
1	14	13	1		1	14	−12	3			103 297.714(0.004)	3.590	147.635	
1	4	3	1		1	3	−2	2			103 324.079(0.006)	0.412	76.398	
1	5	−3	3		1	4	−2	3			103 342.047(0.002)	0.697	78.390	
0	25	15	11	+	0	25	13	12	−		103 356.345(0.002)	4.549	198.551	
0	14	−4	10		0	14	*	11		103 356.455(0.010)	103 356.455(0.001)	11.358	52.396	6
0	14	5	10		0	14	*	11		103 356.679(0.010)	103 356.673(0.001)	11.358	52.396	6
1	12	−6	7		1	11	7	4			103 387.259(0.007)	0.542	115.658	
1	24	−14	11		1	24	−13	12		103 399.803(0.010)	103 399.776(0.011)	29.911	256.400	7
0	4	−2	2		0	3	1	3		103 412.232(0.010)	103 412.261(0.001)	0.364	2.986	6
0	6	4	2	+	0	5	4	1	+	103 468.311(0.010)	103 468.298(0.001)	2.703	9.966	6
0	15	5	10	−	0	15	5	11	+	103 469.475(0.050)	103 469.421(0.001)	2.383	62.478	6
0	15	5	10	−	0	15	4	11	+	103 469.475(0.050)	103 469.491(0.001)	11.585	62.478	6
0	15	6	10	−	0	15	5	11	+	103 471.515(0.050)	103 471.500(0.001)	11.585	62.478	6
0	15	6	10	−	0	15	4	11	+	103 471.515(0.050)	103 471.570(0.001)	2.383	62.478	6
1	21	14	7		1	21	−13	9			103 514.515(0.007)	5.921	219.149	
0	4	2	2	+	0	3	1	3	+		103 540.809(0.001)	0.374	2.634	
0	11	9	2	−	0	11	7	5	+		103 563.841(0.002)	0.181	41.120	
1	18	−12	7		1	18	10	8			103 577.143(0.007)	0.228	179.946	
1	11	6	5		1	11	−5	7			103 617.321(0.004)	0.286	110.782	
0	13	−3	10		0	13	*	11		103 756.089(0.010)	103 756.064(0.001)	8.732	42.797	6
0	13	4	10		0	13	*	11		103 756.089(0.010)	103 756.100(0.001)	8.732	42.797	6
1	4	4	0		1	3	3	0		103 811.021(0.010)	103 811.013(0.003)	6.852	78.854	6
0	12	9	4		0	12	−6	6			103 812.775(0.003)	0.325	47.654	
1	26	14	12		1	26	13	13		103 914.544(0.010)	103 914.539(0.003)	33.930	287.159	7
1	15	*	11	+	1	15	*	12	−	104 024.206(0.010)	104 024.198(0.002)	21.934	135.860	6
1	19	14	5		1	19	−13	7			104 029.474(0.010)	2.558	196.723	
0	5	4	2		0	4	3	2			104 046.452(0.001)	1.744	6.605	
1	25	14	11	+	1	25	13	12	−	104 060.540(0.010)	104 060.532(0.002)	35.414	272.789	7
1	6	4	2	+	1	5	4	1	+		104 068.534(0.002)	0.180	88.528	
0	12	*	10		0	12	*	11		104 069.583(0.010)	104 069.576(0.002)	11.983	33.876	6
0	14	4	10	+	0	14	4	11	−	104 077.751(0.010)	104 077.735(0.001)	1.992	52.167	6
0	14	4	10	+	0	14	3	11	−	104 077.751(0.010)	104 077.746(0.001)	9.422	52.167	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	14	5	10	+	0	14	4	11	−	104 078.184(0.010)	104 078.173(0.001)	9.422	52.167	6
0	14	5	10	+	0	14	3	11	−	104 078.184(0.010)	104 078.185(0.001)	1.992	52.167	6
0	24	14	11	−	0	24	13	12	+	104 078.591(0.010)	104 078.583(0.001)	28.992	181.638	6
1	21	8	13		1	20	−11	10			104 080.120(0.034)	0.225	201.835	
0	28	−16	12		0	28	−15	13		104 152.083(0.010)	104 152.073(0.005)	36.337	249.524	6
0	24	14	11		0	24	13	12		104 168.338(0.010)	104 168.331(0.001)	29.135	181.613	6
0	20	−13	7		0	20	12	9			104 258.935(0.003)	0.241	130.244	
0	11	*	10		0	11	*	11		104 311.380(0.050)	104 311.360(0.002)	6.198	25.635	6
0	24	14	11		0	24	−12	12			104 379.917(0.001)	4.286	181.606	
0	24	14	11	−	0	24	12	12	+		104 416.883(0.002)	4.506	181.627	
1	15	9	6		1	15	−8	8			104 431.978(0.005)	1.223	145.719	
1	5	−4	2		1	4	−3	2			104 452.496(0.003)	4.124	79.135	
0	23	12	11	+	0	23	12	12	−	104 488.821(0.050)	104 488.844(0.001)	4.398	165.344	6
1	24	−15	10		1	24	13	11			104 510.540(0.008)	2.636	259.382	
1	16	6	10		1	16	−6	11			104 512.196(0.001)	0.752	147.498	
1	16	6	10		1	16	5	11		104 515.800(0.010)	104 515.820(0.001)	16.263	147.498	7
1	16	13	3	−	1	16	10	6	+		104 533.750(0.008)	1.185	162.684	
1	25	15	11	+	1	25	14	12	−	104 572.917(0.010)	104 572.939(0.002)	35.352	272.791	7
0	13	3	10	−	0	13	*	11	+	104 574.972(0.050)	104 574.957(0.001)	8.775	42.531	6
0	13	4	10	−	0	13	*	11	+	104 574.972(0.050)	104 575.033(0.001)	8.775	42.531	6
1	16	−7	10		1	16	−6	11		104 576.416(0.010)	104 576.430(0.001)	16.260	147.498	7
1	16	−7	10		1	16	5	11			104 580.054(0.001)	0.753	147.498	
0	23	12	11	+	0	23	11	12	−	104 615.980(0.050)	104 616.002(0.001)	26.784	165.339	6
1	18	14	4		1	18	13	5		104 688.302(0.010)	104 688.328(0.003)	13.698	186.451	7
1	10	8	2		1	10	6	4			104 862.097(0.007)	0.336	108.067	
1	23	−13	11		1	23	−12	12			104 967.078(0.002)	28.386	240.078	
0	12	2	10	+	0	12	*	11	−	104 978.377(0.010)	104 978.400(0.002)	6.022	33.573	6
0	12	3	10	+	0	12	*	11	−	104 978.377(0.010)	104 978.411(0.002)	6.022	33.573	6
0	23	−12	11		0	23	12	12		104 988.344(0.010)	104 988.368(0.001)	4.152	165.333	6
1	7	3	4	−	1	6	4	3	−	105 004.305(0.010)	105 004.334(0.002)	10.298	91.345	7
0	23	−12	11		0	23	−11	12		105 063.917(0.050)	105 063.947(0.001)	26.908	165.330	6
1	16	5	11	−	1	16	*	12	+	105 137.136(0.010)	105 137.155(0.002)	13.484	146.383	6
1	16	6	11	−	1	16	*	12	+	105 137.136(0.010)	105 137.177(0.002)	13.484	146.383	6
1	15	10	5		1	15	8	7			105 277.642(0.008)	0.531	147.607	
1	21	15	6		1	21	14	7		105 292.423(0.010)	105 292.450(0.004)	20.927	222.602	7
0	11	*	10	−	0	11	*	11	+	105 302.500(0.050)	105 302.487(0.002)	6.229	25.294	6
0	20	−14	6		0	20	−12	8			105 360.341(0.005)	0.389	132.155	
0	7	−4	3		0	6	5	2		105 389.485(0.050)	105 389.477(0.003)	1.253	14.259	6
1	4	−3	2		1	3	0	3			105 400.966(0.003)	0.276	75.619	
1	7	4	4	−	1	6	3	3	−	105 455.419(0.010)	105 455.446(0.002)	10.395	91.332	7
1	24	13	11	−	1	24	12	12	+	105 469.779(0.010)	105 469.772(0.002)	32.837	255.977	7
0	6	4	3		0	5	−3	2		105 488.031(0.010)	105 488.030(0.001)	5.059	9.757	6
1	24	14	11	−	1	24	13	12	+	105 676.966(0.010)	105 676.961(0.002)	32.813	255.978	7
0	23	13	11	+	0	23	12	12	−	105 738.545(0.010)	105 738.537(0.001)	26.742	165.344	6
0	23	13	11		0	23	12	12		105 820.831(0.010)	105 820.827(0.001)	26.888	165.333	6
0	12	6	7		0	11	−7	4			105 864.690(0.003)	0.195	42.139	
0	23	13	11	+	0	23	11	12	−		105 865.694(0.001)	4.387	165.339	
1	6	5	1	−	1	5	5	0	−	105 871.526(0.050)	105 871.541(0.003)	0.569	88.833	7
0	23	13	11		0	23	−11	12			105 896.406(0.001)	4.146	165.330	
1	15	13	2	−	1	15	10	5	+		105 902.676(0.012)	0.791	153.581	
1	17	6	11	+	1	17	*	12	−		106 014.546(0.002)	15.954	157.620	
1	17	7	11	+	1	17	*	12	−	106 014.599(0.010)	106 014.647(0.002)	15.954	157.620	
1	15	5	10		1	15	−5	11		106 080.535(0.050)	106 080.533(0.002)	0.529	136.342	7
1	15	5	10		1	15	4	11		106 081.325(0.050)	106 081.317(0.002)	13.907	136.342	7
1	5	4	1	+	1	4	3	2	+	106 083.506(0.010)	106 083.435(0.002)	2.516	84.990	6
1	15	−6	10		1	15	−5	11		106 096.315(0.010)	106 096.307(0.002)	13.907	136.342	7
1	15	−6	10		1	15	4	11			106 097.090(0.002)	0.529	136.342	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	$\mu^2 S$ (D^2)	E_1 (cm^{-1})	Ref.
1	25	−15	11		1	25	13	12			106 190.811(0.006)	3.052	273.168	
0	7	3	4	−	0	6	4	3	−	106 230.685(0.010)	106 230.676(0.001)	5.485	12.987	6
0	10	8	3	−	0	9	9	0	−		106 235.531(0.003)	0.215	33.217	
1	21	10	11		1	21	−10	12		106 324.773(0.010)	106 324.767(0.002)	2.849	209.332	7
1	23	−13	11		1	23	11	12			106 344.274(0.003)	3.321	240.032	
1	24	−14	11		1	24	12	12			106 374.338(0.004)	3.277	256.301	
1	24	9	15		1	23	−12	12			106 383.231(0.055)	0.210	240.078	
1	23	12	11	+	1	23	11	12	−	106 416.523(0.010)	106 416.508(0.002)	30.390	239.845	7
1	22	−12	11		1	22	−11	12		106 442.759(0.010)	106 442.751(0.002)	26.301	224.388	7
1	23	13	11	+	1	23	12	12	−	106 495.820(0.010)	106 495.810(0.002)	30.381	239.845	7
1	21	10	11		1	21	9	12		106 517.340(0.010)	106 517.336(0.002)	24.346	209.325	7
0	7	5	3		0	6	−5	1			106 560.218(0.002)	0.234	14.528	
1	9	5	4		1	8	6	2			106 668.601(0.007)	1.687	97.661	
1	18	7	11	−	1	18	6	12	+	106 669.713(0.010)	106 669.698(0.002)	18.390	169.568	7
1	18	8	11	−	1	18	7	12	+	106 670.078(0.010)	106 670.073(0.002)	18.390	169.568	7
1	5	−4	2		1	4	2	2			106 718.763(0.005)	2.628	79.059	
1	10	−7	4		1	9	−8	2			106 768.712(0.006)	0.191	104.816	
1	22	−14	9		1	22	12	10			106 813.578(0.007)	2.159	230.505	
1	18	14	4		1	18	−13	6			106 830.089(0.012)	0.356	186.380	
0	22	11	11	−	0	22	11	12	+	106 832.472(0.010)	106 832.462(0.001)	4.219	149.699	6
0	22	11	11	−	0	22	10	12	+	106 876.908(0.010)	106 876.899(0.001)	24.538	149.697	6
0	7	−3	4		0	6	4	3		106 877.638(0.010)	106 877.632(0.001)	5.637	13.276	6
1	22	−12	11		1	22	10	12			106 994.777(0.002)	3.161	224.370	
1	22	11	11	−	1	22	10	12	+	107 003.727(0.010)	107 003.719(0.002)	28.023	224.398	7
1	6	5	2	+	1	5	4	1	+	107 021.847(0.010)	107 021.849(0.003)	7.482	88.528	7
0	22	−11	11		0	22	11	12		107 031.519(0.010)	107 031.509(0.001)	3.962	149.705	6
1	22	12	11	−	1	22	11	12	+	107 033.640(0.010)	107 033.633(0.002)	28.020	224.398	7
0	27	15	12	−	0	27	15	13	+	107 037.988(0.010)	107 037.982(0.003)	5.037	230.685	6
0	22	−11	11		0	22	−10	12		107 056.570(0.010)	107 056.564(0.001)	24.684	149.704	6
1	8	2	6	+	1	7	3	5	+	107 066.377(0.010)	107 066.374(0.002)	15.859	93.545	7
1	8	3	6	+	1	7	2	5	+	107 070.442(0.010)	107 070.441(0.002)	15.860	93.545	6
1	19	8	11	+	1	19	7	12	−	107 105.567(0.010)	107 105.561(0.002)	20.784	182.224	7
1	19	9	11	+	1	19	8	12	−	107 106.868(0.010)	107 106.861(0.002)	20.784	182.224	7
0	6	4	3	−	0	5	3	2	−	107 122.079(0.010)	107 122.070(0.001)	5.331	9.414	6
1	21	10	11	+	1	21	9	12	−	107 287.868(0.010)	107 287.860(0.002)	25.601	209.643	7
1	21	11	11	+	1	21	10	12	−	107 299.055(0.010)	107 299.048(0.002)	25.600	209.643	7
1	20	9	11	−	1	20	8	12	+	107 316.358(0.010)	107 316.349(0.002)	23.168	195.583	7
1	20	10	11	−	1	20	9	12	+	107 320.348(0.010)	107 320.342(0.002)	23.168	195.583	7
0	22	12	11	−	0	22	11	12	+	107 339.708(0.010)	107 339.701(0.001)	24.523	149.699	6
0	22	12	11		0	22	11	12		107 353.917(0.010)	107 353.910(0.001)	24.678	149.705	6
0	22	12	11		0	22	−10	12			107 378.965(0.001)	3.960	149.704	
0	22	12	11	−	0	22	10	12	+		107 384.138(0.001)	4.215	149.697	
0	17	13	5		0	17	−11	6			107 391.278(0.007)	0.183	97.461	
1	14	4	10		1	14	−4	11			107 422.572(0.002)	0.522	125.845	
1	14	4	10		1	14	3	11		107 422.727(0.010)	107 422.723(0.002)	11.271	125.845	7
1	14	−5	10		1	14	−4	11		107 426.155(0.010)	107 426.141(0.002)	11.271	125.845	7
1	14	−5	10		1	14	3	11			107 426.292(0.002)	0.522	125.845	
0	10	8	2	+	0	9	9	1	+		107 476.103(0.003)	0.216	33.217	
1	13	*	12	−	1	13	*	13	+	107 525.814(0.010)	107 525.809(0.004)	5.874	113.384	6
0	4	4	1		0	3	−1	2			107 527.627(0.002)	0.174	3.767	
0	27	15	12	−	0	27	14	13	+	107 595.542(0.010)	107 595.537(0.003)	33.702	230.666	6
1	27	−16	12		1	27	−15	13		107 618.144(0.010)	107 618.130(0.006)	35.336	305.503	7
1	18	11	7		1	18	−10	9			107 639.047(0.005)	0.918	178.091	
0	8	−5	3		0	7	−6	1			107 651.808(0.002)	0.613	19.488	
1	25	13	12		1	25	−13	13		107 686.560(0.010)	107 686.565(0.003)	3.740	269.576	7
1	17	14	3		1	17	13	4		107 712.742(0.010)	107 712.736(0.003)	10.535	176.705	7
1	24	−10	15		1	23	11	12			107 763.626(0.055)	0.211	240.032	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	12	6	7	−	0	11	7	4	−		107 871.233(0.003)	0.234	41.856	
1	17	11	6		1	17	9	8			107 951.819(0.007)	0.527	167.935	
1	21	−11	11		1	21	−10	12		108 123.409(0.010)	108 123.409(0.002)	24.256	209.332	7
0	7	4	4	−	0	6	4	3	−	108 201.932(0.010)	108 201.929(0.001)	3.327	12.987	6
1	17	14	3	+	1	17	12	6	−		108 221.491(0.008)	0.277	174.054	
1	12	11	1		1	11	11	0			108 223.998(0.010)	0.186	127.361	
1	21	−11	11		1	21	9	12			108 315.978(0.002)	2.834	209.325	
0	27	−15	12		0	27	15	13		108 351.468(0.010)	108 351.461(0.003)	4.756	230.626	6
0	7	4	4		0	6	4	3		108 356.767(0.010)	108 356.763(0.001)	3.237	13.276	6
1	27	10	17		1	26	−13	14			108 368.409(0.083)	0.195	283.088	
0	19	14	6		0	19	−12	7			108 424.615(0.008)	0.337	120.503	
0	4	3	2		0	3	0	3		108 568.803(0.050)	108 568.722(0.001)	0.280	2.983	6
1	13	3	10		1	13	−3	11		108 576.029(0.010)	108 576.000(0.002)	0.571	116.014	6
1	13	3	10		1	13	2	11		108 576.029(0.010)	108 576.023(0.002)	8.494	116.014	6
1	13	−4	10		1	13	−3	11		108 576.729(0.010)	108 576.719(0.002)	8.494	116.014	7
1	13	−4	10		1	13	2	11		108 576.729(0.010)	108 576.742(0.002)	0.571	116.014	7
0	21	−10	11		0	21	10	12		108 593.799(0.010)	108 593.797(0.001)	3.738	134.735	6
0	10	−8	2		0	9	−9	0			108 599.160(0.003)	0.220	33.504	
0	21	−10	11		0	21	−9	12		108 601.464(0.010)	108 601.463(0.001)	22.505	134.735	6
0	21	10	11	+	0	21	10	12	−	108 606.750(0.010)	108 606.754(0.001)	4.002	134.707	6
0	21	10	11	+	0	21	9	12	−	108 621.119(0.010)	108 621.114(0.001)	22.343	134.707	6
1	25	13	12		1	25	12	13		108 655.760(0.010)	108 655.758(0.002)	31.169	269.544	7
1	27	−11	17		1	26	12	14			108 660.620(0.083)	0.196	283.078	
0	21	11	11		0	21	10	12		108 709.334(0.010)	108 709.329(0.001)	22.503	134.735	6
0	27	−15	12		0	27	−14	13		108 713.616(0.010)	108 713.614(0.002)	33.829	230.614	6
0	21	11	11		0	21	−9	12			108 716.994(0.001)	3.737	134.735	
0	21	11	11	+	0	21	10	12	−	108 797.397(0.010)	108 797.393(0.001)	22.338	134.707	6
0	21	11	11	+	0	21	9	12	−	108 811.751(0.010)	108 811.753(0.001)	4.001	134.707	6
0	5	5	1		0	4	4	1			108 912.993(0.001)	8.677	7.354	
1	9	*	8	−	1	8	2	7	−	108 938.781(0.010)	108 938.776(0.002)	21.633	95.238	6
1	9	*	8	−	1	8	1	7	−	108 938.781(0.010)	108 938.791(0.002)	21.633	95.238	6
0	21	15	7		0	21	−13	8			108 958.243(0.009)	0.606	146.008	
0	9	6	4		0	8	7	2			109 075.682(0.003)	0.430	24.858	
1	20	−13	8		1	20	11	9			109 096.344(0.006)	1.553	204.018	
1	8	6	3	−	1	7	7	0	−		109 167.003(0.006)	0.325	97.428	
1	20	9	11		1	20	−9	12		109 280.409(0.050)	109 280.412(0.001)	2.364	194.908	7
1	21	−9	13		1	20	10	10			109 338.711(0.035)	0.233	201.660	
1	20	9	11		1	20	8	12		109 338.776(0.010)	109 338.776(0.001)	22.324	194.906	7
1	23	16	7		1	23	15	8		109 483.922(0.010)	109 483.923(0.006)	24.524	250.810	7
0	11	8	3	+	0	11	5	6	−		109 526.296(0.002)	0.556	39.301	
1	12	−7	6		1	11	8	3			109 552.306(0.010)	0.405	117.478	
1	12	2	10		1	12	*	11			109 564.432(0.002)	6.219	106.857	
1	12	−3	10		1	12	*	11			109 564.549(0.002)	6.219	106.857	
0	22	−15	7		0	22	−13	9			109 569.637(0.005)	0.260	158.763	
0	20	−9	11		0	20	9	12		109 835.403(0.010)	109 835.407(0.001)	3.483	120.425	6
0	20	−9	11		0	20	−8	12		109 837.549(0.010)	109 837.555(0.001)	20.357	120.425	6
0	20	10	11		0	20	9	12		109 873.560(0.010)	109 873.564(0.001)	20.357	120.425	6
0	20	10	11		0	20	−8	12			109 875.712(0.001)	3.482	120.425	
0	5	4	1	+	0	4	3	2	+	109 914.411(0.050)	109 914.430(0.001)	3.985	6.299	6
0	10	7	3	−	0	10	4	6	+		109 919.785(0.002)	0.311	31.810	
0	10	8	3		0	9	9	1			109 940.009(0.003)	0.218	33.101	
1	20	−10	11		1	20	−9	12		109 955.111(0.010)	109 955.111(0.001)	22.296	194.908	7
1	14	*	12	+	1	14	*	13	−	109 975.820(0.010)	109 975.824(0.003)	11.488	122.386	6
0	4	3	2	+	0	3	0	3	+		109 980.514(0.001)	0.283	2.631	
1	16	14	2		1	16	13	3		109 991.205(0.010)	109 991.202(0.004)	7.074	167.573	7
0	20	9	11	−	0	20	9	12	+	110 013.461(0.010)	110 013.462(0.001)	3.751	120.373	6
1	20	−10	11		1	20	8	12			110 013.475(0.001)	2.360	194.906	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	20	9	11	−	0	20	8	12	+	110 017.715(0.010)	110 017.720(0.001)	20.184	120.372	6
1	9	−5	5		1	8	−6	3			110 028.005(0.006)	0.202	96.411	
1	7	−7	1		1	6	6	0			110 056.796(0.002)	1.451	91.542	
0	20	10	11	−	0	20	9	12	+	110 079.563(0.010)	110 079.565(0.001)	20.183	120.373	6
0	20	10	11	−	0	20	8	12	+	110 083.854(0.050)	110 083.823(0.001)	3.751	120.372	6
0	8	−2	6		0	7	3	5		110 145.152(0.010)	110 145.156(0.001)	11.158	15.424	6
1	20	15	5		1	20	14	6		110 153.197(0.010)	110 153.201(0.004)	17.474	211.067	7
0	8	3	6		0	7	3	5		110 158.882(0.050)	110 158.885(0.001)	4.354	15.424	6
0	5	5	1	+	0	4	4	0	+	110 179.732(0.010)	110 179.735(0.001)	8.806	7.180	6
0	8	−2	6		0	7	−2	5		110 228.308(0.010)	110 228.309(0.001)	4.355	15.421	6
0	8	3	6		0	7	−2	5		110 242.032(0.010)	110 242.037(0.001)	11.164	15.421	6
1	30	11	19		1	29	−14	16			110 276.528(0.122)	0.183	330.850	
0	6	−4	2		0	5	4	2			110 304.036(0.002)	0.195	10.076	
1	30	−12	19		1	29	13	16			110 331.205(0.122)	0.183	330.848	
0	8	2	6	+	0	7	3	5	+	110 358.189(0.010)	110 358.190(0.001)	10.985	15.114	6
0	8	3	6	+	0	7	3	5	+	110 379.481(0.010)	110 379.483(0.001)	4.480	15.114	6
0	5	−5	0		0	4	−4	0			110 393.499(0.001)	8.726	7.583	
1	11	1	10		1	11	*	11		110 406.861(0.010)	110 406.856(0.002)	3.216	98.378	7
1	11	−2	10		1	11	*	11		110 406.861(0.010)	110 406.869(0.002)	3.216	98.378	7
0	8	5	3	−	0	7	6	2	−	110 409.421(0.010)	110 409.429(0.002)	1.174	19.078	6
0	8	2	6	+	0	7	2	5	+	110 478.685(0.010)	110 478.685(0.001)	4.482	15.110	6
0	12	9	3	−	0	12	7	6	+		110 491.210(0.002)	0.205	47.525	
0	8	3	6	+	0	7	2	5	+	110 500.001(0.050)	110 499.978(0.001)	10.992	15.110	6
1	17	7	10		1	16	−10	7			110 696.133(0.017)	0.219	159.037	
1	29	16	13		1	29	15	14		110 757.934(0.010)	110 757.940(0.006)	40.099	339.954	7
0	10	6	5		0	9	−7	2			110 804.917(0.002)	0.381	30.139	
0	9	−1	8		0	8	2	7		110 817.249(0.010)	110 817.245(0.001)	15.927	16.959	6
0	9	2	8		0	8	2	7		110 817.249(0.010)	110 817.277(0.001)	5.468	16.959	6
0	9	−1	8		0	8	−1	7		110 817.523(0.010)	110 817.504(0.001)	5.468	16.959	6
0	9	2	8		0	8	−1	7		110 817.523(0.010)	110 817.536(0.001)	15.927	16.959	6
1	7	3	4		1	6	−4	3		110 836.520(0.050)	110 836.514(0.006)	2.857	85.958	7
0	19	−8	11		0	19	8	12		110 845.056(0.010)	110 845.045(0.001)	3.200	106.779	6
0	19	−8	11		0	19	−7	12		110 845.589(0.010)	110 845.591(0.001)	18.228	106.779	6
1	7	6	1		1	6	−6	1			110 850.397(0.002)	2.725	89.691	
0	19	9	11		0	19	8	12		110 856.581(0.010)	110 856.584(0.001)	18.228	106.779	6
0	19	9	11		0	19	−7	12			110 857.129(0.001)	3.199	106.779	
1	12	9	3		1	12	7	5			110 877.795(0.007)	0.488	122.365	
1	9	8	1		1	9	6	3			110 885.322(0.006)	0.204	102.540	
0	9	1	8	−	0	8	2	7	−	110 954.123(0.050)	110 954.109(0.001)	15.684	16.638	6
0	9	2	8	−	0	8	2	7	−	110 954.123(0.050)	110 954.168(0.001)	5.688	16.638	6
0	9	1	8	−	0	8	1	7	−	110 954.592(0.050)	110 954.553(0.001)	5.688	16.638	6
0	9	2	8	−	0	8	1	7	−	110 954.592(0.050)	110 954.612(0.001)	15.684	16.638	6
1	10	*	10	+	1	9	*	9	+	110 956.501(0.010)	110 956.511(0.002)	54.880	96.445	6
0	11	−8	3		0	11	−5	6			110 975.283(0.002)	0.373	39.541	
1	26	−15	12		1	26	−14	13		111 074.534(0.010)	111 074.535(0.003)	33.030	287.225	7
0	10	−7	3		0	10	−4	6			111 075.605(0.002)	0.239	32.069	
0	26	14	12	+	0	26	14	13	−	111 093.168(0.010)	111 093.165(0.002)	4.937	212.394	6
0	5	5	0	−	0	4	4	1	−	111 097.569(0.010)	111 097.573(0.001)	8.721	7.158	6
1	11	8	3		1	10	9	1			111 139.906(0.006)	1.088	113.770	
0	19	8	11	+	0	19	8	12	−	111 164.269(0.010)	111 164.276(0.001)	3.468	106.698	6
0	19	8	11	+	0	19	7	12	−	111 165.420(0.010)	111 165.423(0.001)	18.048	106.698	6
0	19	9	11	+	0	19	8	12	−	111 185.284(0.010)	111 185.286(0.001)	18.048	106.698	6
0	19	9	11	+	0	19	7	12	−	111 186.430(0.010)	111 186.433(0.001)	3.468	106.698	6
1	23	−15	9		1	23	13	10			111 264.212(0.009)	2.243	245.805	
0	26	14	12	+	0	26	13	13	−	111 316.556(0.010)	111 316.559(0.002)	31.291	212.387	6
1	28	16	12	+	1	28	15	13	−	111 346.492(0.010)	111 346.495(0.005)	40.786	323.500	7
0	27	16	12		0	27	15	13		111 389.823(0.010)	111 389.827(0.002)	33.727	230.626	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	10	*	10		0	9	*	9		111 507.270(0.050)	111 507.282(0.001)	54.783	17.840	6
0	10	*	10	+	0	9	*	9	+	111 548.533(0.010)	111 548.533(0.001)	54.770	17.497	6
0	7	−3	4		0	6	−3	3		111 553.709(0.010)	111 553.719(0.001)	3.460	13.120	6
1	19	8	11		1	19	−8	12			111 584.422(0.001)	1.762	181.1200	
0	23	−15	8		0	23	14	10			111 596.870(0.004)	0.278	171.992	
1	19	8	11		1	19	7	12		111 599.857(0.010)	111 599.860(0.001)	20.431	181.119	7
0	5	−4	1		0	4	3	2		111 641.266(0.050)	111 641.257(0.002)	2.095	6.605	6
0	18	−7	11		0	18	7	12		111 674.520(0.050)	111 674.565(0.001)	2.890	93.799	6
0	18	−7	11		0	18	−6	12		111 674.682(0.010)	111 674.689(0.001)	16.106	93.799	6
0	18	8	11		0	18	7	12		111 677.734(0.010)	111 677.730(0.001)	16.106	93.799	6
0	18	8	11		0	18	−6	12			111 677.854(0.001)	2.890	93.799	
1	15	14	1		1	15	13	2		111 755.656(0.010)	111 755.707(0.005)	3.577	159.036	7
1	19	−9	11		1	19	−8	12		111 804.072(0.010)	111 804.073(0.001)	20.423	181.120	7
1	19	−9	11		1	19	7	12			111 819.511(0.001)	1.761	181.119	
1	10	*	10		1	9	*	9		111 841.878(0.010)	111 841.875(0.002)	54.405	90.562	6
1	22	14	8		1	22	−13	10			111 879.807(0.007)	2.949	231.144	
0	26	−14	12		0	26	14	13		111 887.417(0.010)	111 887.414(0.002)	4.639	212.342	6
1	15	*	12	−	1	15	*	13	+	111 892.060(0.010)	111 892.062(0.002)	16.890	132.127	6
1	9	1	8		1	8	−2	7		111 905.711(0.010)	111 905.707(0.002)	16.211	89.801	7
1	9	−2	8		1	8	−2	7		111 906.083(0.010)	111 906.086(0.002)	4.778	89.801	6
1	11	−8	4		1	10	−9	2			111 906.366(0.006)	0.175	112.433	
1	9	1	8		1	8	1	7		111 907.710(0.010)	111 907.702(0.002)	4.777	89.801	6
1	9	−2	8		1	8	1	7		111 908.083(0.010)	111 908.081(0.002)	16.211	89.801	6
0	13	10	4		0	13	−7	6			111 961.220(0.004)	0.391	56.385	
1	12	−8	5		1	12	5	7			111 965.962(0.006)	0.300	119.078	
1	14	8	6		1	14	−7	8			111 966.975(0.004)	0.583	135.377	
1	5	4	1		1	4	3	1		111 979.114(0.010)	111 979.122(0.003)	3.199	79.845	6
0	26	−14	12		0	26	−13	13		112 025.187(0.010)	112 025.189(0.002)	31.468	212.338	6
1	7	4	3		1	6	−5	2			112 029.588(0.008)	0.384	86.917	
1	7	5	2	−	1	6	6	1	−	112 030.126(0.050)	112 030.131(0.007)	1.675	92.740	7
0	18	7	11	−	0	18	7	12	+	112 122.279(0.010)	112 122.278(0.001)	3.155	93.688	6
0	18	7	11	−	0	18	6	12	+	112 122.553(0.010)	112 122.555(0.001)	15.923	93.688	6
0	18	8	11	−	0	18	7	12	+	112 128.342(0.010)	112 128.342(0.001)	15.922	93.688	6
0	18	8	11	−	0	18	6	12	+	112 128.623(0.010)	112 128.619(0.001)	3.155	93.688	6
1	8	2	6		1	7	−3	5		112 139.105(0.010)	112 139.102(0.002)	10.768	88.285	7
0	7	3	4	−	0	6	3	3	−	112 152.720(0.010)	112 152.723(0.001)	3.584	12.790	6
1	24	12	12		1	24	−12	13		112 181.155(0.010)	112 181.139(0.003)	3.610	252.559	7
0	4	4	1	−	0	3	1	2	−	112 181.156(0.010)	112 181.209(0.002)	0.217	3.416	6
0	11	9	2	−	0	11	6	5	+		112 181.871(0.003)	0.389	40.832	
1	8	−3	6		1	7	−3	5		112 200.646(0.010)	112 200.626(0.002)	3.932	88.285	6
1	7	4	3	+	1	6	5	2	+	112 289.555(0.010)	112 289.550(0.003)	7.017	92.098	6
0	17	−6	11		0	17	6	12		112 357.431(0.050)	112 357.413(0.001)	2.555	81.490	6
0	17	−6	11		0	17	−5	12		112 357.431(0.050)	112 357.438(0.001)	13.977	81.490	6
0	17	7	11		0	17	6	12		112 358.193(0.010)	112 358.191(0.001)	13.977	81.490	6
0	17	7	11		0	17	−5	12		112 358.193(0.010)	112 358.215(0.001)	2.555	81.490	6
1	8	2	6		1	7	2	5		112 396.096(0.010)	112 396.084(0.002)	3.857	88.277	6
1	7	5	2		1	6	5	1		112 426.580(0.010)	112 426.572(0.002)	3.824	88.098	7
1	8	−3	6		1	7	2	5		112 457.610(0.010)	112 457.608(0.002)	10.811	88.277	7
1	19	12	7		1	19	10	9			112 552.948(0.006)	0.187	190.671	
1	24	12	12		1	24	11	13		112 598.391(0.010)	112 598.396(0.003)	28.615	252.545	7
0	7	5	3	+	0	6	5	2	+	112 743.995(0.010)	112 743.998(0.001)	2.601	14.079	6
0	8	−4	4		0	7	−5	2		112 759.193(0.050)	112 759.279(0.001)	0.350	18.462	6
0	16	−5	11		0	16	*	12		112 917.627(0.010)	112 917.632(0.001)	14.023	69.852	6
0	16	6	11		0	16	*	12		112 917.794(0.010)	112 917.800(0.001)	14.023	69.852	6
0	17	6	11	+	0	17	6	12	−	112 925.853(0.050)	112 925.807(0.001)	2.811	81.345	6
0	17	6	11	+	0	17	5	12	−	112 925.853(0.050)	112 925.866(0.001)	13.794	81.345	6
0	17	7	11	+	0	17	6	12	−	112 927.386(0.050)	112 927.376(0.001)	13.794	81.345	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	17	7	11	+	0	17	5	12	−	112 927.386(0.050)	112 927.435(0.001)	2.811	81.345	6
0	7	6	2	−	0	6	6	1	−	113 000.167(0.010)	113 000.160(0.001)	1.445	15.308	6
0	7	4	4		0	6	−3	3		113 032.847(0.010)	113 032.851(0.001)	6.477	13.120	6
0	26	15	12	+	0	26	14	13	−	113 039.017(0.010)	113 039.013(0.002)	31.221	212.394	6
1	26	−15	12		1	26	13	13			113 046.101(0.004)	3.459	287.159	
0	11	−9	2		0	11	−6	5			113 081.174(0.004)	0.200	41.099	
1	7	−4	4		1	6	−4	3		113 220.934(0.010)	113 220.930(0.002)	3.826	85.958	6
0	26	15	12		0	26	14	13		113 228.898(0.010)	113 228.893(0.002)	31.434	212.342	6
0	12	10	2	+	0	12	8	5	−		113 249.689(0.002)	0.182	49.335	
0	26	15	12	+	0	26	13	13	−		113 262.407(0.002)	4.919	212.387	
1	25	−14	12		1	25	−13	13		113 333.278(0.010)	113 333.276(0.002)	30.722	269.576	7
0	26	15	12		0	26	−13	13			113 366.668(0.002)	4.628	212.338	
0	15	−4	11		0	15	*	12		113 374.066(0.010)	113 374.049(0.001)	11.450	58.889	6
0	15	5	11		0	15	*	12		113 374.066(0.010)	113 374.081(0.001)	11.450	58.889	6
1	9	4	5		1	8	5	3			113 408.035(0.006)	1.811	96.216	
1	16	*	12	+	1	16	*	13	−	113 434.630(0.010)	113 434.630(0.002)	22.124	142.599	6
1	27	15	12	−	1	27	14	13	+	113 448.766(0.010)	113 448.765(0.003)	38.177	304.634	7
1	18	7	11		1	18	−7	12			113 506.269(0.002)	1.124	167.969	
1	18	7	11		1	18	6	12		113 509.918(0.010)	113 509.916(0.002)	18.559	167.969	7
0	12	9	3	−	0	12	6	6	+		113 524.512(0.002)	0.716	47.424	
1	18	−8	11		1	18	−7	12		113 568.614(0.010)	113 568.612(0.002)	18.557	167.969	7
1	18	−8	11		1	18	6	12			113 572.260(0.002)	1.124	167.969	
0	7	−6	1		0	6	−6	0		113 582.421(0.050)	113 582.390(0.001)	1.433	15.699	6
0	16	5	11	−	0	16	5	12	+	113 600.731(0.010)	113 600.722(0.001)	2.437	69.671	6
0	16	5	11	−	0	16	4	12	+	113 600.731(0.010)	113 600.733(0.001)	11.650	69.671	6
0	16	6	11	−	0	16	5	12	+	113 601.078(0.010)	113 601.079(0.001)	11.650	69.671	6
0	16	6	11	−	0	16	4	12	+	113 601.078(0.010)	113 601.090(0.001)	2.437	69.671	6
1	19	15	4		1	19	14	5		113 616.816(0.010)	113 616.812(0.004)	13.960	200.193	7
0	14	*	11		0	14	*	12		113 742.265(0.010)	113 742.266(0.002)	17.584	48.602	6
0	11	6	6		0	10	−7	3		113 763.034(0.010)	113 763.065(0.002)	0.368	35.774	6
0	10	6	5	−	0	9	7	2	−		113 811.659(0.002)	0.734	29.803	
1	27	16	12	−	1	27	15	13	+	113 874.231(0.010)	113 874.234(0.003)	38.130	304.636	7
1	12	10	2		1	11	−11	1			113 883.336(0.008)	0.540	124.610	
0	15	7	8	−	0	14	10	5	−		113 917.549(0.005)	0.172	67.902	
0	7	6	1	+	0	6	6	0	+	113 939.073(0.010)	113 939.070(0.001)	1.448	15.312	6
0	25	13	12	−	0	25	13	13	+		113 992.732(0.001)	4.795	194.749	
1	28	15	13		1	28	−15	14		114 017.109(0.050)	114 017.118(0.005)	3.346	320.413	7
0	7	6	2		0	6	6	1		114 032.170(0.010)	114 032.172(0.001)	1.426	15.377	6
0	13	*	11		0	13	*	12		114 035.595(0.010)	114 035.595(0.002)	12.046	38.993	6
0	25	13	12	−	0	25	12	13	+	114 076.745(0.010)	114 076.745(0.001)	28.982	194.746	6
1	5	5	1	+	1	4	2	2	+	114 082.411(0.050)	114 082.424(0.004)	1.011	84.969	7
0	7	4	4	−	0	6	3	3	−	114 123.977(0.010)	114 123.976(0.001)	6.406	12.790	6
0	15	4	11	+	0	15	*	12	−	114 166.340(0.050)	114 166.304(0.001)	11.503	58.670	6
0	15	5	11	+	0	15	*	12	−	114 166.340(0.050)	114 166.374(0.001)	11.503	58.670	6
1	20	8	12		1	19	−11	9			114 171.918(0.029)	0.262	191.098	
1	7	3	4		1	6	3	3		114 206.310(0.010)	114 206.307(0.002)	2.242	85.846	6
0	12	*	11		0	12	*	12		114 265.636(0.010)	114 265.635(0.002)	6.216	30.065	6
1	25	−14	12		1	25	12	13			114 302.469(0.003)	3.644	269.544	
0	25	−13	12		0	25	13	13		114 439.533(0.010)	114 439.535(0.001)	4.480	194.707	6
0	25	−13	12		0	25	−12	13		114 488.611(0.010)	114 488.613(0.001)	29.189	194.705	6
1	14	10	4		1	14	8	6			114 535.039(0.007)	0.663	139.112	
1	18	−8	11		1	17	9	8			114 606.878(0.020)	0.279	167.935	
1	17	14	3	+	1	17	11	6	−		114 607.654(0.011)	1.240	173.841	
0	7	5	3		0	6	5	2		114 633.180(0.010)	114 633.180(0.001)	2.332	14.259	6
0	14	3	11	−	0	14	*	12	+	114 638.025(0.010)	114 638.020(0.002)	8.834	48.343	6
0	14	4	11	−	0	14	*	12	+	114 638.025(0.010)	114 638.031(0.002)	8.834	48.343	6
1	17	*	12	−	1	17	*	13	+	114 678.902(0.010)	114 678.901(0.002)	27.229	153.794	7

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	10	7	4	+	0	9	8	1	+		114 692.190(0.002)	0.611	31.337	
1	10	6	4		1	9	7	2			114 787.061(0.006)	1.679	104.238	
0	13	11	3	+	0	13	9	4	−		114 803.307(0.003)	0.188	58.579	
0	25	14	12	−	0	25	13	13	+	114 832.342(0.010)	114 832.339(0.001)	28.956	194.749	6
0	25	14	12	−	0	25	12	13	+		114 916.352(0.001)	4.788	194.746	
1	26	14	12	+	1	26	13	13	−	114 966.525(0.010)	114 966.524(0.002)	35.604	286.437	7
0	12	−9	3		0	12	−6	6			114 978.449(0.003)	0.417	47.654	
0	25	14	12		0	25	13	13		114 991.199(0.010)	114 991.201(0.001)	29.178	194.707	6
0	13	*	11	+	0	13	*	12	−	115 028.866(0.010)	115 028.867(0.002)	12.106	38.694	6
0	25	14	12		0	25	−12	13			115 040.278(0.001)	4.476	194.705	
1	22	16	6		1	22	15	7		115 078.599(0.010)	115 078.598(0.005)	20.929	238.123	7
1	8	6	2		1	8	3	5			115 130.547(0.009)	0.175	93.821	
1	26	15	12	+	1	26	14	13	−	115 137.519(0.010)	115 137.520(0.002)	35.585	286.438	7
1	24	−13	12		1	24	−12	13			115 155.701(0.012)	28.041	252.559	
1	9	6	4	−	1	8	7	1	−		115 169.769(0.002)	0.241	102.049	
1	17	6	11		1	17	−6	12			115 180.097(0.002)	0.652	155.463	
1	17	6	11		1	17	5	12		115 180.903(0.010)	115 180.902(0.002)	16.488	155.463	7
1	17	−7	11		1	17	−6	12		115 195.791(0.010)	115 195.787(0.002)	16.487	155.463	7
1	17	−7	11		1	17	5	12			115 196.592(0.002)	0.652	155.463	
1	28	15	13		1	28	14	14		115 216.878(0.010)	115 216.879(0.004)	36.594	320.373	7
1	7	4	3		1	6	4	2		115 246.259(0.010)	115 246.247(0.004)	2.745	86.810	6
1	18	12	6		1	18	10	8			115 325.435(0.007)	0.912	179.946	
0	12	*	11	−	0	12	*	12	+	115 350.048(0.010)	115 350.050(0.002)	6.247	29.725	6
0	11	9	3	+	0	10	10	0	+		115 549.419(0.003)	0.196	40.702	
1	24	−13	12		1	24	11	13			115 572.958(0.012)	3.522	252.545	
1	12	−9	4		1	12	6	6			115 611.109(0.010)	0.346	120.941	
1	23	11	12		1	23	−11	13		115 615.861(0.010)	115 615.864(0.002)	3.345	236.175	7
1	18	6	12	+	1	18	*	13	−	115 666.835(0.010)	115 666.823(0.002)	16.117	165.710	7
1	18	7	12	+	1	18	*	13	−	115 666.835(0.010)	115 666.846(0.002)	16.117	165.710	
1	23	11	12		1	23	10	13		115 772.939(0.010)	115 772.944(0.002)	26.418	236.170	7
1	12	4	8		1	11	5	6			115 787.500(0.005)	0.197	112.785	
0	9	−6	3		0	8	−7	1			115 790.923(0.003)	0.563	25.203	
0	11	6	6	−	0	10	7	3	−		115 805.083(0.002)	0.485	35.476	
1	16	11	5		1	16	9	7			115 813.468(0.008)	0.848	158.307	
0	13	10	3	+	0	13	8	6	−		115 825.726(0.002)	0.250	56.385	
1	9	−5	5		1	8	5	3			115 885.737(0.005)	0.262	96.216	
1	8	3	5	−	1	7	4	4	−	115 960.232(0.010)	115 960.239(0.002)	13.137	94.850	7
1	18	14	4	+	1	18	12	7	−		116 003.039(0.006)	0.523	184.094	
1	7	−5	3		1	6	−5	2			116 039.737(0.004)	1.373	86.917	
1	25	13	12	−	1	25	12	13	+	116 041.337(0.010)	116 041.333(0.002)	33.149	268.918	7
1	8	4	5	−	1	7	3	4	−	116 054.919(0.010)	116 054.924(0.002)	13.156	94.847	7
0	11	9	2	−	0	10	10	1	−		116 090.385(0.003)	0.197	40.702	
1	25	14	12	−	1	25	13	13	+	116 107.175(0.010)	116 107.175(0.002)	33.142	268.918	7
1	7	5	3	+	1	6	4	2	+	116 142.981(0.010)	116 142.996(0.003)	8.200	91.999	7
0	24	12	12	+	0	24	12	13	−	116 170.438(0.010)	116 170.431(0.001)	4.614	177.752	6
0	24	12	12	+	0	24	11	13	−	116 199.995(0.010)	116 199.997(0.001)	26.739	177.751	6
1	14	*	13	−	1	14	*	14	+	116 237.382(0.010)	116 237.381(0.004)	5.886	118.509	6
0	5	4	1	+	0	4	2	2	+		116 257.000(0.001)	0.458	6.088	
1	18	15	3		1	18	14	4		116 268.301(0.010)	116 268.298(0.004)	10.501	189.943	7
0	24	−12	12		0	24	12	13		116 378.431(0.010)	116 378.431(0.001)	4.286	177.724	6
0	24	−12	12		0	24	−11	13		116 394.749(0.010)	116 394.748(0.001)	26.966	177.723	6
1	19	7	12	−	1	19	*	13	+		116 420.750(0.002)	18.584	178.340	
1	19	8	12	−	1	19	*	13	+	116 420.795(0.050)	116 420.844(0.002)	18.584	178.340	
0	24	13	12	+	0	24	12	13	−	116 508.730(0.010)	116 508.731(0.001)	26.730	177.752	6
0	24	13	12	+	0	24	11	13	−		116 538.297(0.001)	4.612	177.751	
0	24	13	12		0	24	12	13		116 590.018(0.010)	116 590.018(0.001)	26.963	177.724	6
1	7	−4	4		1	6	3	3		116 590.727(0.010)	116 590.723(0.005)	5.146	85.846	7

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	24	13	12		0	24	−11	13			116 606.334(0.001)	4.284	177.723	
1	16	5	11		1	16	−5	12			116 662.795(0.002)	0.491	143.606	
1	16	5	11		1	16	4	12		116 662.961(0.010)	116 662.964(0.002)	14.054	143.606	7
1	16	−6	11		1	16	−5	12		116 666.424(0.010)	116 666.419(0.002)	14.054	143.606	7
1	16	−6	11		1	16	4	12			116 666.588(0.002)	0.491	143.606	
0	5	−4	1		0	4	−2	2		116 723.672(0.050)	116 723.644(0.001)	0.369	6.435	6
1	5	3	2	−	1	4	2	3	−	116 728.773(0.050)	116 728.822(0.003)	0.882	84.270	7
1	24	12	12	+	1	24	11	13	−	116 773.232(0.010)	116 773.231(0.002)	30.717	252.082	7
1	17	13	4	−	1	17	11	7	+		116 781.898(0.004)	0.392	172.145	
1	24	13	12	+	1	24	12	13	−	116 798.388(0.010)	116 798.390(0.002)	30.714	252.082	7
0	8	−5	3		0	7	6	2		116 860.503(0.050)	116 860.532(0.003)	0.660	19.181	6
1	15	−7	9		1	14	8	6			116 864.313(0.011)	0.415	139.112	
1	20	8	12	+	1	20	7	13	−	116 951.169(0.010)	116 951.169(0.002)	21.026	191.682	7
1	20	9	12	+	1	20	8	13	−	116 951.501(0.010)	116 951.502(0.002)	21.026	191.682	7
1	23	−12	12		1	23	−11	13		116 993.054(0.010)	116 993.060(0.002)	26.343	236.175	7
0	15	−12	3		0	15	−10	5			117 068.543(0.005)	0.240	76.898	
1	17	10	7		1	17	−9	9			117 080.221(0.004)	0.645	165.748	
1	6	6	1	−	1	5	5	0	−	117 130.493(0.010)	117 130.492(0.003)	11.781	88.833	7
1	23	−12	12		1	23	10	13			117 150.141(0.002)	3.331	236.170	
1	23	11	12	−	1	23	10	13	+	117 168.659(0.010)	117 168.659(0.002)	28.256	235.937	7
1	23	12	12	−	1	23	11	13	+	117 178.172(0.010)	117 178.172(0.002)	28.255	235.937	7
1	21	9	12	−	1	21	8	13	+	117 260.472(0.010)	117 260.470(0.002)	23.418	205.732	7
1	21	10	12	−	1	21	9	13	+	117 261.597(0.010)	117 261.598(0.002)	23.418	205.732	7
1	22	10	12	+	1	22	9	13	−	117 335.482(0.010)	117 335.488(0.002)	25.803	220.484	7
1	22	11	12	+	1	22	10	13	−	117 338.912(0.010)	117 338.911(0.002)	25.803	220.484	7
1	23	9	14		1	22	−12	11			117 405.574(0.047)	0.245	227.939	
1	7	6	2	−	1	6	6	1	−		117 443.582(0.003)	0.484	92.740	
1	13	−9	5		1	13	6	7			117 581.325(0.007)	0.551	128.002	
1	9	2	7	+	1	8	3	6	+	117 797.252(0.010)	117 797.255(0.002)	18.234	97.116	6
1	9	3	7	+	1	8	3	6	+		117 797.373(0.002)	0.593	97.116	
1	9	2	7	+	1	8	2	6	+	117 797.855(0.050)	117 797.896(0.002)	0.593	97.116	6
1	9	3	7	+	1	8	2	6	+	117 798.004(0.010)	117 798.014(0.002)	18.234	97.116	6
0	6	5	2		0	5	−4	1		117 815.159(0.050)	117 815.126(0.003)	1.668	10.329	6
0	14	10	5		0	14	−7	7			117 818.835(0.003)	0.251	63.974	
0	9	6	3	+	0	8	7	2	+	117 825.125(0.050)	117 825.118(0.003)	0.864	24.827	6
0	11	−9	2		0	10	−10	0			117 849.718(0.004)	0.201	40.940	
0	23	11	12	−	0	23	11	13	+	117 889.008(0.010)	117 889.007(0.001)	4.399	161.407	6
0	23	11	12	−	0	23	10	13	+	117 898.699(0.010)	117 898.698(0.001)	24.543	161.407	6
0	23	−11	12		0	23	11	13		117 918.121(0.010)	117 918.099(0.001)	4.059	161.397	6
0	23	−11	12		0	23	−10	13		117 923.137(0.010)	117 923.138(0.001)	24.786	161.397	6
0	7	−5	2		0	6	−5	1		117 925.297(0.010)	117 925.307(0.001)	2.447	14.528	6
1	15	4	11		1	15	−4	12			117 977.785(0.002)	0.552	132.407	
1	15	4	11		1	15	3	12		117 977.819(0.050)	117 977.816(0.002)	11.329	132.407	7
1	15	−5	11		1	15	−4	12		117 978.574(0.050)	117 978.569(0.002)	11.329	132.407	7
1	15	−5	11		1	15	3	12			117 978.600(0.002)	0.552	132.407	
0	23	12	12		0	23	11	13		117 993.673(0.010)	117 993.678(0.001)	24.785	161.397	6
0	23	12	12		0	23	−10	13			117 998.717(0.001)	4.059	161.397	
0	23	12	12	−	0	23	11	13	+	118 016.167(0.010)	118 016.165(0.001)	24.540	161.407	6
0	23	12	12	−	0	23	10	13	+		118 025.856(0.001)	4.398	161.407	
1	17	13	4	−	1	17	10	7	+		118 124.175(0.005)	0.759	172.101	
1	5	4	2	−	1	4	1	3	−	118 209.015(0.010)	118 209.035(0.002)	0.823	84.269	7
0	15	12	4	−	0	15	10	5	+		118 217.827(0.004)	0.309	76.684	
1	22	10	12		1	22	−10	13		118 276.381(0.010)	118 276.374(0.002)	2.932	220.425	7
1	22	10	12		1	22	9	13		118 327.867(0.010)	118 327.871(0.002)	24.342	220.423	7
1	17	15	2		1	17	14	3		118 342.878(0.010)	118 342.866(0.005)	7.053	180.298	7
1	27	14	13		1	27	−14	14		118 464.249(0.010)	118 464.246(0.003)	3.808	301.434	7
0	29	−16	13		0	29	−15	14		118 552.711(0.010)	118 552.713(0.004)	36.092	265.102	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	21	−14	8		1	21	12	9			118 589.206(0.009)	1.685	217.968	
0	17	−13	4		0	17	−11	6			118 636.987(0.006)	0.321	97.461	
0	11	9	3		0	10	10	1			118 748.161(0.004)	0.199	40.528	
1	18	14	4	+	1	18	11	7	−		118 794.186(0.008)	1.258	184.001	
1	22	−11	12		1	22	−10	13		118 828.400(0.010)	118 828.401(0.002)	24.317	220.425	7
1	22	−11	12		1	22	9	13			118 879.898(0.002)	2.927	220.423	
1	11	9	2		1	11	7	4			118 968.522(0.006)	0.341	115.658	
1	15	*	13	+	1	15	*	14	−	119 027.736(0.010)	119 027.731(0.003)	11.540	128.157	6
1	21	16	5		1	21	15	6		119 061.795(0.010)	119 061.790(0.005)	17.369	226.114	7
0	19	−14	5		0	19	−12	7			119 063.529(0.007)	0.405	120.503	
1	27	14	13		1	27	13	14		119 094.573(0.010)	119 094.576(0.003)	33.563	301.413	7
1	14	3	11		1	14	*	12			119 137.661(0.002)	9.126	121.871	
1	14	−4	11		1	14	*	12			119 137.811(0.002)	9.126	121.871	
0	7	5	2	−	0	6	5	1	−	119 139.513(0.010)	119 139.515(0.001)	2.739	14.154	6
0	21	−15	6		0	21	−13	8			119 146.205(0.007)	0.455	146.008	
0	22	−10	12		0	22	10	13		119 177.607(0.010)	119 177.603(0.001)	3.804	145.729	6
0	22	−10	12		0	22	−9	13		119 179.038(0.010)	119 179.040(0.001)	22.636	145.729	6
0	22	11	12		0	22	10	13		119 202.655(0.010)	119 202.657(0.001)	22.636	145.729	6
0	22	11	12		0	22	−9	13			119 204.094(0.001)	3.804	145.729	
1	11	4	7		1	10	5	5			119 227.297(0.004)	0.396	106.796	
1	7	−5	3		1	6	4	2		119 256.388(0.010)	119 256.396(0.008)	2.541	86.810	7
0	22	10	12	+	0	22	10	13	−	119 297.250(0.010)	119 297.248(0.001)	4.151	145.718	6
0	22	10	12	+	0	22	9	13	−	119 300.188(0.010)	119 300.189(0.001)	22.382	145.718	6
0	22	11	12	+	0	22	10	13	−	119 341.685(0.010)	119 341.685(0.001)	22.381	145.718	6
0	22	11	12	+	0	22	9	13	−	119 344.624(0.010)	119 344.626(0.001)	4.151	145.718	6
1	14	13	1	−	1	14	10	4	+		119 368.189(0.014)	0.214	144.804	
1	26	10	16		1	25	−13	13			119 394.194(0.073)	0.224	269.576	
0	8	−3	5		0	7	4	4		119 550.520(0.050)	119 550.507(0.001)	8.407	16.890	6
0	8	3	5	−	0	7	4	4	−	119 577.162(0.010)	119 577.161(0.001)	8.206	16.596	6
1	10	*	9	−	1	9	*	8	−	119 624.236(0.050)	119 624.245(0.002)	49.031	98.872	6
1	5	−5	1		1	4	−4	1			119 636.786(0.003)	6.025	80.938	
0	21	15	7	+	0	21	13	8	−		119 657.001(0.006)	0.986	145.862	
0	14	7	8		0	13	−8	5			119 760.511(0.004)	0.192	57.673	
1	13	−8	6		1	12	9	3			119 814.693(0.013)	0.237	126.064	
0	6	−4	2		0	5	−3	2			119 846.860(0.001)	0.351	9.757	
0	8	4	5		0	7	4	4			119 894.690(0.001)	3.960	16.890	
0	17	13	5	+	0	17	11	6	−		119 940.461(0.005)	0.470	97.271	
1	6	6	0	+	1	5	5	1	+		119 956.380(0.002)	11.382	88.774	
1	16	15	1		1	16	14	2		119 975.341(0.010)	119 975.336(0.006)	3.569	171.242	7
1	19	15	4	−	1	19	13	7	+		119 989.394(0.008)	0.466	196.712	
0	8	4	5	−	0	7	4	4	−	120 065.860(0.010)	120 065.859(0.001)	4.062	16.596	6
1	13	2	11		1	13	*	12		120 153.037(0.010)	120 153.022(0.002)	6.253	112.006	6
1	13	−3	11		1	13	*	12		120 153.037(0.010)	120 153.045(0.002)	6.253	112.006	6
1	6	3	3		1	5	−3	3			120 155.507(0.005)	1.394	81.838	
0	21	−9	12		0	21	9	13		120 224.878(0.100)	120 224.814(0.001)	3.523	130.724	6
0	21	−9	12		0	21	−8	13		120 225.185(0.010)	120 225.189(0.001)	20.507	130.724	6
0	21	10	12		0	21	9	13		120 232.473(0.050)	120 232.479(0.001)	20.507	130.724	6
0	21	10	12		0	21	−8	13			120 232.854(0.001)	3.523	130.724	
1	10	4	6		1	9	5	4			120 254.828(0.003)	0.960	101.219	
0	19	14	6	−	0	19	12	7	+		120 279.639(0.006)	0.689	120.334	
1	26	−11	16		1	25	12	13			120 366.083(0.073)	0.226	269.544	
1	13	7	6		1	13	−6	8			120 436.729(0.004)	0.218	125.687	
1	21	9	12		1	21	−9	13		120 464.694(0.010)	120 464.693(0.002)	2.376	205.307	7
0	21	9	12	−	0	21	9	13	+	120 478.826(0.010)	120 478.815(0.001)	3.875	130.688	6
1	21	9	12		1	21	8	13		120 479.341(0.010)	120 479.349(0.002)	22.422	205.307	7
0	21	9	12	−	0	21	8	13	+	120 479.639(0.010)	120 479.634(0.001)	20.243	130.688	6
0	21	10	12	−	0	21	9	13	+	120 493.174(0.010)	120 493.175(0.001)	20.243	130.688	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	21	10	12	−	0	21	8	13	+	120 493.991(0.010)	120 493.994(0.001)	3.875	130.688	6
0	7	−4	3		0	6	−4	2		120 495.372(0.010)	120 495.372(0.001)	3.535	13.755	6
0	5	3	2	−	0	4	2	3	−		120 534.160(0.001)	1.046	5.393	
1	13	12	1		1	12	12	0			120 541.440(0.012)	0.180	136.589	
1	21	−10	12		1	21	−9	13		120 657.260(0.010)	120 657.262(0.002)	22.415	205.307	7
1	21	−10	12		1	21	8	13			120 671.918(0.002)	2.375	205.307	
0	5	−3	2		0	4	2	3			120 701.535(0.001)	0.984	5.731	
0	28	15	13	−	0	28	15	14	+	120 783.880(0.010)	120 783.874(0.002)	5.341	245.545	6
0	9	−2	7		0	8	3	6		120 808.269(0.010)	120 808.274(0.001)	13.376	19.099	6
0	9	3	7		0	8	3	6		120 810.327(0.010)	120 810.330(0.001)	5.021	19.099	6
0	10	6	5		0	9	7	3			120 811.897(0.003)	0.308	29.805	
0	9	−2	7		0	8	−2	6		120 821.996(0.010)	120 822.003(0.001)	5.022	19.098	6
0	9	3	7		0	8	−2	6		120 824.056(0.010)	120 824.059(0.001)	13.376	19.098	6
0	7	4	3	+	0	6	4	2	+	120 864.017(0.010)	120 864.016(0.001)	3.673	13.417	6
0	28	15	13	−	0	28	14	14	+	120 930.151(0.010)	120 930.149(0.002)	33.475	245.541	6
0	10	7	4		0	9	8	2			120 971.657(0.003)	0.509	31.295	
0	8	−3	5		0	7	−3	4		121 029.633(0.010)	121 029.638(0.001)	3.998	16.841	6
0	9	2	7	+	0	8	3	6	+	121 033.638(0.010)	121 033.637(0.001)	13.168	18.796	6
1	12	*	11		1	12	*	12		121 034.937(0.010)	121 034.933(0.003)	6.454	102.819	7
0	9	3	7	+	0	8	3	6	+	121 037.076(0.010)	121 037.073(0.001)	5.186	18.796	6
0	9	2	7	+	0	8	2	6	+	121 054.931(0.010)	121 054.930(0.001)	5.186	18.795	6
0	9	3	7	+	0	8	2	6	+	121 058.361(0.010)	121 058.366(0.001)	13.169	18.795	6
1	16	12	4	+	1	16	10	7	−		121 061.407(0.005)	0.236	160.870	
1	29	11	18		1	28	−14	15			121 082.992(0.109)	0.201	315.979	
0	20	−8	12		0	20	8	13		121 101.497(0.100)	121 101.423(0.001)	3.217	116.385	6
0	20	−8	12		0	20	−7	13		121 101.497(0.100)	121 101.512(0.001)	18.387	116.385	6
0	20	9	12		0	20	8	13		121 103.581(0.100)	121 103.572(0.001)	18.387	116.385	6
0	20	9	12		0	20	−7	13		121 103.581(0.100)	121 103.660(0.001)	3.217	116.385	6
1	10	−5	6		1	9	5	4			121 154.987(0.004)	0.228	101.219	
1	16	*	13	−	1	16	*	14	+	121 170.152(0.010)	121 170.150(0.002)	16.997	138.557	6
0	5	3	2	−	0	4	1	3	−		121 180.970(0.001)	0.245	5.372	
0	5	−3	2		0	4	−1	3		121 199.670(0.050)	121 199.662(0.001)	0.228	5.714	6
1	12	9	3		1	11	10	1			121 238.122(0.007)	1.040	122.020	
1	29	−12	18		1	28	13	15			121 272.433(0.109)	0.201	315.972	
0	8	4	5		0	7	−3	4		121 373.818(0.010)	121 373.821(0.001)	8.560	16.841	6
0	28	−15	13		0	28	15	14		121 461.312(0.010)	121 461.304(0.002)	4.966	245.473	6
0	10	*	9		0	9	2	8		121 466.122(0.050)	121 466.111(0.001)	24.287	20.655	6
0	10	*	9		0	9	−1	8		121 466.122(0.050)	121 466.143(0.001)	24.287	20.655	6
0	20	8	12	+	0	20	8	13	−	121 482.896(0.010)	121 482.900(0.001)	3.570	116.320	6
0	20	8	12	+	0	20	7	13	−	121 483.107(0.010)	121 483.108(0.001)	18.118	116.320	6
0	20	9	12	+	0	20	8	13	−	121 487.155(0.010)	121 487.159(0.001)	18.118	116.320	6
0	20	9	12	+	0	20	7	13	−	121 487.365(0.010)	121 487.366(0.001)	3.570	116.320	6
0	8	3	5	−	0	7	3	4	−	121 548.413(0.010)	121 548.414(0.001)	4.112	16.531	6
0	28	−15	13		0	28	−14	14		121 550.402(0.010)	121 550.405(0.002)	33.751	245.470	6
1	23	−10	14		1	22	11	11			121 572.749(0.047)	0.251	227.800	
1	22	15	7		1	22	−14	9			121 585.917(0.011)	1.669	234.068	
0	10	1	9	−	0	9	2	8	−	121 601.693(0.050)	121 601.662(0.001)	17.848	20.339	6
0	10	2	9	−	0	9	2	8	−	121 601.693(0.050)	121 601.669(0.001)	6.417	20.339	6
0	10	1	9	−	0	9	1	8	−	121 601.693(0.050)	121 601.721(0.001)	6.417	20.339	6
0	10	2	9	−	0	9	1	8	−	121 601.693(0.050)	121 601.729(0.001)	17.848	20.339	6
1	11	*	11	+	1	10	*	10	+	121 625.490(0.050)	121 625.502(0.003)	60.675	100.146	6
1	16	12	4	+	1	16	9	7	−		121 644.167(0.005)	0.378	160.851	
0	19	−7	12		0	19	7	13		121 835.810(0.010)	121 835.797(0.001)	2.888	102.715	6
0	19	−7	12		0	19	−6	13		121 835.810(0.010)	121 835.816(0.001)	16.266	102.715	6
0	19	8	12		0	19	7	13		121 836.345(0.010)	121 836.343(0.001)	16.266	102.715	6
0	19	8	12		0	19	−6	13		121 836.345(0.010)	121 836.362(0.001)	2.888	102.715	6
1	27	−15	13		1	27	−14	14		121 966.542(0.010)	121 966.535(0.003)	33.261	301.434	7

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	8	4	5	−	0	7	3	4	−	122 037.111(0.010)	122 037.112(0.001)	8.387	16.531	6
1	23	15	8		1	23	−14	10			122 065.000(0.010)	3.426	246.738	
1	26	13	13		1	26	−13	14		122 070.344(0.050)	122 070.349(0.002)	3.900	283.088	7
1	20	16	4		1	20	15	5		122 109.005(0.010)	122 108.998(0.005)	13.900	214.741	7
0	11	*	11		0	10	*	10		122 158.938(0.010)	122 158.942(0.002)	60.588	21.560	6
0	11	*	11	+	0	10	*	10	+	122 199.428(0.010)	122 199.428(0.002)	60.576	21.218	6
0	14	7	8	+	0	13	8	5	+		122 215.284(0.004)	0.227	57.417	
0	8	4	4	+	0	7	5	3	+	122 296.206(0.010)	122 296.210(0.001)	4.291	17.839	6
1	13	−7	7		1	12	8	4			122 306.201(0.009)	0.672	124.007	
0	19	7	12	−	0	19	7	13	+	122 341.018(0.050)	122 340.982(0.001)	3.236	102.617	6
0	19	7	12	−	0	19	6	13	+	122 341.018(0.050)	122 341.029(0.001)	15.995	102.617	6
0	19	8	12	−	0	19	7	13	+	122 342.134(0.050)	122 342.129(0.001)	15.995	102.617	6
0	19	8	12	−	0	19	6	13	+	122 342.134(0.050)	122 342.176(0.001)	3.236	102.617	6
0	28	16	13		0	28	15	14		122 354.102(0.010)	122 354.102(0.002)	33.732	245.473	6
1	26	13	13		1	26	12	14		122 361.908(0.010)	122 361.911(0.002)	30.917	283.078	7
1	20	8	12		1	20	−8	13			122 372.848(0.002)	1.694	190.825	
1	20	8	12		1	20	7	13		122 376.488(0.010)	122 376.492(0.002)	20.619	190.824	7
1	20	−9	12		1	20	−8	13		122 431.210(0.010)	122 431.213(0.002)	20.617	190.825	7
1	20	−9	12		1	20	7	13			122 434.857(0.002)	1.694	190.824	
0	18	−6	12		0	18	*	13		122 449.251(0.100)	122 449.192(0.001)	16.667	89.715	6
0	18	7	12		0	18	*	13		122 449.251(0.100)	122 449.315(0.001)	16.667	89.715	6
1	11	*	11		1	10	*	10		122 485.515(0.050)	122 485.511(0.003)	60.234	94.293	6
1	8	3	5		1	7	−4	4		122 506.819(0.010)	122 506.817(0.003)	6.498	89.735	7
1	10	1	9		1	9	−2	8		122 513.744(0.010)	122 513.747(0.002)	18.464	93.534	7
1	10	−2	9		1	9	−2	8			122 513.818(0.002)	5.452	93.534	
1	10	1	9		1	9	1	8			122 514.126(0.002)	5.452	93.534	
1	10	−2	9		1	9	1	8		122 514.181(0.010)	122 514.197(0.002)	18.464	93.534	6
1	10	−6	5		1	9	−7	3			122 554.407(0.007)	0.419	102.877	
1	7	6	1	+	1	6	6	0	+	122 591.753(0.050)	122 591.763(0.004)	0.760	92.776	7
1	27	−15	13		1	27	13	14			122 596.864(0.003)	3.742	301.413	
0	13	10	3	+	0	13	7	6	−		122 616.631(0.003)	0.674	56.158	
1	19	8	11		1	18	−11	8			122 669.130(0.024)	0.279	180.750	
1	9	2	7		1	8	−3	6		122 687.294(0.010)	122 687.291(0.002)	13.243	92.028	7
1	9	−3	7		1	8	−3	6		122 700.867(0.010)	122 700.861(0.002)	4.470	92.028	6
1	11	7	4		1	10	8	2			122 720.379(0.006)	1.662	111.565	
1	9	2	7		1	8	2	6		122 748.816(0.010)	122 748.814(0.002)	4.455	92.026	6
1	9	−3	7		1	8	2	6		122 762.388(0.010)	122 762.384(0.002)	13.250	92.026	7
1	29	16	13	+	1	29	15	14	−	122 807.684(0.010)	122 807.691(0.005)	40.950	338.930	7
1	17	*	13	+	1	17	*	14	−	122 880.004(0.010)	122 880.003(0.002)	22.294	149.696	6
0	17	−5	12		0	17	*	13		122 958.703(0.050)	122 958.693(0.002)	14.132	77.388	6
0	17	6	12		0	17	*	13		122 958.703(0.050)	122 958.718(0.002)	14.132	77.388	6
0	10	−7	3		0	9	−8	1			123 030.987(0.003)	0.555	31.670	
0	18	6	12	+	0	18	6	13	−	123 075.289(0.010)	123 075.281(0.001)	2.875	89.583	6
0	18	6	12	+	0	18	5	13	−	123 075.289(0.010)	123 075.290(0.001)	13.862	89.583	6
0	18	7	12	+	0	18	6	13	−	123 075.559(0.010)	123 075.558(0.001)	13.862	89.583	6
0	18	7	12	+	0	18	5	13	−	123 075.559(0.010)	123 075.567(0.001)	2.875	89.583	6
1	7	5	2	−	1	6	5	1	−	123 289.060(0.050)	123 289.082(0.003)	0.472	92.364	7
0	6	5	2	+	0	5	4	1	+	123 304.447(0.010)	123 304.443(0.001)	7.110	9.966	6
0	16	*	12		0	16	*	13		123 378.672(0.010)	123 378.674(0.002)	23.061	65.737	6
0	27	14	13	+	0	27	14	14	−	123 412.879(0.010)	123 412.879(0.002)	5.196	226.550	6
1	8	−4	5		1	7	−4	4		123 426.213(0.010)	123 426.207(0.002)	4.104	89.735	6
0	13	−10	3		0	13	−7	6			123 454.871(0.004)	0.368	56.385	
0	27	14	13	+	0	27	13	14	−	123 467.935(0.010)	123 467.935(0.002)	31.176	226.548	6
0	15	11	5		0	15	−8	7			123 496.013(0.005)	0.438	74.074	
1	6	−4	3		1	5	−3	3			123 525.300(0.002)	1.901	81.838	
0	17	5	12	−	0	17	*	13	+	123 702.898(0.050)	123 702.871(0.002)	14.194	77.218	6
0	17	6	12	−	0	17	*	13	+	123 702.898(0.050)	123 702.929(0.002)	14.194	77.218	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	15	*	12		0	15	*	13		123 721.514(0.010)	123 721.514(0.002)	17.690	54.762	6
1	9	7	3	+	1	8	8	0	+		123 805.564(0.007)	0.359	102.809	
0	27	−14	13		0	27	14	14			123 827.995(0.002)	4.800	226.483	
0	27	−14	13		0	27	−13	14		123 859.651(0.010)	123 859.656(0.002)	31.478	226.482	6
0	14	11	3	−	0	14	9	6	+		123 867.343(0.002)	0.266	65.928	
0	27	15	13	+	0	27	14	14	−	123 970.440(0.010)	123 970.435(0.002)	31.160	226.550	6
0	14	*	12		0	14	*	13		123 998.076(0.010)	123 998.078(0.002)	12.101	44.466	6
0	27	15	13	+	0	27	13	14	−		124 025.490(0.002)	5.192	226.548	
1	26	−14	13		1	26	−13	14		124 041.911(0.010)	124 041.915(0.002)	30.771	283.088	7
1	10	9	1		1	10	7	3			124 099.855(0.006)	0.188	109.631	
1	19	7	12		1	19	−7	13			124 100.680(0.002)	1.004	176.980	
1	19	7	12		1	19	6	13		124 101.495(0.010)	124 101.497(0.002)	18.799	176.980	7
1	19	−8	12		1	19	−7	13		124 116.122(0.010)	124 116.118(0.002)	18.798	176.980	7
1	19	−8	12		1	19	6	13			124 116.936(0.002)	1.004	176.980	
0	8	−4	4		0	7	5	3		124 124.367(0.010)	124 124.369(0.002)	4.289	18.083	6
0	27	15	13		0	27	14	14		124 190.146(0.010)	124 190.148(0.002)	31.472	226.483	6
0	13	*	12		0	13	*	13		124 217.975(0.010)	124 217.969(0.003)	6.231	34.850	6
0	27	15	13		0	27	−13	14			124 221.809(0.002)	4.798	226.482	
0	16	4	12	+	0	16	*	13	−	124 237.659(0.010)	124 237.659(0.002)	11.583	65.527	6
0	16	5	12	+	0	16	*	13	−	124 237.659(0.010)	124 237.669(0.002)	11.583	65.527	6
1	18	*	13	−	1	18	*	14	+	124 255.408(0.010)	124 255.406(0.002)	27.463	161.565	7
0	10	7	3	−	0	9	8	2	−	124 282.280(0.010)	124 282.297(0.003)	0.698	31.331	6
1	19	−13	7		1	19	11	8			124 291.989(0.007)	1.194	192.577	
1	26	−14	13		1	26	12	14			124 333.478(0.002)	3.871	283.078	
1	28	15	13	−	1	28	14	14	+	124 437.820(0.010)	124 437.821(0.003)	38.379	319.349	7
1	6	5	1	−	1	5	4	2	−	124 476.588(0.010)	124 476.596(0.003)	4.059	88.212	7
1	19	16	3		1	19	15	4		124 505.336(0.010)	124 505.322(0.006)	10.474	203.983	7
1	8	4	4	+	1	7	5	3	+	124 513.364(0.010)	124 513.367(0.002)	10.268	95.874	7
0	13	11	2	−	0	13	9	5	+		124 526.416(0.003)	0.172	58.257	
1	28	16	13	−	1	28	15	14	+	124 580.439(0.010)	124 580.441(0.003)	38.365	319.350	7
1	5	3	2		1	4	−2	3			124 591.233(0.003)	0.833	78.390	
1	16	14	2	+	1	16	11	5	−		124 666.769(0.013)	0.524	163.983	
0	15	*	12	−	0	15	*	13	+	124 691.404(0.010)	124 691.408(0.002)	17.774	54.510	6
1	8	5	4	+	1	7	5	3	+		124 754.860(0.002)	0.178	95.874	
0	12	10	3	−	0	11	11	0	−		124 770.832(0.004)	0.180	48.943	
1	13	10	3		1	13	8	5			124 848.853(0.006)	0.517	131.209	
0	14	11	4		0	14	−8	6			124 864.467(0.006)	0.318	65.718	
1	8	3	5		1	7	3	4		124 891.236(0.010)	124 891.234(0.002)	3.289	89.655	6
1	15	*	14	−	1	15	*	15	+	124 955.769(0.010)	124 955.764(0.005)	5.895	123.989	6
1	25	12	13		1	25	−12	14		124 963.751(0.010)	124 963.758(0.002)	3.757	265.375	7
1	14	−7	8		1	13	8	5			124 969.214(0.009)	0.639	131.209	
0	15	12	4		0	15	10	6			124 976.619(0.004)	0.183	76.242	
0	12	10	2	+	0	11	11	1	+		124 994.881(0.004)	0.180	48.943	
0	14	*	12	+	0	14	*	13	−	125 074.286(0.010)	125 074.288(0.002)	12.160	44.171	6
1	25	12	13		1	25	11	14		125 082.264(0.010)	125 082.271(0.002)	28.532	265.371	7
1	6	−3	4		1	5	−2	4			125 099.017(0.002)	0.238	80.718	
0	11	8	4	−	0	10	9	1	−		125 337.313(0.003)	0.581	38.593	
1	19	*	13	+	1	19	*	14	−	125 352.104(0.010)	125 352.105(0.002)	32.531	174.159	
1	19	15	4	−	1	19	12	7	+		125 354.348(0.011)	1.580	196.533	
0	13	*	12	−	0	13	*	13	+	125 395.228(0.010)	125 395.240(0.003)	6.262	34.512	6
0	6	5	2		0	5	4	2			125 409.931(0.001)	4.916	10.076	
1	8	4	4	+	1	7	4	3	+		125 413.498(0.002)	0.178	95.844	
0	26	13	13	−	0	26	13	14	+	125 470.208(0.010)	125 470.211(0.001)	5.014	208.201	6
1	13	11	2		1	12	−12	1			125 485.539(0.010)	0.520	133.709	
0	26	13	13	−	0	26	12	14	+	125 489.709(0.010)	125 489.709(0.001)	28.935	208.201	6
1	8	6	2	+	1	7	7	1	+	125 614.091(0.010)	125 614.121(0.008)	1.052	97.409	7
1	21	15	6		1	21	−14	8			125 617.052(0.012)	0.249	221.924	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	6	4	2		1	5	−4	2			125 643.720(0.008)	0.912	82.619	
1	27	14	13	+	1	27	13	14	−	125 646.762(0.010)	125 646.764(0.002)	35.903	300.442	7
1	8	5	4	+	1	7	4	3	+	125 654.980(0.010)	125 654.992(0.002)	10.505	95.844	7
1	18	6	12		1	18	−6	13			125 687.313(0.002)	0.561	163.777	
1	18	6	12		1	18	5	13		125 687.485(0.010)	125 687.488(0.002)	16.690	163.777	7
1	18	−7	12		1	18	−6	13		125 690.964(0.010)	125 690.961(0.002)	16.689	163.777	7
1	18	−7	12		1	18	5	13			125 691.136(0.002)	0.561	163.777	
0	26	14	13	−	0	26	13	14	+	125 693.602(0.010)	125 693.605(0.001)	28.929	208.201	6
0	26	−13	13		0	26	13	14		125 697.022(0.010)	125 697.023(0.001)	4.601	208.145	6
0	11	7	5		0	10	−8	2		125 701.208(0.050)	125 701.219(0.003)	0.367	37.127	6
1	27	15	13	+	1	27	14	14	−	125 702.079(0.010)	125 702.081(0.002)	35.897	300.443	7
1	6	−4	3		1	5	2	3			125 703.946(0.006)	0.812	81.765	
0	26	−13	13		0	26	−12	14		125 707.573(0.010)	125 707.574(0.001)	29.258	208.144	6
0	26	14	13	−	0	26	12	14	+		125 713.103(0.001)	5.012	208.201	
1	5	2	3	+	1	4	1	4	+	125 794.821(0.010)	125 794.870(0.003)	0.293	83.278	6
1	8	−4	5		1	7	3	4		125 810.627(0.010)	125 810.623(0.003)	7.387	89.655	7
0	26	14	13		0	26	13	14		125 834.795(0.010)	125 834.798(0.001)	29.256	208.145	6
0	16	12	5		0	16	10	7			125 838.776(0.004)	0.173	85.039	
0	26	14	13		0	26	−12	14			125 845.349(0.001)	4.600	208.144	
0	6	−5	1		0	5	−4	1			125 888.088(0.001)	5.356	10.329	
1	5	3	3	+	1	4	0	4	+	125 921.889(0.050)	125 921.875(0.003)	0.292	83.278	7
1	25	−13	13		1	25	−12	14			125 932.951(0.002)	28.471	265.375	
1	8	−8	1		1	7	7	0			125 987.920(0.002)	1.446	97.278	
0	7	−5	2		0	6	5	2			125 998.269(0.003)	0.267	14.259	
1	25	−13	13		1	25	11	14			126 051.464(0.002)	3.746	265.371	
0	9	−6	3		0	8	7	2			126 129.545(0.004)	0.349	24.858	
1	20	7	13	−	1	20	*	14	+	126 201.276(0.010)	126 201.261(0.002)	18.762	187.472	7
1	20	8	13	−	1	20	*	14	+	126 201.276(0.010)	126 201.283(0.002)	18.762	187.472	
1	18	16	2		1	18	15	3		126 408.270(0.010)	126 408.250(0.007)	7.043	193.822	7
1	22	−15	8		1	22	13	9			126 480.814(0.011)	1.488	232.584	
0	14	10	4	+	0	14	8	7	−		126 521.873(0.002)	0.225	63.862	
1	26	13	13	−	1	26	12	14	+	126 576.779(0.010)	126 576.784(0.003)	33.279	282.215	7
1	26	14	13	−	1	26	13	14	+	126 598.162(0.010)	126 598.165(0.003)	33.276	282.215	7
1	8	7	1		1	7	−7	1			126 725.128(0.002)	2.750	95.213	
1	9	3	6	−	1	8	4	5	−	126 778.494(0.010)	126 778.500(0.002)	15.966	98.718	7
1	9	4	6	−	1	8	3	5	−	126 796.018(0.010)	126 796.027(0.002)	15.969	98.718	7
1	21	8	13	+	1	21	*	14	−	126 820.691(0.050)	126 820.643(0.002)	21.231	201.501	7
1	21	9	13	+	1	21	*	14	−		126 820.728(0.002)	21.231	201.501	
1	5	5	0		1	4	4	0			126 913.868(0.003)	8.961	82.316	
1	25	12	13	+	1	25	11	14	−	127 001.345(0.010)	127 001.339(0.002)	30.902	264.682	7
1	25	13	13	+	1	25	12	14	−	127 009.490(0.010)	127 009.483(0.002)	30.901	264.682	7
1	20	−9	12		1	19	10	9			127 023.627(0.029)	0.296	190.671	
1	9	6	3		1	9	3	6			127 050.002(0.007)	0.188	98.302	
1	17	5	12		1	17	−5	13		127 142.212(0.010)	127 142.180(0.002)	0.481	151.222	7
1	17	5	12		1	17	4	13		127 142.212(0.010)	127 142.216(0.002)	14.160	151.222	7
1	17	−6	12		1	17	−5	13		127 142.988(0.010)	127 142.985(0.002)	14.160	151.222	7
1	17	−6	12		1	17	4	13		127 142.988(0.010)	127 143.021(0.002)	0.481	151.222	7
0	25	12	13	+	0	25	12	14	−	127 150.041(0.010)	127 150.041(0.001)	4.799	190.505	6
0	25	12	13	+	0	25	11	14	−	127 156.514(0.010)	127 156.512(0.001)	26.738	190.504	6
0	12	−10	2		0	11	−11	0			127 172.779(0.004)	0.184	49.127	
1	22	9	13	−	1	22	8	14	+	127 217.999(0.010)	127 217.996(0.002)	23.675	216.241	7
1	22	10	13	−	1	22	9	14	+	127 218.294(0.010)	127 218.291(0.002)	23.675	216.241	7
0	25	−12	13		0	25	12	14		127 226.787(0.010)	127 226.789(0.001)	4.371	190.462	6
0	25	−12	13		0	25	−11	14		127 230.069(0.010)	127 230.073(0.001)	27.078	190.461	6
0	25	13	13	+	0	25	12	14	−	127 234.054(0.010)	127 234.054(0.001)	26.736	190.505	6
0	25	13	13	+	0	25	11	14	−		127 240.525(0.001)	4.799	190.504	
0	20	15	6		0	20	−13	7			127 267.284(0.009)	0.209	133.721	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	25	13	13		0	25	12	14		127 275.839(0.050)	127 275.867(0.001)	27.077	190.462	6
0	25	13	13		0	25	−11	14			127 279.151(0.001)	4.371	190.461	
1	24	11	13	−	1	24	10	14	+	127 308.685(0.010)	127 308.705(0.002)	28.424	247.835	7
1	24	12	13	−	1	24	11	14	+	127 311.631(0.010)	127 311.655(0.002)	28.423	247.835	7
1	24	11	13		1	24	−11	14		127 315.914(0.010)	127 315.933(0.002)	3.446	248.298	7
0	8	5	4	+	0	7	5	3	+	127 327.572(0.050)	127 327.602(0.001)	3.565	17.839	6
1	15	11	4	−	1	15	8	7	+		127 338.539(0.005)	0.172	150.265	
1	24	11	13		1	24	10	14		127 358.142(0.010)	127 358.175(0.002)	26.387	248.297	7
1	23	10	13	+	1	23	9	14	−	127 397.080(0.010)	127 397.102(0.002)	26.062	231.687	7
1	23	11	13	+	1	23	10	14	−	127 398.063(0.010)	127 398.085(0.002)	26.062	231.687	7
1	16	9	7		1	16	−8	9			127 430.167(0.004)	0.336	154.057	
0	12	10	3		0	11	11	1			127 598.905(0.004)	0.182	48.715	
1	10	5	5		1	9	6	3			127 609.119(0.008)	2.169	102.540	
1	5	−4	2		1	4	1	3			127 612.875(0.004)	0.489	78.362	
1	22	9	13		1	21	−12	10			127 709.408(0.040)	0.288	216.163	
1	24	−12	13		1	24	−11	14		127 733.185(0.010)	127 733.190(0.002)	26.365	248.298	7
1	24	−12	13		1	24	10	14			127 775.432(0.002)	3.442	248.297	
1	6	4	2		1	5	3	2			127 816.033(0.004)	1.097	82.546	
0	8	5	4		0	7	5	3			127 987.603(0.001)	3.411	18.083	
1	15	11	4		1	15	9	6			128 088.506(0.007)	0.728	149.202	
1	8	6	2		1	7	6	1			128 095.152(0.002)	3.912	93.389	
1	16	*	14	+	1	16	*	15	−		128 104.724(0.003)	11.585	134.284	
0	16	8	8	+	0	15	11	5	+		128 190.102(0.006)	0.191	78.280	
1	17	12	5		1	17	10	7			128 202.637(0.008)	0.956	169.654	
0	13	9	4	−	0	13	6	7	+		128 324.504(0.002)	0.575	54.298	
1	16	4	12		1	16	−4	13			128 464.874(0.002)	0.608	139.321	
1	16	4	12		1	16	3	13			128 464.881(0.002)	11.348	139.321	
1	16	−5	12		1	16	−4	13			128 465.043(0.002)	11.348	139.321	
1	16	−5	12		1	16	3	13			128 465.050(0.002)	0.608	139.321	
0	24	−11	13		0	24	11	14			128 506.655(0.001)	4.114	173.437	
0	24	−11	13		0	24	−10	14			128 507.604(0.001)	24.928	173.437	
1	10	2	8	+	1	9	3	7	+		128 521.166(0.002)	20.879	101.046	
1	10	3	8	+	1	9	3	7	+		128 521.186(0.002)	0.800	101.046	
1	10	2	8	+	1	9	2	7	+		128 521.283(0.002)	0.800	101.046	
1	10	3	8	+	1	9	2	7	+		128 521.303(0.002)	20.879	101.046	
0	24	12	13		0	24	11	14			128 522.972(0.001)	24.928	173.437	
0	24	12	13		0	24	−10	14			128 523.921(0.001)	4.114	173.437	
0	24	11	13	−	0	24	11	14	+	128 562.402(0.010)	128 562.403(0.001)	4.555	173.462	6
0	24	11	13	−	0	24	10	14	+	128 564.405(0.010)	128 564.405(0.001)	24.573	173.462	6
1	18	8	10		1	17	−11	7			128 575.365(0.020)	0.226	170.814	
0	18	8	10	+	0	17	11	7	+		128 575.426(0.006)	0.188	96.499	
0	24	12	13	−	0	24	11	14	+	128 591.973(0.010)	128 591.968(0.001)	24.573	173.462	6
0	24	12	13	−	0	24	10	14	+		128 593.970(0.001)	4.555	173.462	
1	7	6	2	−	1	6	5	1	−	128 702.522(0.010)	128 702.533(0.004)	8.781	92.364	7
0	14	10	4	+	0	14	7	7	−		128 739.526(0.002)	0.856	63.788	
1	6	−5	2		1	5	−4	2			128 860.379(0.004)	8.596	82.619	
1	29	15	14		1	29	−15	15		128 862.302(0.050)	128 862.280(0.004)	3.504	335.655	7
0	12	10	2	+	0	12	7	5	−		129 017.154(0.004)	0.252	48.809	
1	8	4	4		1	7	−5	3			129 106.006(0.007)	1.554	90.788	
0	8	7	2	+	0	7	7	1	+		129 124.202(0.001)	1.462	20.520	
0	15	11	4	−	0	15	9	7	+		129 169.005(0.002)	0.300	74.064	
0	9	−5	4		0	8	−6	2			129 201.000(0.002)	0.682	23.916	
1	29	15	14		1	29	14	15		129 245.632(0.010)	129 245.605(0.004)	36.353	335.643	7
1	23	10	13		1	23	−10	14		129 349.411(0.010)	129 349.421(0.002)	2.980	231.856	7
1	23	10	13		1	23	9	14		129 362.509(0.010)	129 362.516(0.002)	24.394	231.855	7
0	11	7	5	+	0	10	8	2	+		129 434.413(0.002)	0.907	36.802	
0	8	−7	1		0	7	−7	0		129 483.401(0.050)	129 483.404(0.001)	1.452	20.884	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	23	−11	13		1	23	−10	14		129 506.497(0.010)	129 506.502(0.002)	24.387	231.856	7
0	18	−8	10		0	17	11	7			129 512.033(0.006)	0.173	96.556	
1	23	−11	13		1	23	9	14			129 519.597(0.002)	2.979	231.855	
0	8	7	1	−	0	7	7	0	−		129 527.572(0.001)	1.463	20.521	
0	23	−10	13		0	23	10	14		129 589.595(0.010)	129 589.596(0.001)	3.831	157.074	6
0	23	−10	13		0	23	−9	14		129 589.846(0.010)	129 589.849(0.001)	22.800	157.074	6
0	23	11	13		0	23	10	14		129 594.631(0.010)	129 594.635(0.001)	22.800	157.074	6
0	23	11	13		0	23	−9	14			129 594.888(0.001)	3.831	157.074	
1	15	3	12		1	15	*	13		129 654.715(0.010)	129 654.696(0.002)	9.178	128.082	6
1	15	−4	12		1	15	*	13		129 654.715(0.010)	129 654.726(0.002)	9.178	128.082	6
0	13	−9	4		0	13	−6	7			129 737.692(0.002)	0.439	54.497	
0	7	5	3		0	6	−4	2		129 739.071(0.010)	129 739.074(0.002)	4.985	13.755	6
0	23	10	13	+	0	23	10	14	−	129 770.956(0.010)	129 770.952(0.001)	4.283	157.078	6
0	23	10	13	+	0	23	9	14	−	129 771.524(0.010)	129 771.525(0.001)	22.433	157.078	6
0	23	11	13	+	0	23	10	14	−	129 780.640(0.010)	129 780.643(0.001)	22.433	157.078	6
0	23	11	13	+	0	23	9	14	−	129 781.211(0.010)	129 781.217(0.001)	4.283	157.078	6
0	6	5	1	−	0	5	4	2	−	129 843.339(0.010)	129 843.340(0.001)	6.393	9.822	6
0	8	7	2		0	7	7	1		129 873.685(0.050)	129 873.701(0.001)	1.450	20.526	6
0	8	6	3	−	0	7	6	2	−	129 913.334(0.010)	129 913.334(0.001)	2.696	19.078	6
0	14	−10	4		0	14	−7	7			130 012.274(0.003)	0.585	63.974	
1	11	−7	5		1	10	−8	3			130 071.775(0.007)	0.482	110.180	
1	11	*	10	−	1	10	*	9	−	130 306.849(0.050)	130 306.859(0.003)	54.800	102.863	6
1	8	5	3	−	1	7	6	2	−	130 359.349(0.010)	130 359.346(0.005)	6.159	96.657	7
1	17	*	14	−	1	17	*	15	+	130 478.781(0.010)	130 478.780(0.003)	17.092	145.343	6
0	22	−9	13		0	22	9	14		130 509.940(0.100)	130 509.888(0.001)	3.525	141.376	6
0	22	−9	13		0	22	−8	14		130 509.940(0.100)	130 509.949(0.001)	20.685	141.376	6
0	22	10	13		0	22	9	14		130 511.334(0.100)	130 511.324(0.001)	20.685	141.376	6
0	22	10	13		0	22	−8	14		130 511.334(0.100)	130 511.386(0.001)	3.525	141.376	6
0	11	−8	3		0	10	−9	1			130 573.256(0.003)	0.562	38.888	
1	8	−6	3		1	7	−6	2		130 617.795(0.010)	130 617.786(0.003)	1.370	92.054	7
1	25	10	15		1	24	−13	12			130 651.077(0.063)	0.261	256.400	
1	14	−9	6		1	14	6	8			130 658.283(0.006)	0.264	135.349	
1	14	*	12		1	14	*	13		130 713.854(0.010)	130 713.849(0.003)	12.564	117.511	6
0	9	−3	6		0	8	4	5		130 741.908(0.010)	130 741.909(0.001)	10.778	20.890	6
0	5	4	2		0	4	−1	3			130 742.486(0.002)	0.499	5.714	
1	14	−10	5		1	14	7	7			130 762.048(0.009)	0.493	137.514	
0	11	8	3	+	0	10	9	2	+		130 804.726(0.003)	0.608	38.591	
0	9	4	6		0	8	4	5		130 808.605(0.010)	130 808.608(0.001)	4.623	20.890	6
0	22	9	13	−	0	22	9	14	+	130 814.873(0.050)	130 814.905(0.002)	3.985	141.354	6
0	22	9	13	−	0	22	8	14	+	130 815.051(0.010)	130 815.056(0.002)	20.307	141.354	6
0	22	10	13	−	0	22	9	14	+	130 817.848(0.010)	130 817.845(0.002)	20.307	141.354	6
0	22	10	13	−	0	22	8	14	+	130 818.037(0.050)	130 817.996(0.002)	3.985	141.354	6
1	29	−16	14		1	29	−15	15		130 875.044(0.010)	130 875.040(0.004)	36.161	335.655	7
1	8	5	3		1	7	5	2		130 944.818(0.010)	130 944.809(0.003)	4.478	91.848	6
0	9	3	6	−	0	8	4	5	−	130 987.086(0.010)	130 987.087(0.001)	10.570	20.601	6
0	30	−16	14		0	30	−15	15		130 991.201(0.010)	130 991.201(0.003)	36.042	281.002	6
0	11	8	4		0	10	9	2			131 027.618(0.003)	0.548	38.491	
1	6	−5	2		1	5	3	2			131 032.692(0.008)	2.262	82.546	
1	18	15	3	−	1	18	12	6	+		131 058.498(0.013)	0.966	185.607	
0	9	−3	6		0	8	−3	5		131 086.091(0.010)	131 086.092(0.001)	4.629	20.878	6
0	9	4	6	−	0	8	4	5	−	131 088.229(0.010)	131 088.228(0.001)	4.754	20.601	6
0	9	4	6		0	8	−3	5		131 152.787(0.010)	131 152.791(0.001)	10.802	20.878	6
1	22	9	13		1	22	−9	14			131 182.124(0.002)	2.355	216.047	
1	22	9	13		1	22	8	14		131 185.638(0.010)	131 185.644(0.002)	22.554	216.047	7
1	22	−10	13		1	22	−9	14		131 233.613(0.010)	131 233.621(0.002)	22.552	216.047	7
1	22	−10	13		1	22	8	14			131 237.141(0.002)	2.355	216.047	
0	21	−8	13		0	21	8	14		131 292.020(0.050)	131 292.007(0.002)	3.197	126.345	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	21	−8	13		0	21	−7	14		131 292.020(0.050)	131 292.020(0.002)	18.572	126.345	6
0	21	9	13		0	21	8	14		131 292.381(0.050)	131 292.382(0.002)	18.572	126.345	6
0	21	9	13		0	21	−7	14		131 292.381(0.050)	131 292.395(0.002)	3.197	126.345	6
1	12	8	4		1	11	9	2			131 315.192(0.007)	1.632	119.627	
0	10	−2	8		0	9	3	7		131 449.961(0.010)	131 449.964(0.001)	15.594	23.128	6
0	10	3	8		0	9	3	7		131 450.243(0.010)	131 450.250(0.001)	5.683	23.128	6
0	10	−2	8		0	9	−2	7		131 452.024(0.010)	131 452.020(0.001)	5.683	23.128	6
0	10	3	8		0	9	−2	7		131 452.306(0.010)	131 452.306(0.001)	15.595	23.128	6
0	9	3	6	−	0	8	3	5	−	131 475.784(0.010)	131 475.785(0.001)	4.762	20.585	6
1	23	14	9		1	23	−13	11			131 560.133(0.007)	0.566	243.579	
0	9	4	6	−	0	8	3	5	−	131 576.924(0.010)	131 576.926(0.001)	10.601	20.585	6
0	6	6	1		0	5	5	1			131 618.508(0.001)	10.983	10.987	
1	13	*	12		1	13	*	13		131 647.692(0.010)	131 647.687(0.003)	6.472	107.615	7
0	10	2	8	+	0	9	3	7	+	131 674.808(0.010)	131 674.808(0.001)	15.337	22.833	6
0	10	3	8	+	0	9	3	7	+	131 675.328(0.010)	131 675.327(0.001)	5.899	22.833	6
0	10	2	8	+	0	9	2	7	+	131 678.243(0.010)	131 678.243(0.001)	5.899	22.833	6
0	10	3	8	+	0	9	2	7	+	131 678.763(0.010)	131 678.763(0.001)	15.337	22.833	6
0	21	8	13	+	0	21	8	14	−	131 720.673(0.050)	131 720.650(0.002)	3.660	126.294	6
0	21	8	13	+	0	21	7	14	−	131 720.673(0.050)	131 720.686(0.002)	18.187	126.294	6
0	21	9	13	+	0	21	8	14	−	131 721.474(0.050)	131 721.469(0.002)	18.187	126.294	6
0	21	9	13	+	0	21	7	14	−	131 721.474(0.050)	131 721.505(0.002)	3.660	126.294	6
0	17	8	9	+	0	16	11	6	+		131 750.425(0.006)	0.210	87.115	
1	28	14	14		1	28	−14	15		131 756.069(0.010)	131 756.055(0.005)	3.935	315.979	7
1	10	7	3		1	10	4	6			131 912.829(0.009)	0.258	105.231	
1	24	15	9		1	24	−14	11			131 944.761(0.009)	2.207	259.849	
1	28	14	14		1	28	13	15		131 944.967(0.010)	131 944.979(0.005)	33.173	315.972	7
1	12	10	2		1	12	8	4			131 954.491(0.006)	0.320	124.007	
0	20	−7	13		0	20	*	14		131 954.981(0.100)	131 954.943(0.002)	19.299	111.984	6
0	20	8	13		0	20	*	14		131 954.981(0.100)	131 955.033(0.002)	19.299	111.984	6
1	13	10	3		1	12	11	1			131 976.753(0.009)	1.001	130.971	
0	13	7	7		0	12	−8	4			132 000.355(0.003)	0.367	50.113	
0	12	8	4	+	0	12	5	7	−		132 000.839(0.002)	0.302	45.444	
0	8	6	3		0	7	6	2		132 055.442(0.050)	132 055.482(0.001)	2.523	19.181	6
1	28	11	17		1	27	−14	14			132 096.323(0.095)	0.236	301.434	
0	11	*	10		0	10	*	9		132 115.301(0.050)	132 115.331(0.002)	54.361	24.707	6
0	11	*	10	−	0	10	2	9	−	132 249.620(0.050)	132 249.585(0.002)	27.158	24.395	8
0	11	*	10	−	0	10	1	9	−	132 249.620(0.050)	132 249.592(0.002)	27.158	24.395	8
1	8	6	3	−	1	7	6	2	−		132 287.183(0.002)	0.175	96.657	
1	12	*	12	+	1	11	*	11	+	132 293.568(0.050)	132 293.609(0.004)	66.469	104.203	6
0	16	8	9		0	15	−9	6			132 352.919(0.006)	0.193	75.656	
1	18	*	14	+	1	18	*	15	−	132 357.776(0.010)	132 357.801(0.003)	22.445	157.150	6
1	19	11	8		1	19	−10	10			132 433.212(0.004)	0.207	188.159	
0	20	7	13	−	0	20	7	14	+	132 507.587(0.010)	132 507.582(0.002)	3.310	111.900	6
0	20	7	13	−	0	20	6	14	+	132 507.587(0.010)	132 507.589(0.002)	16.063	111.900	6
0	20	8	13	−	0	20	7	14	+	132 507.796(0.010)	132 507.789(0.002)	16.063	111.900	6
0	20	8	13	−	0	20	6	14	+	132 507.796(0.010)	132 507.796(0.002)	3.310	111.900	6
0	19	−6	13		0	19	*	14		132 514.302(0.010)	132 514.294(0.002)	16.790	98.294	6
0	19	7	13		0	19	*	14		132 514.302(0.010)	132 514.313(0.002)	16.790	98.294	6
0	7	5	3	+	0	6	4	2	+	132 580.136(0.010)	132 580.143(0.001)	6.134	13.417	6
1	28	−12	17		1	27	13	14			132 728.743(0.095)	0.237	301.413	
0	8	−6	2		0	7	−6	1		132 744.316(0.010)	132 744.321(0.001)	2.576	19.488	6
0	29	15	14	−	0	29	15	15	+	132 772.345(0.010)	132 772.341(0.003)	5.600	260.744	6
1	17	−8	10		1	16	9	7			132 791.219(0.016)	0.427	158.307	
0	29	15	14	−	0	29	14	15	+	132 808.168(0.010)	132 808.168(0.003)	33.365	260.743	6
0	12	*	12		0	11	*	11		132 810.365(0.010)	132 810.367(0.002)	66.392	25.635	6
0	12	*	12	+	0	11	*	11	+	132 850.105(0.010)	132 850.101(0.002)	66.380	25.294	6
1	21	8	13		1	21	−8	14			132 897.355(0.002)	1.597	200.874	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	21	8	13		1	21	7	14		132 898.179(0.010)	132 898.183(0.002)	20.830	200.874	7
1	21	−9	13		1	21	−8	14		132 912.006(0.010)	132 912.011(0.002)	20.829	200.874	7
1	21	−9	13		1	21	7	14			132 912.839(0.002)	1.597	200.874	
0	6	−6	0		0	5	−5	0			132 917.607(0.001)	10.986	11.266	
1	28	−15	14		1	28	−14	15		132 955.811(0.010)	132 955.816(0.005)	33.075	315.979	7
0	18	*	13		0	18	*	14		132 983.341(0.010)	132 983.340(0.002)	28.460	85.279	6
1	8	4	4		1	7	4	3		133 116.158(0.010)	133 116.155(0.003)	2.570	90.654	6
1	12	*	12		1	11	*	11		133 130.438(0.050)	133 130.427(0.004)	66.058	98.378	6
1	11	1	10		1	10	−2	9			133 132.633(0.003)	20.662	97.620	
1	11	−2	10		1	10	−2	9			133 132.646(0.003)	6.173	97.620	
1	11	1	10		1	10	1	9		133 132.684(0.050)	133 132.704(0.003)	6.173	97.620	6
1	11	−2	10		1	10	1	9			133 132.717(0.003)	20.662	97.620	
1	20	15	5	−	1	20	13	8	+		133 133.574(0.006)	0.553	207.830	
1	28	−15	14		1	28	13	15			133 144.740(0.005)	3.914	315.972	
0	29	−15	14		0	29	15	15		133 169.845(0.010)	133 169.854(0.003)	5.111	260.660	6
0	29	−15	14		0	29	−14	15		133 190.157(0.010)	133 190.160(0.003)	33.776	260.660	6
0	19	6	13	+	0	19	*	14	−	133 190.994(0.050)	133 190.972(0.002)	16.858	98.175	6
0	19	7	13	+	0	19	*	14	−	133 190.994(0.050)	133 191.019(0.002)	16.858	98.175	6
1	10	2	8		1	9	−3	7		133 232.074(0.010)	133 232.068(0.002)	15.638	96.121	7
1	10	−3	8		1	9	−3	7		133 234.924(0.010)	133 234.922(0.002)	5.035	96.121	6
1	10	2	8		1	9	2	7		133 245.639(0.010)	133 245.638(0.002)	5.032	96.120	6
1	10	−3	8		1	9	2	7		133 248.500(0.010)	133 248.492(0.002)	15.639	96.120	7
0	6	6	1	−	0	5	5	0	−	133 251.589(0.010)	133 251.593(0.001)	11.005	10.864	6
1	5	4	1		1	4	−3	2			133 266.672(0.008)	0.289	79.135	
1	14	−13	2		1	13	13	0			133 349.115(0.016)	0.174	146.473	
0	8	−4	4		0	7	−4	3		133 368.070(0.010)	133 368.072(0.001)	3.985	17.774	6
0	17	*	13		0	17	*	14		133 373.623(0.010)	133 373.625(0.002)	23.206	72.939	6
1	8	−5	4		1	7	−5	3		133 374.661(0.010)	133 374.658(0.003)	3.467	90.788	7
0	12	−8	4		0	12	−5	7			133 395.424(0.002)	0.246	45.664	
0	29	16	14		0	29	15	15		133 405.695(0.010)	133 405.697(0.003)	33.773	260.660	6
1	9	3	6		1	8	−4	5		133 414.279(0.010)	133 414.277(0.002)	9.739	93.852	7
0	5	4	2	−	0	4	1	3	−	133 427.588(0.050)	133 427.605(0.001)	0.531	5.372	6
0	6	−5	1		0	5	4	2			133 482.893(0.003)	1.311	10.076	
0	6	6	0	+	0	5	5	1	+		133 611.658(0.001)	10.979	10.855	
1	25	−11	15		1	24	12	12			133 636.507(0.064)	0.267	256.301	
1	9	−4	6		1	8	−4	5		133 677.811(0.010)	133 677.809(0.002)	4.451	93.852	6
1	16	*	15	−	1	16	*	16	+	133 679.458(0.010)	133 679.452(0.006)	5.903	129.825	6
0	16	12	5		0	16	−9	7			133 683.291(0.006)	0.470	84.778	
0	16	*	13		0	16	*	14		133 695.346(0.010)	133 695.344(0.002)	17.783	61.277	6
1	11	7	5	+	1	10	8	2	+		133 752.098(0.004)	0.193	113.822	
0	18	5	13	−	0	18	*	14	+	133 783.421(0.010)	133 783.419(0.002)	14.290	85.120	6
0	18	6	13	−	0	18	*	14	+	133 783.421(0.010)	133 783.429(0.002)	14.290	85.120	6
1	19	*	14	−	1	19	*	15	+	133 864.169(0.010)	133 864.167(0.003)	27.674	169.694	7
1	30	16	14	+	1	30	15	15	−	133 885.941(0.010)	133 885.947(0.005)	41.153	354.712	7
0	16	−13	3		0	16	−11	5			133 953.635(0.005)	0.235	87.616	
0	15	*	13		0	15	*	14		133 957.570(0.010)	133 957.568(0.003)	12.148	50.294	6
0	8	6	2	+	0	7	6	1	+	133 960.027(0.010)	133 960.025(0.001)	2.748	19.112	6
0	15	12	3	+	0	15	10	6	−		134 004.007(0.003)	0.262	76.166	
0	8	4	4	+	0	7	4	3	+	134 012.336(0.010)	134 012.337(0.001)	4.147	17.449	6
0	14	*	13		0	14	*	14		134 168.439(0.010)	134 168.435(0.003)	6.244	39.991	6
1	10	7	4	+	1	9	8	1	+		134 248.794(0.003)	0.438	107.941	
0	13	7	7	+	0	12	8	4	+		134 273.144(0.003)	0.457	49.847	
1	27	13	14		1	27	−13	15		134 284.381(0.010)	134 284.385(0.002)	4.037	296.934	7
0	15	11	4	−	0	15	8	7	+		134 292.000(0.003)	0.957	73.894	
0	17	*	13	+	0	17	*	14	−	134 295.630(0.010)	134 295.631(0.002)	23.309	72.739	6
1	9	3	6		1	8	3	5		134 333.673(0.010)	134 333.667(0.002)	4.196	93.821	6
1	27	13	14		1	27	12	15		134 367.512(0.010)	134 367.520(0.002)	30.788	296.931	7

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	12	7	6		0	11	−8	3			134 403.600(0.003)	0.523	43.243	
0	17	13	5		0	17	11	7			134 515.119(0.005)	0.211	96.556	
1	20	7	13		1	20	−7	14			134 529.381(0.002)	0.873	186.337	
1	20	7	13		1	20	6	14		134 529.546(0.010)	134 529.559(0.002)	19.038	186.337	7
1	20	−8	13		1	20	−7	14		134 533.028(0.010)	134 533.025(0.002)	19.038	186.337	7
1	20	−8	13		1	20	6	14			134 533.203(0.002)	0.873	186.337	
1	9	−4	6		1	8	3	5		134 597.198(0.010)	134 597.198(0.002)	9.957	93.821	7
1	11	−6	6		1	10	−7	4			134 672.291(0.006)	0.270	108.377	
1	8	7	2	+	1	7	7	1	+		134 717.583(0.004)	0.750	97.409	
0	16	*	13	−	0	16	*	14	+	134 736.877(0.010)	134 736.879(0.002)	17.866	61.032	6
0	28	14	14	+	0	28	14	15	−	134 742.489(0.010)	134 742.490(0.002)	5.417	241.046	6
0	28	14	14	+	0	28	13	15	−	134 755.252(0.010)	134 755.252(0.002)	31.125	241.046	6
0	17	−8	9		0	16	11	6			134 877.070(0.006)	0.184	87.121	
0	21	9	12	−	0	20	12	9	−		134 883.537(0.008)	0.175	130.207	
0	28	15	14	+	0	28	14	15	−	134 888.766(0.010)	134 888.765(0.002)	31.121	241.046	6
0	28	15	14	+	0	28	13	15	−		134 901.527(0.002)	5.416	241.046	
1	27	−14	14		1	27	−13	15		134 914.708(0.010)	134 914.715(0.002)	30.742	296.934	7
1	12	−8	5		1	11	−9	3			134 930.545(0.007)	0.476	118.312	
0	28	−14	14		0	28	14	15		134 993.264(0.010)	134 993.260(0.002)	4.906	240.967	6
1	27	−14	14		1	27	12	15			134 997.850(0.003)	4.028	296.931	
0	28	−14	14		0	28	−13	15		135 000.036(0.010)	135 000.039(0.002)	31.559	240.967	6
0	15	−11	4		0	15	−8	7			135 039.229(0.004)	0.585	74.074	
1	20	*	14	+	1	20	*	15	−	135 068.214(0.010)	135 068.212(0.003)	32.801	182.967	
0	28	15	14		0	28	14	15		135 082.360(0.010)	135 082.361(0.002)	31.558	240.967	6
0	28	15	14		0	28	−13	15			135 089.140(0.002)	4.905	240.967	
0	16	12	4	+	0	16	10	7	−		135 104.051(0.003)	0.343	84.939	
0	15	*	13	+	0	15	*	14	−	135 115.310(0.010)	135 115.315(0.003)	12.207	50.003	6
0	16	8	9	−	0	15	9	6	−		135 176.080(0.005)	0.224	75.431	
0	12	9	4	+	0	11	10	1	+		135 196.640(0.003)	0.542	46.608	
1	29	15	14	−	1	29	14	15	+	135 241.849(0.010)	135 241.854(0.004)	38.638	334.419	7
1	15	−10	6		1	15	7	8			135 249.258(0.007)	0.540	145.634	
1	29	16	14	−	1	29	15	15	+	135 288.714(0.010)	135 288.718(0.004)	38.633	334.419	7
0	9	5	4	−	0	8	6	3	−	135 323.882(0.010)	135 323.879(0.002)	3.083	23.411	6
0	14	*	13	−	0	14	*	14	+	135 438.171(0.010)	135 438.175(0.003)	6.275	39.654	6
1	6	5	1		1	5	4	1			135 446.659(0.003)	5.063	83.580	
1	20	15	5	−	1	20	12	8	+		135 447.904(0.008)	1.215	207.753	
1	6	4	2	+	1	5	3	3	+	135 531.676(0.050)	135 531.748(0.003)	1.490	87.479	7
0	5	−2	3		0	4	1	4			135 700.407(0.001)	0.267	4.573	
1	9	4	5	+	1	8	5	4	+	135 738.961(0.010)	135 738.967(0.002)	13.023	100.035	7
1	20	−14	7		1	20	12	8			135 786.108(0.010)	1.149	205.874	
1	9	5	5	+	1	8	5	4	+		135 791.076(0.002)	0.356	100.035	
1	5	2	3		1	4	−1	4			135 967.252(0.003)	0.303	77.230	
1	9	4	5	+	1	8	4	4	+		135 980.461(0.002)	0.355	100.027	
1	21	*	14	−	1	21	*	15	+	136 009.674(0.010)	136 009.671(0.003)	37.850	196.964	
1	21	9	12		1	20	−12	9			136 025.156(0.034)	0.329	204.788	
1	9	5	5	+	1	8	4	4	+	136 032.560(0.010)	136 032.570(0.002)	13.080	100.027	7
0	16	13	4	+	0	16	11	5	−		136 055.008(0.004)	0.265	87.431	
1	19	6	13		1	19	−6	14			136 081.255(0.002)	0.489	172.440	
1	19	6	13		1	19	5	14		136 081.290(0.010)	136 081.293(0.002)	16.860	172.440	7
1	19	−7	13		1	19	−6	14		136 082.076(0.010)	136 082.073(0.002)	16.860	172.440	7
1	19	−7	13		1	19	5	14			136 082.110(0.002)	0.489	172.440	
0	5	2	3	+	0	4	1	4	+		136 170.621(0.001)	0.269	4.222	
1	11	10	1		1	11	8	3			136 172.778(0.007)	0.177	117.478	
0	17	12	6		0	17	−9	8			136 292.366(0.005)	0.350	94.165	
0	27	13	14	−	0	27	13	15	+	136 395.193(0.010)	136 395.194(0.002)	5.203	221.998	6
0	27	13	14	−	0	27	12	15	+	136 399.477(0.010)	136 399.476(0.002)	28.926	221.998	6
1	26	12	14		1	26	−12	15		136 414.520(0.010)	136 414.537(0.002)	3.870	278.528	7

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	26	12	14		1	26	11	15		136 446.648(0.010)	136 446.653(0.002)	28.507	278.527	7
0	27	14	14	−	0	27	13	15	+	136 450.250(0.010)	136 450.250(0.002)	28.925	221.998	6
0	27	14	14	−	0	27	12	15	+		136 454.532(0.002)	5.203	221.998	
0	11	7	5		0	10	8	3			136 459.764(0.003)	0.523	36.768	
0	27	−13	14		0	27	13	15			136 521.679(0.002)	4.671	221.928	
0	27	−13	14		0	27	−12	15		136 523.802(0.010)	136 523.803(0.002)	29.381	221.928	6
0	27	14	14		0	27	13	15		136 553.340(0.010)	136 553.341(0.002)	29.381	221.928	6
0	27	14	14		0	27	−12	15			136 555.464(0.002)	4.671	221.928	
0	18	−14	4		0	18	−12	6			136 562.278(0.006)	0.304	109.420	
1	10	8	3	−	1	9	9	0	−		136 572.472(0.009)	0.338	108.934	
1	13	−10	4		1	13	7	6			136 589.775(0.011)	0.174	129.704	
1	28	14	14	+	1	28	13	15	−	136 623.729(0.010)	136 623.727(0.010)	34.809	314.792	7
0	14	−11	3		0	14	−8	6			136 625.588(0.005)	0.274	65.718	
1	28	15	14	+	1	28	14	15	−		136 642.097(0.010)	34.807	314.792	
1	26	−13	14		1	26	−12	15			136 706.099(0.002)	28.488	278.528	
1	22	8	14	+	1	22	*	15	−	136 714.067(0.010)	136 714.056(0.003)	21.420	211.681	7
1	22	9	14	+	1	22	*	15	−		136 714.076(0.003)	21.420	211.681	
1	26	−13	14		1	26	11	15			136 738.215(0.002)	3.866	278.527	
1	27	13	14	−	1	27	12	15	+	136 754.915(0.010)	136 754.909(0.003)	33.517	295.881	7
1	27	14	14	−	1	27	13	15	+	136 761.915(0.010)	136 761.913(0.003)	33.516	295.881	7
1	8	−6	3		1	7	5	2			136 802.541(0.012)	0.651	91.848	
0	14	11	3	−	0	14	8	6	+		136 963.089(0.004)	0.496	65.491	
0	12	7	6	+	0	11	8	3	+		137 038.822(0.002)	0.812	42.954	
0	6	4	2	+	0	5	3	3	+	137 152.739(0.010)	137 152.745(0.001)	2.145	8.842	6
1	26	12	14	+	1	26	11	15	−	137 165.401(0.010)	137 165.392(0.003)	30.881	277.640	7
1	26	13	14	+	1	26	12	15	−	137 167.939(0.010)	137 167.930(0.003)	30.881	277.640	7
1	9	7	2	−	1	8	8	1	−		137 174.654(0.010)	0.658	102.800	
1	6	6	1	−	1	5	3	2	−		137 183.741(0.006)	0.995	88.164	
1	23	9	14	−	1	23	*	15	+		137 193.859(0.003)	23.893	227.111	
1	23	10	14	−	1	23	9	15	+		137 193.936(0.003)	23.892	227.111	
1	17	*	15	+	1	17	*	16	−	137 205.216(0.010)	137 205.213(0.004)	11.625	140.767	6
0	8	5	4		0	7	−4	3		137 231.304(0.010)	137 231.306(0.002)	6.332	17.774	6
0	16	13	4		0	16	11	6			137 300.848(0.004)	0.199	87.121	
0	20	−15	5		0	20	−13	7			137 304.899(0.007)	0.376	133.721	
0	9	6	4		0	8	−6	2			137 318.676(0.002)	0.244	23.916	
1	8	−5	4		1	7	4	3		137 384.812(0.010)	137 384.807(0.005)	4.742	90.654	7
1	24	10	14	+	1	24	9	15	−	137 454.983(0.010)	137 454.973(0.002)	26.333	243.250	7
1	24	11	14	+	1	24	10	15	−	137 455.242(0.010)	137 455.237(0.002)	26.333	243.250	7
1	25	11	14	−	1	25	10	15	+	137 506.800(0.010)	137 506.793(0.002)	28.711	260.095	7
1	25	12	14	−	1	25	11	15	+	137 507.661(0.010)	137 507.654(0.002)	28.711	260.095	7
1	19	14	5	+	1	19	12	8	−		137 509.091(0.005)	0.371	194.512	
0	5	3	3		0	4	0	4			137 536.504(0.002)	0.259	4.572	
1	18	5	13		1	18	−5	14			137 541.432(0.002)	0.501	159.189	
1	18	5	13		1	18	4	14		137 541.436(0.010)	137 541.440(0.002)	14.223	159.189	7
1	18	−6	13		1	18	−5	14		137 541.604(0.010)	137 541.607(0.002)	14.223	159.189	7
1	18	−6	13		1	18	4	14			137 541.615(0.002)	0.501	159.189	
1	10	3	7	−	1	9	4	6	−		137 558.988(0.002)	18.348	102.947	
1	10	4	7	−	1	9	4	6	−		137 559.605(0.002)	0.574	102.947	
1	10	3	7	−	1	9	3	6	−		137 561.907(0.002)	0.574	102.947	
1	10	4	7	−	1	9	3	6	−	137 562.515(0.010)	137 562.523(0.002)	18.348	102.947	7
1	14	12	2		1	13	−13	1			137 662.489(0.012)	0.503	143.478	
1	8	6	3	−	1	7	5	2	−	137 700.620(0.010)	137 700.634(0.004)	8.648	96.477	7
0	6	−4	2		0	5	3	3			137 751.100(0.001)	1.890	9.160	
0	26	12	14	+	0	26	12	15	−	137 812.746(0.010)	137 812.743(0.002)	4.962	203.604	6
0	26	12	14	+	0	26	11	15	−	137 814.093(0.010)	137 814.091(0.002)	26.760	203.604	6
0	26	−12	14		0	26	12	15		137 823.225(0.010)	137 823.234(0.002)	4.410	203.547	6
0	26	−12	14		0	26	−11	15		137 823.853(0.010)	137 823.855(0.002)	27.235	203.547	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	26	13	14	+	0	26	12	15	−	137 832.240(0.010)	137 832.241(0.002)	26.760	203.604	6
0	26	13	14	+	0	26	11	15	−		137 833.589(0.002)	4.962	203.604	
0	26	13	14		0	26	12	15		137 833.769(0.010)	137 833.785(0.002)	27.235	203.547	6
0	26	13	14		0	26	−11	15			137 834.406(0.002)	4.410	203.547	
1	14	11	3		1	14	9	5			137 837.136(0.006)	0.495	140.793	
0	12	9	3	−	0	11	10	2	−		138 004.106(0.003)	0.550	46.607	
1	14	5	9		1	13	6	7			138 126.870(0.008)	0.189	128.002	
1	11	6	5		1	10	7	3			138 129.981(0.008)	2.143	109.631	
1	5	−3	3		1	4	0	4			138 175.824(0.003)	0.286	77.229	
1	25	11	14		1	25	−11	15		138 281.907(0.010)	138 281.907(0.002)	3.516	260.759	7
1	25	11	14		1	25	10	15		138 292.760(0.010)	138 292.774(0.002)	26.392	260.758	7
0	12	8	5		0	11	−9	2			138 358.550(0.004)	0.293	44.871	
1	25	−12	14		1	25	−11	15		138 400.414(0.010)	138 400.420(0.002)	26.385	260.759	7
1	25	−12	14		1	25	10	15			138 411.287(0.002)	3.515	260.758	
1	14	−8	7		1	13	9	4			138 414.796(0.011)	0.650	133.104	
0	8	−5	3		0	7	−5	2		138 423.001(0.010)	138 423.000(0.001)	3.769	18.462	6
1	8	7	1	−	1	7	7	0	−		138 518.476(0.005)	0.919	97.428	
0	5	3	3	+	0	4	0	4	+		138 523.737(0.001)	0.259	4.221	
1	19	14	5	+	1	19	11	8	−		138 585.210(0.005)	0.669	194.476	
1	6	5	2	+	1	5	2	3	+	138 611.572(0.050)	138 611.602(0.003)	1.288	87.474	7
0	9	4	5	+	0	8	5	4	+	138 625.834(0.010)	138 625.834(0.001)	7.367	22.087	6
1	22	−10	13		1	21	11	10			138 649.210(0.041)	0.310	215.800	
0	17	9	8	−	0	16	12	5	−		138 792.929(0.007)	0.182	89.402	
0	18	14	5	−	0	18	12	6	+		138 808.904(0.005)	0.391	109.264	
0	12	−9	3		0	11	−10	1			138 875.364(0.004)	0.547	46.856	
0	8	5	3	−	0	7	5	2	−	138 895.211(0.010)	138 895.216(0.001)	3.962	18.128	6
1	17	4	13		1	17	*	14		138 895.778(0.050)	138 895.761(0.003)	12.022	146.589	7
1	17	−5	13		1	17	*	14		138 895.778(0.050)	138 895.796(0.003)	12.022	146.589	7
1	7	7	1	+	1	6	6	0	+	138 897.549(0.010)	138 897.547(0.003)	14.239	92.776	7
0	25	−11	14		0	25	11	15			138 940.195(0.002)	4.123	185.827	
0	25	−11	14		0	25	−10	15		138 940.345(0.010)	138 940.364(0.002)	25.110	185.827	6
0	25	12	14		0	25	11	15		138 943.492(0.010)	138 943.479(0.002)	25.110	185.827	6
0	25	12	14		0	25	−10	15			138 943.647(0.002)	4.123	185.827	
0	9	−4	5		0	8	5	4		139 021.421(0.010)	139 021.422(0.001)	7.621	22.352	6
0	8	5	4	+	0	7	4	3	+	139 043.729(0.010)	139 043.729(0.001)	6.417	17.449	6
0	25	11	14	−	0	25	11	15	+	139 044.613(0.010)	139 044.608(0.002)	4.694	185.866	6
0	25	11	14	−	0	25	10	15	+	139 045.002(0.010)	139 045.003(0.002)	24.617	185.866	6
0	25	12	14	−	0	25	11	15	+	139 051.077(0.010)	139 051.079(0.002)	24.617	185.866	6
0	25	12	14	−	0	25	10	15	+		139 051.475(0.002)	4.694	185.866	
0	9	−5	4		0	8	6	3		139 098.563(0.010)	139 098.563(0.002)	2.722	23.586	6
1	11	*	9	+	1	10	3	8	+	139 239.357(0.010)	139 239.357(0.003)	24.538	105.333	6
1	11	*	9	+	1	10	2	8	+	139 239.357(0.010)	139 239.378(0.003)	24.538	105.333	6
0	7	6	2		0	6	−5	1		139 487.732(0.050)	139 487.775(0.004)	0.486	14.528	6
0	6	4	2	+	0	5	2	3	+		139 491.345(0.001)	0.467	8.764	
0	6	−4	2		0	5	−2	3		139 576.794(0.050)	139 576.803(0.001)	0.426	9.099	6
1	13	−9	5		1	12	−10	3			139 582.641(0.007)	0.447	127.268	
0	20	15	6	+	0	20	13	7	−		139 785.358(0.006)	0.553	133.584	
1	18	*	15	−	1	18	*	16	+	139 815.800(0.010)	139 815.804(0.004)	17.176	152.486	6
1	23	14	9		1	23	12	11			139 831.359(0.007)	0.275	243.303	
0	24	−10	14		0	24	10	15		139 901.370(0.050)	139 901.335(0.002)	3.813	168.770	6
0	24	−10	14		0	24	−9	15		139 901.370(0.050)	139 901.377(0.002)	23.002	168.770	6
0	24	11	14		0	24	10	15		139 902.290(0.050)	139 902.284(0.002)	23.002	168.770	6
0	24	11	14		0	24	−9	15		139 902.290(0.050)	139 902.326(0.002)	3.813	168.770	6
0	12	9	4		0	11	10	2			139 941.665(0.004)	0.539	46.448	
1	24	10	14		1	24	−10	15		140 016.414(0.050)	140 016.407(0.002)	3.000	243.627	7
0	10	−5	5		0	9	−6	3			140 019.124(0.002)	0.205	29.065	
1	24	10	14		1	24	9	15		140 019.597(0.010)	140 019.605(0.002)	24.478	243.626	7

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	24	−11	14		1	24	−10	15		140 058.653(0.010)	140 058.649(0.002)	24.477	243.627	7
1	24	−11	14		1	24	9	15			140 061.847(0.002)	3.000	243.626	
0	24	10	14	+	0	24	10	15	−		140 122.817(0.002)	4.402	168.788	
0	24	10	14	+	0	24	9	15	−	140 122.909(0.010)	140 122.925(0.002)	22.491	168.788	6
0	24	11	14	+	0	24	10	15	−	140 124.833(0.050)	140 124.819(0.002)	22.491	168.788	6
0	24	11	14	+	0	24	9	15	−		140 124.927(0.002)	4.402	168.788	
1	16	3	13		1	16	*	14		140 133.833(0.010)	140 133.826(0.003)	9.223	134.647	6
1	16	−4	13		1	16	*	14		140 133.833(0.010)	140 133.833(0.003)	9.223	134.647	6
0	9	5	5		0	8	5	4		140 138.837(0.010)	140 138.837(0.001)	4.247	22.352	6
0	9	5	5	+	0	8	5	4	+	140 173.955(0.010)	140 173.954(0.001)	4.355	22.087	6
1	19	9	10		1	18	−12	7			140 487.230(0.025)	0.222	183.401	
1	7	7	0	−	1	6	6	1	−		140 563.762(0.003)	14.176	92.740	
0	21	10	12	−	0	20	11	9	−		140 665.779(0.008)	0.179	130.015	
1	11	8	3		1	11	5	6			140 675.108(0.010)	0.262	112.785	
0	23	−9	14		0	23	9	15		140 728.092(0.010)	140 728.079(0.002)	3.481	152.380	6
0	23	−9	14		0	23	−8	15		140 728.092(0.010)	140 728.089(0.002)	20.900	152.380	6
0	23	10	14		0	23	9	15		140 728.336(0.010)	140 728.332(0.002)	20.900	152.380	6
0	23	10	14		0	23	−8	15		140 728.336(0.010)	140 728.342(0.002)	3.481	152.380	6
1	13	9	4		1	12	10	2			140 779.581(0.008)	1.590	128.408	
1	7	4	3		1	6	−4	3			140 786.167(0.006)	1.680	85.958	
1	20	9	11		1	19	−12	8			140 813.224(0.029)	0.331	193.857	
1	18	−13	6		1	18	11	7			140 866.116(0.007)	0.936	181.681	
1	12	*	11	−	1	11	*	10	−	140 986.741(0.010)	140 986.751(0.004)	60.575	107.209	6
0	23	9	14	−	0	23	9	15	+	141 069.984(0.050)	141 069.963(0.002)	4.084	152.372	6
0	23	9	14	−	0	23	8	15	+	141 069.984(0.050)	141 069.990(0.002)	20.372	152.372	6
0	23	10	14	−	0	23	9	15	+	141 070.539(0.050)	141 070.537(0.002)	20.372	152.372	6
0	23	10	14	−	0	23	8	15	+	141 070.539(0.050)	141 070.564(0.002)	4.084	152.372	6
0	7	−5	2		0	6	−4	2			141 104.164(0.001)	1.180	13.755	
1	16	12	4		1	16	10	6			141 208.101(0.006)	0.710	160.004	
1	15	*	13		1	15	*	14		141 250.939(0.010)	141 250.938(0.003)	12.613	123.370	6
0	10	−6	4		0	9	−7	2			141 398.818(0.003)	0.861	30.139	
1	24	10	14		1	23	−13	11			141 435.758(0.055)	0.307	243.579	
0	22	−8	14		0	22	*	15		141 437.561(0.050)	141 437.531(0.002)	21.923	136.658	6
0	22	9	14		0	22	*	15		141 437.561(0.050)	141 437.593(0.002)	21.923	136.658	6
1	11	5	6		1	10	6	4			141 444.713(0.005)	1.852	108.067	
0	10	−3	7		0	9	4	6		141 476.266(0.010)	141 476.268(0.001)	13.032	25.253	6
0	10	4	7		0	9	4	6		141 487.712(0.010)	141 487.715(0.001)	5.278	25.253	6
0	10	−3	7		0	9	−3	6		141 542.964(0.010)	141 542.967(0.001)	5.279	25.251	6
0	10	4	7		0	9	−3	6		141 554.414(0.010)	141 554.413(0.001)	13.036	25.251	6
1	30	15	15		1	30	−15	16			141 588.520(0.018)	3.662	351.222	
1	23	9	14		1	23	−9	15		141 655.200(0.010)	141 655.211(0.002)	2.306	227.130	7
1	23	9	14		1	23	8	15		141 656.017(0.010)	141 656.026(0.002)	22.712	227.130	7
1	23	−10	14		1	23	−9	15		141 668.291(0.010)	141 668.306(0.002)	22.711	227.130	7
1	23	−10	14		1	23	8	15			141 669.121(0.002)	2.306	227.130	
1	30	15	15		1	30	14	16			141 702.974(0.018)	35.569	351.219	
0	10	3	7	−	0	9	4	6	−	141 775.596(0.010)	141 775.595(0.001)	12.800	24.974	6
0	10	4	7	−	0	9	4	6	−	141 794.222(0.010)	141 794.222(0.001)	5.444	24.974	6
1	19	*	15	+	1	19	*	16	−	141 865.702(0.010)	141 865.699(0.003)	22.582	164.961	6
0	10	3	7	−	0	9	3	6	−	141 876.736(0.010)	141 876.736(0.001)	5.446	24.971	6
0	10	4	7	−	0	9	3	6	−	141 895.364(0.010)	141 895.363(0.001)	12.805	24.971	6
0	22	8	14	+	0	22	8	15	−	141 903.239(0.010)	141 903.231(0.002)	3.743	136.621	6
0	22	8	14	+	0	22	7	15	−	141 903.239(0.010)	141 903.238(0.002)	18.253	136.621	6
0	22	9	14	+	0	22	8	15	−	141 903.387(0.010)	141 903.382(0.002)	18.253	136.621	6
0	22	9	14	+	0	22	7	15	−	141 903.387(0.010)	141 903.388(0.002)	3.743	136.621	6
1	8	6	2	+	1	7	6	1	+	141 919.983(0.050)	141 919.905(0.003)	0.874	96.865	7
1	9	−9	1		1	8	8	0		141 970.054(0.050)	141 970.059(0.003)	1.437	103.744	7
1	13	5	8		1	12	6	6			142 033.696(0.006)	0.367	120.941	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	21	−7	14		0	21	*	15		142 043.988(0.010)	142 043.982(0.002)	19.434	121.607	6
0	21	8	14		0	21	*	15		142 043.988(0.010)	142 043.996(0.002)	19.434	121.607	6
0	6	5	1	−	0	5	3	2	−		142 089.974(0.002)	0.434	9.414	
0	11	−2	9		0	10	3	8		142 091.569(0.050)	142 091.560(0.002)	17.826	27.513	6
0	11	3	9		0	10	3	8		142 091.569(0.050)	142 091.597(0.002)	6.331	27.513	6
0	11	−2	9		0	10	−2	8		142 091.870(0.050)	142 091.846(0.002)	6.331	27.513	6
0	11	3	9		0	10	−2	8		142 091.870(0.050)	142 091.883(0.002)	17.826	27.513	6
1	14	*	13		1	14	*	14		142 247.671(0.010)	142 247.675(0.004)	6.488	112.766	7
0	11	2	9	+	0	10	3	8	+	142 313.624(0.050)	142 313.598(0.002)	17.499	27.225	6
0	11	3	9	+	0	10	3	8	+	142 313.624(0.050)	142 313.673(0.002)	6.619	27.225	6
0	11	2	9	+	0	10	2	8	+	142 314.172(0.050)	142 314.117(0.002)	6.619	27.225	6
0	11	3	9	+	0	10	2	8	+	142 314.172(0.050)	142 314.192(0.002)	17.499	27.225	6
1	17	*	16	−	1	17	*	17	+	142 407.013(0.010)	142 407.002(0.007)	5.909	136.016	6
0	15	12	4		0	15	−9	6			142 546.778(0.007)	0.205	75.656	
0	20	*	14		0	20	*	15		142 559.731(0.010)	142 559.733(0.002)	33.806	107.228	6
0	21	7	14	−	0	21	*	15	+	142 636.452(0.050)	142 636.435(0.002)	19.504	121.536	6
0	21	8	14	−	0	21	*	15	+	142 636.452(0.050)	142 636.470(0.002)	19.504	121.536	6
1	9	8	1		1	8	−8	1			142 640.995(0.003)	2.760	101.481	
0	12	8	5	−	0	11	9	2	−		142 711.138(0.003)	0.974	44.574	
0	12	*	11		0	11	*	10		142 764.641(0.010)	142 764.643(0.002)	60.150	29.114	6
1	9	4	5		1	8	−5	4		142 765.487(0.010)	142 765.477(0.006)	4.383	95.237	7
1	6	−6	1		1	5	−5	1			142 766.399(0.003)	8.022	84.929	
1	7	3	4		1	6	−3	4			142 818.911(0.004)	0.388	84.891	
0	9	−4	5		0	8	−4	4		142 884.649(0.010)	142 884.656(0.001)	4.376	22.223	6
0	12	*	11	−	0	11	*	10	−	142 897.668(0.010)	142 897.663(0.002)	60.106	28.806	6
1	7	6	1	+	1	6	5	2	+	142 912.189(0.010)	142 912.194(0.003)	6.135	92.098	7
1	13	*	13	+	1	12	*	12	+	142 960.832(0.010)	142 960.846(0.006)	72.264	108.616	6
0	19	*	14		0	19	*	15		142 995.561(0.010)	142 995.560(0.002)	28.637	93.525	6
0	6	−5	1		0	5	−3	2			143 025.717(0.002)	0.319	9.757	
1	22	8	14		1	22	−8	15			143 259.719(0.002)	1.474	211.268	
1	22	8	14		1	22	7	15		143 259.889(0.010)	143 259.902(0.002)	21.058	211.268	7
1	22	−9	14		1	22	−8	15		143 263.234(0.010)	143 263.239(0.002)	21.057	211.268	7
1	22	−9	14		1	22	7	15			143 263.422(0.002)	1.474	211.268	
0	20	6	14	+	0	20	*	15	−	143 281.083(0.010)	143 281.081(0.002)	16.968	107.121	6
0	20	7	14	+	0	20	*	15	−	143 281.083(0.010)	143 281.089(0.002)	16.968	107.121	6
1	14	11	3		1	13	12	1			143 341.009(0.011)	0.970	140.609	
0	18	*	14		0	18	*	15		143 361.037(0.010)	143 361.035(0.003)	23.335	80.497	6
0	13	*	13		0	12	*	12		143 461.522(0.010)	143 461.524(0.003)	72.196	30.065	6
0	13	*	13	+	0	12	*	12	+	143 500.523(0.010)	143 500.518(0.003)	72.185	29.725	6
1	20	*	15	−	1	20	*	16	+	143 502.811(0.010)	143 502.805(0.003)	27.865	178.180	6
0	20	9	11	−	0	19	12	8	−		143 603.770(0.007)	0.210	119.252	
1	13	11	2		1	13	9	4			143 607.275(0.006)	0.304	133.104	
1	27	11	16		1	26	−14	13			143 623.407(0.084)	0.276	287.225	
0	9	4	5	+	0	8	4	4	+	143 657.241(0.010)	143 657.226(0.001)	4.519	21.919	6
0	17	*	14		0	17	*	15		143 664.736(0.010)	143 664.735(0.003)	17.866	68.147	6
1	29	14	15		1	29	−14	16		143 674.938(0.050)	143 674.945(0.004)	4.127	330.850	7
0	17	13	4	−	0	17	11	7	+		143 708.641(0.003)	0.355	96.499	
1	29	14	15		1	29	13	16		143 729.499(0.010)	143 729.499(0.004)	33.247	330.848	7
0	18	13	6		0	18	−10	8			143 755.421(0.006)	0.530	106.242	
1	12	*	11		1	11	−2	10		143 758.506(0.010)	143 758.491(0.004)	29.748	102.061	6
1	12	*	11		1	11	1	10		143 758.506(0.010)	143 758.504(0.004)	29.748	102.061	6
1	13	*	13		1	12	*	12		143 776.151(0.010)	143 776.138(0.006)	71.877	102.819	6
1	11	2	9		1	10	−3	8		143 796.970(0.010)	143 796.961(0.003)	17.969	100.565	7
1	11	−3	9		1	10	−3	8		143 797.552(0.010)	143 797.544(0.003)	5.640	100.565	6
1	11	2	9		1	10	2	8		143 799.824(0.010)	143 799.815(0.003)	5.639	100.565	6
1	11	−3	9		1	10	2	8		143 800.408(0.010)	143 800.398(0.003)	17.969	100.565	7
0	19	*	14	−	0	19	*	15	+	143 846.988(0.010)	143 846.990(0.002)	28.755	93.376	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	9	7	2		1	8	7	1		143 852.344(0.050)	143 852.347(0.002)	3.960	99.440	6
1	9	5	4	−	1	8	6	3	−	143 905.697(0.010)	143 905.694(0.003)	10.045	101.070	7
0	16	*	14		0	16	*	15		143 914.405(0.010)	143 914.399(0.003)	12.190	56.477	6
0	20	−9	11		0	19	12	8			143 961.051(0.007)	0.194	119.287	
0	30	15	15	−	0	30	15	16	+		143 995.420(0.003)	5.824	276.284	
0	9	5	5		0	8	−4	4		144 002.069(0.010)	144 002.071(0.001)	8.117	22.223	6
0	30	15	15	−	0	30	14	16	+	144 003.721(0.010)	144 003.719(0.003)	33.310	276.283	6
1	10	3	7		1	9	−4	6		144 033.318(0.010)	144 033.317(0.002)	12.444	98.311	7
1	29	−15	15		1	29	−14	16		144 058.273(0.010)	144 058.269(0.004)	33.214	330.850	7
0	18	9	10		0	17	−10	7			144 086.559(0.007)	0.198	96.072	
0	17	12	5	+	0	17	10	8	−		144 094.343(0.002)	0.325	94.156	
0	7	5	3		0	6	4	3			144 097.904(0.001)	0.752	13.276	
1	10	−4	7		1	9	−4	6		144 099.178(0.010)	144 099.182(0.002)	4.907	98.311	6
1	29	−15	15		1	29	13	16			144 112.823(0.004)	4.121	330.848	
0	15	*	14		0	15	*	15		144 117.052(0.010)	144 117.045(0.004)	6.255	45.487	6
1	9	5	4		1	8	−6	3			144 140.748(0.009)	0.888	96.411	
0	30	−15	15		0	30	15	16		144 270.972(0.010)	144 271.011(0.003)	5.200	276.190	6
0	30	−15	15		0	30	−14	16		144 275.337(0.010)	144 275.341(0.003)	33.872	276.189	6
1	10	3	7		1	9	3	6		144 296.855(0.010)	144 296.849(0.002)	4.846	98.302	6
0	30	16	15		0	30	15	16		144 328.280(0.010)	144 328.282(0.003)	33.872	276.190	6
0	18	*	14	+	0	18	*	15	−	144 342.665(0.010)	144 342.667(0.003)	23.436	80.305	6
1	10	−4	7		1	9	3	6		144 362.722(0.010)	144 362.714(0.002)	12.490	98.302	7
1	9	6	4	−	1	8	6	3	−		144 521.242(0.002)	0.201	101.070	
0	16	11	5	−	0	16	9	8	+		144 566.740(0.002)	0.222	82.609	
0	13	10	4	−	0	12	11	1	−		144 616.127(0.004)	0.504	55.380	
0	17	*	14	−	0	17	*	15	+	144 775.581(0.010)	144 775.583(0.003)	17.948	67.909	6
1	7	−5	3		1	6	−4	3			144 796.316(0.003)	4.542	85.958	
1	21	*	15	+	1	21	*	16	−	144 813.008(0.010)	144 813.000(0.003)	33.047	192.134	7
1	21	7	14		1	21	−7	15			144 840.253(0.003)	0.741	196.042	
1	21	7	14		1	21	6	15		144 840.286(0.010)	144 840.291(0.003)	19.268	196.042	7
1	21	−8	14		1	21	−7	15		144 841.110(0.010)	144 841.081(0.003)	19.268	196.042	7
1	21	−8	14		1	21	6	15			144 841.120(0.003)	0.741	196.042	
1	14	−10	5		1	13	−11	3			144 875.947(0.009)	0.416	137.043	
0	19	14	6		0	19	12	8			144 879.762(0.005)	0.217	119.287	
1	21	−15	7		1	21	13	8			144 903.429(0.012)	0.756	219.917	
1	18	13	5	−	1	18	11	8	+		144 909.054(0.005)	0.226	181.866	
1	30	12	18		1	29	−15	15			144 950.489(0.123)	0.252	335.655	
1	12	5	7		1	11	6	5			145 082.594(0.005)	0.880	114.238	
0	16	−12	4		0	16	−9	7			145 112.231(0.005)	0.477	84.778	
0	9	8	2	−	0	8	8	1	−		145 133.471(0.002)	1.474	26.490	
0	16	*	14	+	0	16	*	15	−	145 152.380(0.050)	145 152.356(0.003)	12.248	56.191	8
1	7	−4	4		1	6	−3	4			145 203.328(0.002)	0.605	84.891	
0	9	5	5	+	0	8	4	4	+		145 205.345(0.001)	7.951	21.919	
1	9	−5	5		1	8	−5	4			145 243.180(0.003)	4.641	95.237	
0	10	6	4	+	0	9	7	3	+		145 278.314(0.003)	2.159	29.715	
0	9	8	1	+	0	8	8	0	+		145 295.860(0.002)	1.474	26.490	
1	30	−13	18		1	29	14	15			145 335.351(0.123)	0.253	335.643	
1	18	13	5	−	1	18	10	8	+		145 361.374(0.006)	0.328	181.851	
0	9	−8	1		0	8	−8	0			145 428.540(0.002)	1.464	26.819	
0	16	12	4	+	0	16	9	7	−		145 475.322(0.004)	0.820	84.594	
0	15	*	14	−	0	15	*	15	+		145 478.913(0.004)	6.287	45.151	
1	16	−8	9		1	15	9	6			145 543.008(0.013)	0.702	149.202	
0	18	14	5		0	18	12	7			145 545.014(0.005)	0.237	108.759	
1	9	−7	3		1	8	−7	2			145 548.401(0.003)	1.436	98.022	
1	6	3	3	−	1	5	2	4	−		145 567.247(0.003)	0.739	86.477	
1	27	−12	16		1	26	13	13			145 603.335(0.084)	0.279	287.159	
0	29	14	15	+	0	29	14	16	−		145 628.798(0.003)	5.611	255.886	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	29	14	15	+	0	29	13	16	−		145 631.610(0.003)	31.110	255.885	
0	16	13	3	−	0	16	11	6	+		145 646.015(0.003)	0.248	87.115	
1	28	13	15		1	28	−13	16			145 661.716(0.004)	4.155	311.114	
0	29	15	15	+	0	29	14	16	−		145 664.626(0.003)	31.109	255.886	
0	29	15	15	+	0	29	13	16	−		145 667.438(0.003)	5.611	255.885	
1	28	13	15		1	28	12	16		145 684.441(0.010)	145 684.444(0.004)	30.601	311.113	7
0	9	6	4	−	0	8	6	3	−	145 695.933(0.010)	145 695.927(0.001)	3.761	23.411	6
0	9	8	2		0	8	8	1		145 730.729(0.010)	145 730.742(0.002)	1.466	26.434	6
0	29	−14	15		0	29	14	16		145 803.685(0.050)	145 803.683(0.003)	4.958	255.796	6
0	29	−14	15		0	29	−13	16		145 805.048(0.010)	145 805.047(0.003)	31.699	255.796	6
0	29	15	15		0	29	14	16		145 823.986(0.010)	145 823.989(0.003)	31.699	255.796	6
0	29	15	15		0	29	−13	16			145 825.352(0.003)	4.958	255.796	
0	12	7	6		0	11	8	4			145 829.916(0.003)	0.206	42.862	
1	9	5	4	−	1	8	5	3	−		145 833.531(0.003)	0.197	101.006	
1	22	*	15	−	1	22	*	16	+	145 843.917(0.010)	145 843.909(0.003)	38.148	206.816	7
1	28	−14	15		1	28	−13	16		145 850.638(0.010)	145 850.640(0.004)	30.591	311.114	7
1	28	−14	15		1	28	12	16			145 873.368(0.004)	4.153	311.113	
0	17	−12	5		0	17	10	8			145 886.104(0.003)	0.198	94.253	
1	6	4	3	−	1	5	1	4	−	145 942.497(0.050)	145 942.489(0.003)	0.730	86.477	7
0	13	10	3	+	0	12	11	2	+		145 944.343(0.004)	0.507	55.380	
1	24	15	9		1	24	13	11			145 952.613(0.009)	0.455	259.382	
0	16	11	5	−	0	16	8	8	+		146 144.173(0.002)	0.892	82.556	
1	9	6	3		1	8	6	2		146 253.128(0.010)	146 253.122(0.002)	5.017	97.661	6
1	18	*	16	+	1	18	*	17	−	146 327.765(0.010)	146 327.740(0.005)	11.660	147.605	6
1	20	6	14		1	20	−6	15			146 386.023(0.003)	0.442	181.454	
1	20	6	14		1	20	5	15		146 386.031(0.010)	146 386.031(0.003)	16.995	181.454	7
1	20	−7	14		1	20	−6	15		146 386.213(0.010)	146 386.202(0.003)	16.995	181.454	7
1	20	−7	14		1	20	5	15			146 386.210(0.003)	0.442	181.454	
1	29	14	15	+	1	29	13	16	−	146 387.665(0.010)	146 387.661(0.004)	36.059	329.536	7
1	29	15	15	+	1	29	14	16	−	146 393.704(0.010)	146 393.698(0.004)	36.058	329.536	7
1	9	6	4	−	1	8	5	3	−	146 449.062(0.010)	146 449.079(0.003)	10.579	101.006	7
1	11	7	4		1	11	4	7			146 449.135(0.007)	0.245	110.773	
1	12	7	5		1	11	8	3			146 533.106(0.007)	2.085	117.478	
0	9	7	3	+	0	8	7	2	+		146 536.248(0.001)	2.761	24.827	
1	23	*	15	+	1	23	*	16	−	146 631.712(0.010)	146 631.706(0.003)	43.185	222.220	
1	28	13	15	−	1	28	13	16	+		146 665.828(0.010)	0.175	309.899	
1	10	8	2	+	1	9	9	1	+		146 665.992(0.011)	0.434	108.930	
1	28	13	15	−	1	28	12	16	+	146 666.057(0.010)	146 666.055(0.010)	32.168	309.899	7
1	28	14	15	−	1	28	13	16	+	146 668.173(0.010)	146 668.163(0.010)	32.167	309.899	7
1	28	14	15	−	1	28	12	16	+		146 668.391(0.010)	0.175	309.899	
1	10	4	6	+	1	9	5	5	+	146 672.066(0.010)	146 672.075(0.002)	15.951	104.564	7
1	10	5	6	+	1	9	5	5	+		146 682.981(0.002)	0.255	104.564	
1	10	4	6	+	1	9	4	5	+		146 724.184(0.002)	0.255	104.563	
1	10	5	6	+	1	9	4	5	+	146 735.083(0.010)	146 735.090(0.002)	15.962	104.563	7
1	19	−9	11		1	18	10	8			146 980.025(0.024)	0.427	179.946	
1	9	4	5		1	8	4	4		147 034.134(0.010)	147 034.129(0.002)	3.448	95.094	6
0	28	13	15	−	0	28	13	16	+	147 051.650(0.010)	147 051.647(0.003)	5.372	236.140	6
0	28	13	15	−	0	28	12	16	+	147 052.543(0.010)	147 052.545(0.003)	28.941	236.140	6
0	28	14	15	−	0	28	13	16	+	147 064.405(0.010)	147 064.408(0.003)	28.941	236.140	6
0	28	14	15	−	0	28	12	16	+		147 065.307(0.003)	5.372	236.140	
0	18	9	10	+	0	17	10	7	+		147 109.236(0.007)	0.226	95.884	
1	12	11	1		1	12	9	3			147 118.741(0.007)	0.171	126.064	
0	28	−13	15		0	28	13	16			147 127.466(0.003)	4.690	236.059	
0	28	−13	15		0	28	−12	16		147 127.875(0.050)	147 127.869(0.003)	29.557	236.059	6
0	28	14	15		0	28	13	16		147 134.235(0.050)	147 134.245(0.003)	29.557	236.059	6
0	28	14	15		0	28	−12	16			147 134.648(0.003)	4.690	236.059	
1	9	6	3	+	1	8	7	2	+	147 185.335(0.010)	147 185.340(0.007)	4.792	101.903	7

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	24	9	15	−	1	24	*	16	+		147 189.431(0.003)	24.088	238.341	
1	24	10	15	−	1	24	*	16	+	147 189.453(0.050)	147 189.451(0.003)	24.088	238.341	
0	9	6	4		0	8	6	3		147 216.238(0.010)	147 216.239(0.001)	3.461	23.586	6
1	16	−11	6		1	16	8	8			147 293.376(0.008)	0.567	156.502	
1	27	12	15		1	27	−12	16		147 347.093(0.050)	147 347.091(0.003)	3.963	292.016	7
1	27	12	15		1	27	11	16		147 355.448(0.010)	147 355.452(0.003)	28.504	292.016	7
0	18	13	5	−	0	18	11	8	+		147 412.194(0.003)	0.402	106.367	
1	27	−13	15		1	27	−12	16			147 430.225(0.003)	28.498	292.016	
1	27	−13	15		1	27	11	16			147 438.586(0.003)	3.962	292.016	
1	11	9	3	+	1	10	10	0	+		147 486.211(0.010)	0.293	115.816	
0	16	−11	5		0	16	−8	8			147 488.884(0.003)	0.692	82.696	
1	25	10	15	+	1	25	*	16	−		147 528.103(0.003)	26.567	255.174	
1	25	11	15	+	1	25	*	16	−		147 528.176(0.003)	26.567	255.174	
0	7	6	2		0	6	5	2			147 560.738(0.001)	8.304	14.259	
1	27	12	15	+	1	27	11	16	−	147 586.698(0.010)	147 586.690(0.003)	31.358	290.958	7
1	27	13	15	+	1	27	12	16	−	147 587.456(0.010)	147 587.446(0.003)	31.358	290.958	7
0	7	6	2	−	0	6	5	1	−	147 625.300(0.010)	147 625.302(0.001)	9.148	14.154	6
1	26	11	15	−	1	26	10	16	+	147 653.348(0.010)	147 653.341(0.003)	28.995	272.714	7
1	26	12	15	−	1	26	11	16	+	147 653.585(0.010)	147 653.577(0.003)	28.995	272.714	7
1	15	−8	8		1	14	9	5			147 664.119(0.012)	0.871	140.793	
0	13	−10	3		0	12	−11	1			147 692.829(0.004)	0.514	55.576	
1	12	8	4		1	12	5	7			147 773.553(0.008)	0.348	119.078	
0	17	12	5	+	0	17	9	8	−		147 826.436(0.003)	1.161	94.031	
1	19	5	14		1	19	*	15		147 873.555(0.010)	147 873.536(0.003)	14.798	167.508	
1	19	−6	14		1	19	*	15			147 873.574(0.003)	14.798	167.508	
1	30	15	15	−	1	30	14	16	+		147 899.260(0.098)	28.986	349.779	
0	23	−10	13		0	22	13	10			147 941.824(0.009)	0.178	156.462	
0	9	−7	2		0	8	−7	1		147 978.952(0.010)	147 978.962(0.002)	2.711	25.203	6
0	15	8	8		0	14	−9	5			148 011.020(0.005)	0.343	66.933	
1	20	10	10		1	19	−13	7			148 012.806(0.029)	0.288	196.723	
0	18	9	9	−	0	17	12	6	−		148 055.601(0.007)	0.243	98.787	
1	7	−5	3		1	6	3	3			148 166.109(0.006)	1.841	85.846	
0	27	−12	15		0	27	12	16		148 276.950(0.100)	148 276.854(0.002)	4.396	216.982	6
0	27	−12	15		0	27	−11	16		148 276.950(0.100)	148 276.965(0.002)	27.440	216.982	6
0	27	13	15		0	27	12	16		148 278.991(0.100)	148 278.978(0.002)	27.440	216.982	6
0	27	13	15		0	27	−11	16		148 278.991(0.100)	148 279.089(0.002)	4.396	216.982	6
0	27	12	15	+	0	27	12	16	−	148 303.381(0.010)	148 303.378(0.002)	5.108	217.051	6
0	27	12	15	+	0	27	11	16	−	148 303.651(0.010)	148 303.647(0.002)	26.797	217.051	6
0	27	13	15	+	0	27	12	16	−	148 307.662(0.010)	148 307.660(0.002)	26.797	217.051	6
0	27	13	15	+	0	27	11	16	−		148 307.930(0.002)	5.108	217.051	
0	9	7	3		0	8	7	2		148 310.590(0.010)	148 310.604(0.002)	2.688	24.858	6
1	11	3	8	−	1	10	4	7	−	148 325.729(0.010)	148 325.731(0.003)	20.660	107.536	7
1	11	4	8	−	1	10	4	7	−		148 325.851(0.003)	1.089	107.536	
1	11	3	8	−	1	10	3	7	−		148 326.348(0.003)	1.089	107.536	
1	11	4	8	−	1	10	3	7	−	148 326.449(0.010)	148 326.468(0.003)	20.660	107.536	7
0	23	10	13	+	0	22	13	10	+		148 412.046(0.009)	0.192	156.456	
0	13	10	4		0	12	11	2			148 496.019(0.004)	0.507	55.166	
0	17	−12	5		0	17	−9	8			148 523.042(0.004)	0.822	94.165	
0	7	−6	1		0	6	−5	1			148 696.499(0.001)	8.562	14.528	
0	9	7	2	−	0	8	7	1	−		148 734.156(0.002)	2.775	24.842	
0	19	9	10	−	0	18	12	7	−		148 807.836(0.007)	0.242	108.756	
1	12	−7	6		1	11	−8	4			148 867.496(0.007)	0.606	116.166	
1	17	15	2	−	1	17	12	5	+		148 918.201(0.013)	0.311	175.012	
1	26	11	15		1	26	−11	16		148 933.534(0.050)	148 933.571(0.003)	3.570	273.559	7
1	26	11	15		1	26	10	16		148 936.260(0.010)	148 936.267(0.003)	26.464	273.559	7
1	26	−12	15		1	26	−11	16		148 965.679(0.010)	148 965.687(0.003)	26.463	273.559	7
1	26	−12	15		1	26	10	16			148 968.383(0.003)	3.570	273.559	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	$\mu^2 S$ (D^2)	E_1 (cm^{-1})	Ref.
0	17	13	5		0	17	−10	7			149 032.092(0.007)	0.361	96.072	
1	6	4	2		1	5	−3	3			149 065.220(0.006)	0.926	81.838	
0	13	9	5		0	12	−10	2			149 119.929(0.005)	0.177	53.369	
0	18	−13	5		0	18	11	8			149 123.869(0.004)	0.210	106.436	
1	19	*	16	−	1	19	*	17	+	149 179.227(0.010)	149 179.222(0.004)	17.252	159.985	6
0	26	−11	15		0	26	11	16		149 276.471(0.050)	149 276.446(0.002)	4.078	198.568	6
0	26	−11	15		0	26	−10	16		149 276.471(0.050)	149 276.474(0.002)	25.341	198.568	6
0	26	12	15		0	26	11	16		149 277.071(0.050)	149 277.067(0.002)	25.341	198.568	6
0	26	12	15		0	26	−10	16		149 277.071(0.050)	149 277.095(0.002)	4.078	198.568	6
1	18	4	14		1	18	*	15		149 277.800(0.050)	149 277.795(0.003)	12.079	154.209	7
1	18	−5	14		1	18	*	15		149 277.800(0.050)	149 277.802(0.003)	12.079	154.209	7
1	15	12	3		1	15	10	5			149 361.811(0.006)	0.474	151.119	
0	15	10	5	+	0	15	7	8	−		149 373.024(0.002)	0.542	71.702	
0	26	11	15	−	0	26	11	16	+		149 410.813(0.002)	4.820	198.620	
0	26	11	15	−	0	26	10	16	+		149 410.888(0.002)	24.669	198.620	
0	26	12	15	−	0	26	11	16	+		149 412.160(0.002)	24.669	198.620	
0	26	12	15	−	0	26	10	16	+		149 412.236(0.002)	4.820	198.620	
1	9	−5	5		1	8	4	4		149 511.835(0.010)	149 511.832(0.005)	6.596	95.094	7
1	6	6	0		1	5	5	0			149 649.302(0.003)	11.093	86.550	
1	24	−11	14		1	23	12	11			149 749.227(0.056)	0.322	243.303	
0	12	8	5		0	11	9	3			149 833.720(0.003)	0.688	44.489	
0	17	−14	3		0	17	−12	5			149 871.029(0.005)	0.233	99.119	
1	12	*	10	+	1	11	*	9	+	149 952.310(0.100)	149 952.319(0.004)	54.806	109.977	6
1	9	5	4		1	8	5	3			149 998.480(0.004)	3.720	96.216	
1	23	15	8		1	23	13	10			150 038.771(0.008)	0.194	245.805	
0	19	13	7		0	19	−10	9			150 095.969(0.004)	0.194	116.655	
1	16	−10	7		1	16	7	9			150 112.963(0.005)	0.171	154.029	
0	25	−10	15		0	25	10	16			150 145.215(0.002)	3.736	180.819	
0	25	−10	15		0	25	−9	16			150 145.222(0.002)	23.254	180.819	
0	25	11	15		0	25	10	16			150 145.383(0.002)	23.254	180.819	
0	25	11	15		0	25	−9	16			150 145.390(0.002)	3.736	180.819	
1	9	−6	4		1	8	−6	3			150 248.675(0.004)	2.590	96.411	
0	11	−7	4		0	10	−8	2			150 250.559(0.003)	0.860	37.127	
1	15	−13	3		1	14	−14	1			150 350.161(0.015)	0.489	153.907	
0	25	10	15	+	0	25	10	16	−		150 393.686(0.002)	4.509	180.850	
0	25	10	15	+	0	25	9	16	−		150 393.705(0.002)	22.551	180.850	
0	25	11	15	+	0	25	10	16	−		150 394.081(0.002)	22.551	180.850	
0	25	11	15	+	0	25	9	16	−		150 394.101(0.002)	4.509	180.850	
1	25	10	15		1	25	−10	16			150 463.552(0.003)	2.996	255.739	
1	25	10	15		1	25	9	16			150 464.307(0.003)	24.588	255.739	
1	25	−11	15		1	25	−10	16			150 474.419(0.003)	24.587	255.739	
1	25	−11	15		1	25	9	16			150 475.175(0.003)	2.996	255.739	
1	17	*	14		1	17	*	15		150 579.410(0.100)	150 579.404(0.004)	18.524	141.566	6
0	26	11	15	−	0	25	14	12	−		150 638.116(0.014)	0.178	198.579	
1	23	10	13		1	22	−13	10			150 686.274(0.048)	0.359	231.144	
0	19	−9	10		0	18	12	7			150 726.491(0.007)	0.221	108.759	
0	15	8	8	−	0	14	9	5	−		150 731.201(0.005)	0.418	66.694	
1	15	−11	5		1	14	−12	3			150 755.276(0.011)	0.388	147.635	
0	23	11	13		0	22	−12	10			150 855.966(0.009)	0.179	156.365	
0	24	−9	15		0	24	*	16			150 898.656(0.002)	24.541	163.737	
0	24	10	15		0	24	*	16			150 898.698(0.002)	24.541	163.737	
0	7	6	1	+	0	6	5	2	+		150 908.092(0.001)	8.874	14.079	
1	9	7	3	+	1	8	7	2	+		150 979.775(0.003)	0.524	101.903	
1	8	7	2	+	1	7	6	1	+		151 023.367(0.004)	10.447	96.865	
1	14	10	4		1	13	11	2			151 041.054(0.010)	1.549	137.895	
1	7	5	2		1	6	4	2			151 043.688(0.003)	3.580	86.810	
0	15	−10	5		0	15	−7	8			151 126.721(0.002)	0.442	71.857	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	18	*	17	−	1	18	*	18	+	151 137.047(0.050)	151 137.026(0.008)	5.913	142.564	6
0	10	−4	6		0	9	5	5		151 162.032(0.010)	151 162.032(0.001)	10.280	27.026	6
0	17	14	4		0	17	12	6			151 188.151(0.004)	0.207	98.711	
0	24	9	15	−	0	24	*	16	+	151 267.499(0.050)	151 267.457(0.002)	24.612	163.743	6
0	24	10	15	−	0	24	*	16	+	151 267.499(0.050)	151 267.564(0.002)	24.612	163.743	6
0	10	4	6	+	0	9	5	5	+		151 326.873(0.001)	10.024	26.762	
1	20	*	16	+	1	20	*	17	−	151 401.520(0.100)	151 401.549(0.004)	22.705	173.130	6
0	10	−6	4		0	9	7	3			151 405.798(0.003)	1.522	29.805	
1	9	8	2	−	1	8	8	1	−		151 415.795(0.005)	0.973	102.800	
0	10	5	6		0	9	5	5		151 416.849(0.010)	151 416.848(0.001)	4.921	27.026	6
0	26	12	15	−	0	25	13	12	−		151 479.071(0.014)	0.179	198.551	
1	11	8	4	−	1	10	9	1	−		151 482.943(0.006)	0.634	114.568	
0	23	−8	15		0	23	*	16		151 549.888(0.050)	151 549.899(0.002)	22.067	147.325	6
0	23	9	15		0	23	*	16		151 549.888(0.050)	151 549.909(0.002)	22.067	147.325	6
1	15	−11	5		1	15	8	7			151 577.816(0.009)	0.289	147.607	
1	13	*	12	−	1	12	*	11	−	151 664.000(0.100)	151 664.031(0.006)	66.353	111.912	6
0	10	5	6	+	0	9	5	5	+		151 703.644(0.001)	5.055	26.762	
1	16	*	14		1	16	*	15			151 767.005(0.004)	12.655	129.584	
0	13	8	6		0	12	−9	3			151 838.345(0.004)	0.569	51.489	
1	24	9	15		1	24	−9	16			151 977.199(0.003)	2.229	238.557	
1	24	9	15		1	24	8	16			151 977.382(0.003)	22.893	238.557	
1	24	−10	15		1	24	−9	16			151 980.397(0.003)	22.892	238.557	
1	24	−10	15		1	24	8	16			151 980.580(0.003)	2.229	238.557	
0	23	8	15	+	0	23	*	16	−	152 044.756(0.050)	152 044.753(0.002)	22.136	147.301	6
0	23	9	15	+	0	23	*	16	−	152 044.756(0.050)	152 044.780(0.002)	22.136	147.301	6
0	22	*	15		0	22	*	16		152 110.340(0.050)	152 110.346(0.002)	39.116	131.584	8
0	11	−3	8		0	10	4	7		152 114.540(0.010)	152 114.540(0.002)	15.262	29.972	6
0	11	4	8		0	10	4	7		152 116.320(0.050)	152 116.337(0.002)	5.929	29.972	8
0	11	−3	8		0	10	−3	7		152 125.962(0.050)	152 125.987(0.002)	5.929	29.972	6
0	11	4	8		0	10	−3	7		152 127.782(0.050)	152 127.783(0.002)	15.262	29.972	6
0	10	−4	6		0	9	−4	5			152 279.447(0.001)	4.944	26.989	
0	11	3	8	−	0	10	4	7	−	152 420.460(0.050)	152 420.457(0.002)	14.987	29.704	8
0	11	4	8	−	0	10	4	7	−	152 423.590(0.050)	152 423.616(0.002)	6.143	29.704	8
0	11	3	8	−	0	10	3	7	−	152 439.080(0.050)	152 439.084(0.002)	6.144	29.703	8
0	11	4	8	−	0	10	3	7	−	152 442.250(0.050)	152 442.243(0.002)	14.988	29.703	8
0	23	11	13	+	0	22	12	10	+		152 525.302(0.009)	0.195	156.319	
0	10	5	6		0	9	−4	5		152 534.252(0.050)	152 534.264(0.002)	10.369	26.989	6
0	21	*	15		0	21	*	16		152 590.050(0.050)	152 590.055(0.003)	34.012	116.517	8
1	19	−14	6		1	19	12	7			152 634.366(0.008)	0.814	194.426	
1	15	−9	7		1	14	10	4			152 667.376(0.014)	0.497	142.933	
0	11	7	4	−	0	10	8	3	−		152 728.852(0.003)	1.575	36.761	
0	12	*	10		0	11	3	9		152 735.077(0.050)	152 735.075(0.002)	27.040	32.253	6
0	12	*	10		0	11	−2	9		152 735.077(0.050)	152 735.112(0.002)	27.040	32.253	6
0	22	7	15	−	0	22	*	16	+	152 736.210(0.050)	152 736.197(0.002)	19.625	131.526	8
0	22	8	15	−	0	22	*	16	+	152 736.210(0.050)	152 736.203(0.002)	19.625	131.526	8
1	15	*	14		1	15	*	15			152 836.686(0.005)	6.501	118.272	
0	6	5	2		0	5	3	3			152 856.994(0.002)	0.173	9.160	
0	10	4	6	+	0	9	4	5	+	152 874.980(0.050)	152 874.992(0.001)	5.086	26.711	6
0	12	2	10	+	0	11	3	9	+	152 954.190(0.050)	152 954.150(0.002)	19.656	31.972	8
0	12	3	10	+	0	11	3	9	+	152 954.190(0.050)	152 954.160(0.002)	7.345	31.972	8
0	12	2	10	+	0	11	2	9	+	152 954.190(0.050)	152 954.225(0.002)	7.345	31.972	8
0	12	3	10	+	0	11	2	9	+	152 954.190(0.050)	152 954.235(0.002)	19.656	31.972	8
0	17	14	4	−	0	17	12	5	+		152 977.683(0.004)	0.237	98.962	
1	13	9	4		1	13	6	7			152 979.993(0.009)	0.376	128.002	
0	20	*	15		0	20	*	16		152 997.980(0.050)	152 998.014(0.003)	28.799	102.125	8
1	17	−13	5		1	17	11	6			153 003.551(0.006)	0.685	171.536	
1	21	*	16	−	1	21	*	17	+		153 169.062(0.004)	28.038	187.025	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	18	−9	9		0	17	12	6			153 176.843(0.007)	0.197	98.711	
0	10	5	6	+	0	9	4	5	+	153 251.752(0.010)	153 251.764(0.002)	10.135	26.711	6
0	19	*	15		0	19	*	16		153 342.310(0.050)	153 342.324(0.003)	23.452	88.410	8
0	21	*	15	+	0	21	*	16	−	153 350.830(0.050)	153 350.872(0.003)	34.137	116.421	8
0	13	*	12		0	12	*	11		153 413.860(0.050)	153 413.858(0.003)	65.941	33.876	8
0	6	−3	3		0	5	2	4			153 447.039(0.002)	0.682	8.002	
1	23	8	15		1	23	−8	16			153 507.633(0.003)	1.330	222.010	
1	23	8	15		1	23	7	16			153 507.673(0.003)	21.299	222.010	
1	23	−9	15		1	23	−8	16			153 508.449(0.003)	21.299	222.010	
1	23	−9	15		1	23	7	16			153 508.488(0.003)	1.330	222.010	
0	13	*	12	−	0	12	*	11	−	153 545.700(0.050)	153 545.707(0.003)	65.898	33.573	8
0	6	3	3	−	0	5	2	4	−	153 581.040(0.100)	153 581.041(0.002)	0.696	7.667	6
1	12	9	3		1	12	6	6			153 590.743(0.010)	0.206	120.941	
0	8	6	3		0	7	−5	2		153 618.030(0.100)	153 617.950(0.003)	3.923	18.462	6
1	14	*	14	+	1	13	*	13	+		153 627.228(0.008)	78.059	113.384	
0	18	*	15		0	18	*	16		153 630.330(0.100)	153 630.339(0.003)	17.940	75.373	6
1	6	3	3		1	5	−2	4			153 711.621(0.004)	0.771	80.718	
1	25	15	10		1	25	−14	12			153 815.432(0.008)	0.498	273.356	
0	14	11	4	+	0	13	12	1	+		153 830.239(0.004)	0.469	64.909	
1	9	8	1	+	1	8	8	0	+		153 842.342(0.005)	1.051	102.809	
1	6	2	4	+	1	5	1	5	+		153 846.756(0.003)	0.233	85.200	
1	7	5	2	−	1	6	4	3	−		153 851.267(0.004)	2.239	91.345	
1	6	3	4	+	1	5	0	5	+		153 868.229(0.003)	0.233	85.200	
0	17	*	15		0	17	*	16		153 868.768(0.050)	153 868.773(0.004)	12.226	63.015	6
0	20	*	15	−	0	20	*	16	+	153 896.640(0.050)	153 896.649(0.003)	28.913	101.987	8
1	7	−6	2		1	6	−5	2			154 011.784(0.003)	13.207	86.917	
0	19	14	5	+	0	19	12	8	−		154 016.764(0.003)	0.441	119.252	
1	14	12	2		1	14	10	4			154 018.123(0.007)	0.296	142.933	
0	16	*	15		0	16	*	16			154 063.772(0.004)	6.265	51.338	
0	19	−15	4		0	19	−13	6			154 090.555(0.006)	0.304	122.147	
0	7	5	2	−	0	6	4	3	−		154 107.420(0.001)	3.840	12.987	
0	14	*	14		0	13	*	13		154 112.470(0.050)	154 112.385(0.003)	78.000	34.850	8
0	14	*	14	+	0	13	*	13	+	154 150.570(0.050)	154 150.651(0.003)	77.989	34.512	8
1	13	8	5		1	12	9	3			154 246.641(0.008)	2.090	126.064	
0	13	9	5	+	0	12	10	2	+		154 248.294(0.003)	0.969	53.112	
1	17	−11	7		1	17	8	9			154 268.565(0.006)	0.381	165.668	
0	9	−5	4		0	8	−5	3		154 293.580(0.100)	154 293.513(0.001)	4.546	23.079	6
0	15	−12	3		0	15	−9	6			154 314.793(0.006)	0.187	75.656	
0	18	14	4	+	0	18	12	7	−		154 319.997(0.003)	0.347	108.756	
0	7	7	1		0	6	6	1			154 354.509(0.001)	13.223	15.377	
1	11	9	2	−	1	10	10	1	−		154 356.765(0.012)	0.313	115.815	
1	10	4	6		1	9	−5	5			154 367.570(0.003)	8.185	100.082	
0	9	−6	3		0	8	−6	2		154 372.610(0.100)	154 372.539(0.002)	3.723	23.916	6
0	19	*	15	+	0	19	*	16	−	154 380.500(0.050)	154 380.423(0.003)	23.551	88.227	8
1	12	2	10		1	11	−3	9			154 380.531(0.004)	20.234	105.362	
1	12	−3	10		1	11	−3	9			154 380.647(0.004)	6.296	105.362	
1	12	2	10		1	11	2	9			154 381.113(0.004)	6.296	105.362	
1	12	−3	10		1	11	2	9		154 381.236(0.010)	154 381.230(0.004)	20.234	105.362	7
1	13	*	12		1	12	*	11		154 388.990(0.100)	154 388.892(0.006)	65.317	106.857	
0	20	15	6		0	20	13	8			154 417.509(0.006)	0.259	132.816	
0	14	11	3	−	0	13	12	2	−		154 421.963(0.004)	0.470	64.908	
1	14	*	14		1	13	*	13			154 422.331(0.008)	77.693	107.615	
1	6	−5	2		1	5	2	3			154 460.525(0.006)	0.379	81.765	
1	11	3	8		1	10	−4	7			154 548.631(0.003)	14.960	103.117	
1	11	−4	8		1	10	−4	7			154 563.869(0.003)	5.405	103.117	
1	22	*	16	+	1	22	*	17	−		154 584.390(0.004)	33.272	201.659	
1	11	3	8		1	10	3	7			154 614.497(0.003)	5.392	103.115	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	11	−4	8		1	10	3	7			154 629.734(0.003)	14.968	103.115	
1	30	14	16		1	30	−14	17			154 668.835(0.016)	4.173	346.059	
0	6	5	2		0	5	−2	3			154 682.698(0.003)	0.489	9.099	
1	30	14	16		1	30	13	17			154 683.952(0.016)	32.555	346.059	
1	30	−15	16		1	30	−14	17			154 783.289(0.016)	32.527	346.059	
1	30	14	16	+	1	30	13	17	−		154 791.510(0.097)	25.901	344.616	
1	30	15	16	+	1	30	14	17	−		154 792.829(0.097)	25.897	344.616	
1	30	−15	16		1	30	13	17			154 798.406(0.016)	4.168	346.059	
0	18	*	15	−	0	18	*	16	+	154 808.278(0.050)	154 808.288(0.003)	18.021	75.142	6
0	9	5	4	−	0	8	5	3	−	154 827.800(0.050)	154 827.784(0.001)	4.723	22.761	8
0	18	−13	5		0	18	−10	8			154 939.453(0.005)	0.753	106.242	
1	26	11	15		1	25	−14	12			154 997.185(0.074)	0.323	273.356	
1	22	7	15		1	22	−7	16			155 059.069(0.003)	0.619	206.096	
1	22	7	15		1	22	6	16			155 059.077(0.003)	19.479	206.096	
1	22	−8	15		1	22	−7	16			155 059.252(0.003)	19.479	206.096	
1	22	−8	15		1	22	6	16			155 059.260(0.003)	0.619	206.096	
0	13	8	6	−	0	12	9	3	−		155 115.747(0.003)	1.111	51.211	
0	17	*	15	+	0	17	*	16	−	155 185.720(0.100)	155 185.676(0.004)	12.285	62.733	6
0	9	6	3	+	0	8	6	2	+	155 189.730(0.100)	155 189.702(0.002)	4.054	23.581	6
0	20	14	7		0	20	−11	9			155 198.809(0.006)	0.433	130.105	
1	10	−5	6		1	9	−5	5			155 267.729(0.002)	5.075	100.082	
0	18	13	5	−	0	18	10	8	+		155 286.158(0.004)	1.166	106.105	
1	15	12	3		1	14	−13	2			155 299.856(0.013)	0.944	150.921	
0	20	10	11		0	19	−11	8			155 401.753(0.008)	0.207	118.906	
0	7	−7	0		0	6	−6	0			155 424.922(0.001)	13.206	15.699	
0	7	−5	2		0	6	4	3			155 462.993(0.002)	2.853	13.276	
1	19	*	17	+	1	19	*	18	−		155 470.970(0.006)	11.690	154.799	
0	16	*	15	−	0	16	*	16	+	155 517.550(0.100)	155 517.469(0.004)	6.297	51.003	6
0	19	−14	5		0	19	12	8			155 518.676(0.006)	0.197	119.287	
1	10	5	5	−	1	9	6	4	−		155 587.774(0.002)	12.817	105.891	
1	10	6	4		1	9	−7	3			155 593.256(0.012)	0.323	102.877	
0	10	7	4		0	9	−7	2			155 617.958(0.003)	0.309	30.139	
1	23	*	16	−	1	23	*	17	+		155 700.495(0.004)	38.420	217.026	
1	12	8	5	−	1	11	9	2	−		155 733.551(0.005)	0.391	120.964	
0	10	5	5	−	0	9	6	4	−	155 734.240(0.100)	155 734.077(0.002)	6.162	28.271	6
1	10	6	5	−	1	9	6	4	−		155 748.403(0.002)	0.550	105.891	
0	14	8	7		0	13	−9	4			155 907.280(0.004)	0.596	58.825	
0	15	12	3	+	0	15	9	6	−		156 051.737(0.005)	0.321	75.431	
0	14	9	5	−	0	14	6	8	+		156 104.928(0.003)	0.281	61.487	
1	9	−6	4		1	8	5	3			156 106.406(0.008)	3.440	96.216	
0	7	7	1	+	0	6	6	0	+		156 139.477(0.001)	13.206	15.312	
1	10	5	5	−	1	9	5	4	−		156 203.321(0.002)	0.550	105.870	
0	21	15	7		0	21	13	9			156 204.509(0.006)	0.190	144.432	
0	7	7	0	−	0	6	6	1	−	156 272.260(0.100)	156 272.154(0.001)	13.198	15.308	6
0	30	14	16	+	0	30	14	17	−		156 282.061(0.004)	5.786	271.070	
0	19	14	6		0	19	−11	8			156 282.306(0.008)	0.522	118.906	
0	30	14	16	+	0	30	13	17	−		156 282.656(0.004)	31.118	271.070	
1	9	6	3	+	1	8	6	2	+		156 288.802(0.003)	0.420	101.599	
0	30	15	16	+	0	30	14	17	−		156 290.360(0.004)	31.118	271.070	
0	30	15	16	+	0	30	13	17	−		156 290.954(0.004)	5.786	271.070	
1	29	12	17		1	28	−15	14			156 334.909(0.109)	0.290	320.413	
1	10	6	5	−	1	9	5	4	−		156 363.950(0.003)	12.961	105.870	
0	30	−14	16		0	30	14	17			156 419.120(0.004)	4.951	270.972	
0	30	−14	16		0	30	−13	17			156 419.379(0.004)	31.899	270.972	
0	30	15	16		0	30	14	17			156 423.450(0.004)	31.899	270.972	
0	30	15	16		0	30	−13	17			156 423.709(0.004)	4.951	270.972	
1	29	13	16		1	29	−13	17			156 487.468(0.005)	4.279	325.628	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	29	13	16		1	29	12	17			156 493.454(0.005)	30.692	325.628	
1	22	10	12		1	21	−13	9			156 523.368(0.041)	0.401	219.149	
1	21	10	11		1	20	−13	8			156 532.916(0.034)	0.395	207.657	
1	29	−14	16		1	29	−13	17			156 542.021(0.005)	30.688	325.628	
1	29	−14	16		1	29	12	17			156 548.007(0.005)	4.278	325.628	
1	24	*	16	+	1	24	*	17	−		156 595.725(0.005)	43.438	233.117	
1	21	6	15		1	21	*	16			156 616.127(0.003)	17.515	190.818	
1	21	−7	15		1	21	*	16			156 616.165(0.003)	17.515	190.818	
0	14	−11	3		0	13	−12	1			156 744.017(0.005)	0.479	65.047	
1	12	10	3	−	1	11	11	0	−		156 767.910(0.011)	0.247	123.469	
0	7	−6	1		0	6	5	2			156 769.461(0.003)	0.417	14.259	
1	10	4	6		1	9	4	5			156 845.273(0.003)	4.476	99.999	
0	6	5	2	+	0	5	3	3	+		156 988.890(0.002)	0.210	8.842	
0	14	11	4		0	13	12	2			157 061.099(0.005)	0.471	64.644	
0	10	−5	5		0	9	6	4			157 072.987(0.002)	6.394	28.496	
1	16	−12	5		1	15	13	2			157 078.514(0.013)	0.364	159.036	
0	19	15	5	+	0	19	13	6	−		157 106.474(0.005)	0.345	122.029	
0	12	−8	4		0	11	−9	2			157 150.328(0.004)	0.840	44.871	
1	25	*	16	−	1	25	*	17	+		157 209.929(0.004)	48.532	249.930	
1	7	−6	2		1	6	4	2			157 228.443(0.012)	0.284	86.810	
1	6	−4	3		1	5	1	4			157 309.380(0.004)	0.651	80.711	
1	11	4	7	+	1	10	5	6	+		157 512.106(0.003)	18.508	109.457	
1	11	5	7	+	1	10	5	6	+		157 514.625(0.003)	0.503	109.457	
1	11	4	7	+	1	10	4	6	+		157 523.012(0.003)	0.502	109.457	
1	11	5	7	+	1	10	4	6	+		157 525.531(0.003)	18.510	109.457	
1	29	−13	17		1	28	14	14			157 540.655(0.109)	0.293	320.373	
0	29	13	16	−	0	29	13	17	+		157 550.543(0.004)	5.525	250.630	
0	29	13	16	−	0	29	12	17	+		157 550.725(0.004)	28.971	250.630	
0	29	14	16	−	0	29	13	17	+		157 553.356(0.004)	28.971	250.630	
0	29	14	16	−	0	29	12	17	+		157 553.537(0.004)	5.525	250.630	
0	29	−13	16		0	29	13	17			157 599.429(0.004)	4.646	250.539	
0	29	−13	16		0	29	−12	17			157 599.502(0.004)	29.792	250.539	
0	29	14	16		0	29	13	17			157 600.793(0.004)	29.792	250.539	
0	29	14	16		0	29	−12	17			157 600.865(0.004)	4.646	250.539	
1	26	10	16	+	1	26	*	17	−		157 619.222(0.004)	26.765	267.457	
1	26	11	16	+	1	26	*	17	−		157 619.241(0.004)	26.765	267.457	
1	29	13	16	−	1	29	13	17	+		157 637.189(0.005)	0.172	324.278	
1	29	13	16	−	1	29	12	17	+		157 637.250(0.005)	33.998	324.278	
1	29	14	16	−	1	29	13	17	+		157 637.914(0.005)	33.998	324.278	
1	29	14	16	−	1	29	12	17	+		157 637.975(0.005)	0.172	324.278	
1	10	−5	6		1	9	4	5			157 745.432(0.003)	8.970	99.999	
1	13	−8	6		1	12	−9	4			157 794.327(0.008)	0.765	124.797	
1	28	12	16	+	1	28	11	17	−		157 808.581(0.004)	31.658	304.635	
1	28	13	16	+	1	28	12	17	−		157 808.791(0.004)	31.658	304.635	
1	27	11	16	−	1	27	*	17	+		157 816.504(0.004)	29.251	285.694	
1	27	12	16	−	1	27	*	17	+		157 816.571(0.004)	29.251	285.694	
0	14	−9	5		0	14	−6	8			157 975.111(0.003)	0.235	61.664	
1	10	−10	1		1	9	9	0			158 010.950(0.004)	1.423	110.924	
0	22	−10	12		0	21	13	9			158 051.959(0.008)	0.213	144.432	
1	28	12	16		1	28	−12	17			158 055.190(0.008)	4.018	305.841	
1	28	12	16		1	28	11	17			158 057.281(0.008)	28.362	305.841	
1	28	−13	16		1	28	−12	17			158 077.918(0.008)	28.360	305.841	
1	28	−13	16		1	28	11	17			158 080.009(0.008)	4.018	305.841	
1	13	−7	7		1	12	−8	5			158 113.793(0.008)	0.263	122.813	
0	22	10	12	+	0	21	13	9	+		158 126.555(0.008)	0.230	144.423	
1	20	5	15		1	20	*	16			158 146.810(0.004)	14.864	176.179	
1	20	−6	15		1	20	*	16			158 146.818(0.004)	14.864	176.179	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	6	4	3		0	5	−1	4			158 214.613(0.002)	0.608	7.998	
0	17	14	3	+	0	17	12	6	−		158 277.066(0.003)	0.232	98.787	
1	12	6	6		1	11	7	4			158 357.503(0.008)	2.459	115.658	
0	8	6	3	−	0	7	5	2	−		158 399.121(0.002)	7.477	18.128	
0	14	8	7	−	0	13	9	4	−		158 399.448(0.004)	0.802	58.579	
0	20	10	11	−	0	19	11	8	−		158 420.780(0.008)	0.233	118.760	
0	19	15	5		0	19	13	7			158 521.762(0.005)	0.260	121.662	
1	20	*	17	−	1	20	*	18	+		158 567.156(0.005)	17.319	167.841	
1	10	9	1		1	9	−9	1			158 605.179(0.003)	2.759	108.480	
1	7	6	1		1	6	5	1			158 606.108(0.003)	6.997	88.098	
0	12	8	4	+	0	11	9	3	+	158 627.140(0.100)	158 627.025(0.004)	1.243	44.556	6
0	28	−12	16		0	28	12	17			158 635.399(0.003)	4.314	230.768	
0	28	−12	16		0	28	−11	17			158 635.418(0.003)	27.708	230.768	
0	28	13	16		0	28	12	17			158 635.801(0.003)	27.708	230.768	
0	28	13	16		0	28	−11	17			158 635.820(0.003)	4.314	230.768	
0	28	12	16	+	0	28	12	17	−		158 682.759(0.003)	5.241	230.847	
0	28	12	16	+	0	28	11	17	−		158 682.811(0.003)	26.842	230.847	
0	28	13	16	+	0	28	12	17	−		158 683.657(0.003)	26.842	230.847	
0	28	13	16	+	0	28	11	17	−		158 683.709(0.003)	5.241	230.847	
0	8	−5	3		0	7	−4	3			159 031.792(0.001)	0.223	17.774	
1	12	3	9	−	1	11	4	8	−		159 083.064(0.004)	23.422	112.484	
1	12	4	9	−	1	11	4	8	−		159 083.087(0.004)	1.162	112.484	
1	12	3	9	−	1	11	3	8	−		159 083.184(0.004)	1.162	112.484	
1	12	4	9	−	1	11	3	8	−		159 083.207(0.004)	23.422	112.484	
1	27	11	16		1	27	−11	17			159 296.265(0.004)	3.584	286.702	
1	27	11	16		1	27	10	17			159 296.914(0.004)	26.474	286.702	
1	21	−10	12		1	20	11	9			159 304.494(0.035)	0.421	204.018	
1	27	−12	16		1	27	−11	17			159 304.626(0.004)	26.473	286.702	
1	27	−12	16		1	27	10	17			159 305.275(0.004)	3.584	286.702	
0	6	5	2	+	0	5	2	3	+		159 327.490(0.002)	0.571	8.764	
1	25	15	10		1	25	13	12			159 462.143(0.008)	0.556	273.168	
1	16	−13	4		1	16	11	5			159 515.839(0.006)	0.463	162.171	
0	27	−11	16		0	27	*	17			159 543.986(0.003)	29.596	211.660	
0	27	12	16		0	27	*	17			159 544.098(0.003)	29.596	211.660	
1	19	*	15		1	19	*	16			159 615.827(0.004)	24.259	162.184	
0	6	4	3	−	0	5	1	4	−		159 629.403(0.002)	0.606	7.662	
1	7	6	2	−	1	6	3	3	−		159 635.755(0.004)	1.684	91.332	
0	11	−6	5		0	10	−7	3			159 662.669(0.002)	0.494	35.774	
1	10	8	2		1	9	8	1			159 679.850(0.003)	3.990	106.239	
1	9	7	2	−	1	8	7	1	−		159 688.406(0.004)	1.310	102.049	
0	27	11	16	−	0	27	11	17	+		159 696.273(0.003)	4.935	211.724	
0	27	11	16	−	0	27	10	17	+		159 696.287(0.003)	24.724	211.724	
0	27	12	16	−	0	27	11	17	+		159 696.542(0.003)	24.724	211.724	
0	27	12	16	−	0	27	10	17	+		159 696.556(0.003)	4.935	211.724	
0	10	6	5	−	0	9	6	4	−		159 736.121(0.001)	4.635	28.271	
1	19	*	18	−	1	19	*	19	+		159 868.189(0.010)	5.916	149.467	
0	7	5	2	−	0	6	3	3	−		160 029.467(0.001)	0.660	12.790	
0	10	6	5		0	9	6	4			160 046.818(0.002)	4.503	28.496	
1	9	7	3	+	1	8	6	2	+		160 083.238(0.005)	9.307	101.599	
0	7	−5	2		0	6	−3	3			160 139.081(0.001)	0.586	13.120	
1	21	15	6	−	1	21	13	9	+		160 139.848(0.006)	0.346	219.321	
1	20	−15	6		1	20	13	7			160 206.051(0.011)	0.343	207.984	
0	17	−13	4		0	17	−10	7			160 277.801(0.007)	0.342	96.072	
0	26	−10	16		0	26	*	17			160 339.284(0.003)	27.155	193.219	
0	26	11	16		0	26	*	17			160 339.312(0.003)	27.155	193.219	
1	16	6	10		1	15	7	8			160 383.078(0.013)	0.178	145.634	
0	26	10	16	+	0	26	*	17	−		160 605.186(0.003)	27.220	193.263	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	26	11	16	+	0	26	*	17	−		160 605.260(0.003)	27.220	193.263	
1	13	*	11	+	1	12	*	10	+		160 660.394(0.006)	60.546	114.979	
1	26	−12	15		1	25	13	12			160 676.012(0.074)	0.334	273.168	
1	8	4	4		1	7	−4	4			160 681.391(0.005)	0.949	89.735	
1	26	10	16		1	26	−10	17			160 757.390(0.004)	2.965	268.196	
1	26	10	16		1	26	9	17			160 757.564(0.004)	24.720	268.196	
1	26	−11	16		1	26	−10	17			160 760.086(0.004)	24.720	268.196	
1	26	−11	16		1	26	9	17			160 760.260(0.004)	2.965	268.196	
1	10	−8	3		1	9	−8	2			160 810.280(0.003)	1.458	104.816	
1	12	10	2	+	1	11	11	1	+		160 849.726(0.012)	0.248	123.469	
1	21	*	17	+	1	21	*	18	−		160 963.360(0.005)	22.816	181.656	
1	18	*	15		1	18	*	16			160 994.350(0.004)	18.592	148.839	
0	11	−7	4		0	10	8	3			161 009.104(0.004)	0.842	36.768	
1	21	15	6	−	1	21	12	9	+		161 010.789(0.006)	0.596	219.291	
1	8	8	1	−	1	7	7	0	−		161 032.229(0.003)	16.735	97.428	
0	25	−9	16		0	25	*	17			161 033.374(0.003)	24.692	175.447	
0	25	10	16		0	25	*	17			161 033.381(0.003)	24.692	175.447	
0	13	9	5		0	12	10	3			161 060.280(0.004)	0.808	52.971	
0	19	13	6	−	0	19	11	9	+		161 079.318(0.002)	0.322	116.656	
0	19	10	9	+	0	18	13	6	+		161 084.102(0.008)	0.251	111.195	
1	10	5	5		1	9	−6	4			161 085.713(0.008)	2.627	101.423	
0	10	9	2	+	0	9	9	1	+		161 095.281(0.002)	1.483	33.217	
0	25	−11	14		0	24	14	11			161 102.566(0.012)	0.195	185.088	
0	10	9	1	−	0	9	9	0	−		161 157.734(0.002)	1.483	33.217	
0	20	14	6	+	0	20	12	9	−		161 285.085(0.003)	0.434	130.207	
0	10	−9	1		0	9	−9	0			161 391.503(0.002)	1.472	33.504	
0	25	9	16	−	0	25	*	17	+		161 421.183(0.003)	24.758	175.465	
0	25	10	16	−	0	25	*	17	+		161 421.203(0.003)	24.758	175.465	
0	10	9	2		0	9	9	1			161 610.218(0.002)	1.477	33.101	
0	24	*	16		0	24	*	17			161 636.826(0.003)	44.401	158.345	
1	8	7	1	−	1	7	6	2	−		161 638.656(0.002)	8.804	96.657	
1	10	7	3		1	9	7	2			161 667.122(0.003)	5.131	104.238	
0	25	11	14	−	0	24	14	11	−		161 726.930(0.012)	0.209	185.110	
1	8	8	0	+	1	7	7	1	+		161 891.794(0.003)	16.779	97.409	
1	15	11	4		1	14	12	2			162 016.893(0.012)	1.511	148.070	
0	17	9	9		0	16	−10	6			162 078.298(0.006)	0.320	86.223	
1	10	7	3	−	1	9	8	2	−		162 098.181(0.008)	3.282	107.851	
0	17	13	4	−	0	17	10	7	+		162 145.304(0.006)	0.582	95.884	
0	11	−4	7		0	10	5	6			162 150.348(0.002)	12.635	32.077	
0	24	*	16	+	0	24	*	17	−		162 154.171(0.003)	44.532	158.334	
0	23	*	16		0	23	*	17			162 159.019(0.003)	39.346	141.916	
1	7	7	1	+	1	6	4	2	+		162 171.293(0.008)	0.798	91.999	
1	25	9	16		1	25	−9	17			162 190.219(0.004)	2.124	250.329	
1	25	9	16		1	25	8	17			162 190.260(0.004)	23.092	250.329	
1	25	−10	16		1	25	−9	17			162 190.975(0.004)	23.092	250.329	
1	25	−10	16		1	25	8	17			162 191.015(0.004)	2.124	250.329	
0	11	5	7		0	10	5	6			162 200.347(0.002)	5.565	32.077	
1	17	*	15		1	17	*	16			162 263.926(0.005)	12.691	136.153	
1	14	*	13	−	1	13	*	12	−		162 338.800(0.008)	72.134	116.971	
0	11	−4	7		0	10	−4	6			162 405.164(0.002)	5.569	32.069	
0	9	6	4		0	8	−5	3			162 411.189(0.002)	6.328	23.079	
1	14	10	4		1	14	7	7			162 446.210(0.009)	0.315	137.514	
0	11	5	7		0	10	−4	6			162 455.164(0.002)	12.650	32.069	
1	14	9	5		1	13	10	3			162 472.789(0.010)	2.116	135.373	
0	11	4	7	+	0	10	5	6	+		162 488.510(0.002)	12.371	31.823	
0	11	5	7	+	0	10	5	6	+		162 567.616(0.002)	5.733	31.823	
0	22	*	16		0	22	*	17			162 608.377(0.003)	34.201	126.160	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	20	−14	6		0	20	12	9			162 645.507(0.005)	0.271	130.244	
1	8	5	3		1	7	−5	3			162 732.100(0.009)	0.772	90.788	
0	12	−3	9		0	11	4	8			162 742.954(0.002)	17.493	35.046	
0	12	4	9		0	11	4	8			162 743.216(0.002)	6.572	35.046	
0	12	−3	9		0	11	−3	8			162 744.750(0.002)	6.572	35.046	
0	12	4	9		0	11	−3	8			162 745.012(0.002)	17.493	35.046	
0	10	8	3	−	0	9	8	2	−		162 792.612(0.002)	2.804	31.331	
0	19	−13	6		0	19	11	9			162 811.793(0.003)	0.225	116.716	
0	23	*	16	−	0	23	*	17	+		162 812.636(0.003)	39.474	141.870	
1	22	*	17	−	1	22	*	18	+		162 860.774(0.005)	28.196	196.227	
0	11	4	7	+	0	10	4	6	+		162 865.282(0.002)	5.738	31.810	
0	28	−12	16		0	27	15	13			162 891.044(0.022)	0.185	230.626	
1	10	6	4	+	1	9	7	3	+		162 911.912(0.005)	9.443	106.939	
0	11	5	7	+	0	10	4	6	+		162 944.388(0.002)	12.391	31.810	
0	15	12	4	−	0	14	13	1	−		162 977.967(0.005)	0.439	75.191	
0	21	*	16		0	21	*	17			162 992.538(0.003)	28.947	111.080	
0	13	8	6		0	12	9	4			163 004.019(0.004)	0.481	51.116	
0	12	3	9	−	0	11	4	8	−		163 044.728(0.002)	17.157	34.788	
0	12	4	9	−	0	11	4	8	−		163 045.232(0.002)	6.851	34.788	
0	12	3	9	−	0	11	3	8	−		163 047.887(0.002)	6.851	34.788	
0	12	4	9	−	0	11	3	8	−		163 048.391(0.002)	17.157	34.788	
0	25	12	14		0	24	−13	11			163 096.691(0.012)	0.196	185.021	
1	14	9	5		1	14	6	8			163 207.770(0.007)	0.440	135.349	
0	20	15	5	−	0	20	13	8	+		163 208.170(0.004)	0.448	132.823	
0	15	12	3	+	0	14	13	2	+		163 230.057(0.005)	0.439	75.191	
0	28	13	16		0	27	−14	13			163 253.599(0.022)	0.185	230.614	
1	18	−14	5		1	18	12	6			163 283.090(0.007)	0.655	183.793	
1	14	−9	6		1	13	−10	4			163 296.743(0.009)	0.796	134.260	
0	10	7	4	+	0	9	7	3	+		163 307.576(0.002)	3.907	29.715	
1	15	−13	3		1	15	11	4			163 318.428(0.007)	0.294	153.475	
0	20	*	16		0	20	*	17			163 318.475(0.004)	23.558	96.677	
0	13	*	11		0	12	*	10			163 379.878(0.003)	59.848	37.348	
0	22	*	16	+	0	22	*	17	−		163 403.946(0.003)	34.322	126.076	
1	16	*	15		1	16	*	16			163 416.010(0.006)	6.512	124.133	
1	16	−14	3		1	15	−15	1			163 447.648(0.018)	0.474	164.988	
0	8	−6	2		0	7	−5	2			163 515.513(0.001)	3.490	18.462	
0	28	12	16	+	0	27	15	13	+		163 556.147(0.022)	0.194	230.685	
0	13	−9	4		0	12	−10	2			163 560.993(0.004)	0.865	53.369	
0	19	*	16		0	19	*	17			163 592.593(0.004)	18.007	82.953	
0	10	−8	2		0	9	−8	1			163 596.055(0.002)	2.780	31.670	
0	13	*	11	+	0	12	3	10	+		163 596.163(0.003)	29.886	37.074	
0	13	*	11	+	0	12	2	10	+		163 596.173(0.003)	29.886	37.074	
1	24	8	16		1	24	−8	17			163 668.077(0.004)	1.170	233.098	
1	24	8	16		1	24	7	17			163 668.085(0.004)	21.549	233.098	
1	24	−9	16		1	24	−8	17			163 668.261(0.004)	21.549	233.098	
1	24	−9	16		1	24	7	17			163 668.269(0.004)	1.170	233.098	
0	19	13	6	−	0	19	10	9	+		163 724.173(0.003)	1.239	116.568	
1	17	13	4		1	16	14	2			163 776.433(0.017)	0.343	171.242	
0	18	*	16		0	18	*	17			163 820.802(0.005)	12.259	69.908	
0	10	8	2	+	0	9	8	1	+		163 854.707(0.002)	2.808	31.337	
1	24	14	10		1	24	12	12			163 861.975(0.006)	0.247	256.301	
0	21	*	16	−	0	21	*	17	+		163 934.531(0.003)	29.058	110.953	
0	17	*	16		0	17	*	17			164 008.566(0.005)	6.274	57.544	
0	14	*	13		0	13	*	12			164 062.851(0.003)	71.734	38.993	
0	10	8	3		0	9	8	2			164 083.119(0.002)	2.772	31.295	
0	13	9	4	−	0	12	10	3	−		164 105.867(0.004)	1.064	53.105	
0	28	13	16	+	0	27	14	13	+		164 114.600(0.022)	0.194	230.666	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	18	−9	10		1	17	10	7			164 122.738(0.020)	0.711	169.654	
0	14	*	13	−	0	13	*	12	−		164 193.587(0.003)	71.691	38.694	
0	9	−6	3		0	8	6	3			164 270.102(0.003)	0.292	23.586	
1	10	7	4	+	1	9	7	3	+		164 285.571(0.003)	0.273	106.939	
1	15	*	15	+	1	14	*	14	+		164 292.764(0.010)	83.854	118.509	
1	23	*	17	+	1	23	*	18	−		164 380.396(0.006)	33.477	211.543	
0	20	*	16	+	0	20	*	17	−		164 410.051(0.004)	23.655	96.503	
1	15	10	5		1	15	7	8			164 424.678(0.008)	0.509	145.634	
1	15	6	9		1	14	7	7			164 529.614(0.010)	0.325	137.514	
0	25	12	14	−	0	24	13	11	−		164 585.540(0.012)	0.210	185.015	
0	14	10	5	−	0	13	11	2	−		164 608.819(0.004)	0.930	62.411	
1	20	*	18	+	1	20	*	19	−		164 633.673(0.007)	11.717	162.349	
0	19	−13	6		0	19	−10	9			164 638.202(0.003)	0.992	116.655	
0	18	−15	3		0	18	−13	5			164 755.671(0.005)	0.223	111.410	
0	15	*	15		0	14	*	14			164 762.925(0.004)	83.804	39.991	
1	13	11	3	+	1	12	12	0	+		164 772.903(0.011)	0.210	131.903	
0	21	15	7		0	21	−12	9			164 782.101(0.009)	0.592	144.146	
0	15	*	15	+	0	14	*	14	+		164 800.477(0.004)	83.793	39.654	
0	19	*	16	−	0	19	*	17	+		164 835.526(0.004)	18.087	82.729	
1	10	−7	4		1	9	−7	3			164 892.356(0.004)	2.604	102.877	
0	18	12	6	+	0	18	10	9	−		164 947.153(0.003)	0.205	103.762	
1	8	−5	4		1	7	−4	4			164 950.043(0.002)	1.775	89.735	
1	13	2	11		1	12	−3	10			164 977.364(0.006)	22.439	110.511	
1	13	−3	11		1	12	−3	10			164 977.387(0.006)	7.006	110.511	
1	13	2	11		1	12	2	10			164 977.481(0.006)	7.006	110.511	
1	13	−3	11		1	12	2	10			164 977.504(0.006)	22.439	110.511	
0	8	6	3		0	7	5	3			164 983.039(0.002)	2.902	18.083	
1	14	*	13		1	13	*	12			165 022.320(0.008)	71.134	112.006	
1	12	3	9		1	11	−4	8			165 059.368(0.004)	17.395	108.273	
1	12	−4	9		1	11	−4	8			165 062.728(0.004)	5.931	108.273	
1	15	*	15		1	14	*	14			165 068.795(0.010)	83.507	112.766	
1	12	3	9		1	11	3	8			165 074.605(0.004)	5.928	108.272	
1	12	−4	9		1	11	3	8			165 077.966(0.004)	17.396	108.272	
0	21	10	11	+	0	20	13	8	+		165 101.089(0.008)	0.269	132.823	
0	10	−5	5		0	9	−5	4			165 190.662(0.002)	4.867	28.226	
0	9	6	4	−	0	8	5	3	−		165 199.832(0.002)	6.866	22.761	
1	23	7	16		1	23	*	17			165 202.292(0.004)	20.178	216.499	
1	23	−8	16		1	23	*	17			165 202.332(0.004)	20.178	216.499	
0	18	*	16	+	0	18	*	17	−		165 215.441(0.005)	12.317	69.631	
1	7	4	3	+	1	6	3	4	+		165 230.484(0.003)	1.269	90.332	
1	18	−12	7		1	18	9	9			165 233.771(0.007)	0.414	177.890	
1	11	4	7		1	10	−5	6			165 265.950(0.003)	11.378	105.261	
0	17	9	9	+	0	16	10	6	+		165 295.195(0.006)	0.383	86.009	
0	21	15	6	−	0	21	13	9	+		165 362.110(0.003)	0.510	144.423	
1	11	−5	7		1	10	−5	6			165 525.331(0.003)	5.468	105.261	
1	7	−7	1		1	6	−6	1			165 537.209(0.003)	10.059	89.691	
1	25	11	14		1	24	−14	11			165 544.076(0.064)	0.378	259.849	
1	24	*	17	−	1	24	*	18	+		165 552.541(0.005)	38.596	227.595	
0	17	*	16	−	0	17	*	17	+		165 553.831(0.005)	6.306	57.211	
0	10	7	4		0	9	7	3			165 624.938(0.002)	3.550	29.805	
1	10	6	4		1	9	6	3			165 703.075(0.003)	5.450	102.540	
0	15	12	4		0	14	13	2			165 710.910(0.005)	0.439	74.883	
1	13	8	5		1	13	5	8			165 803.688(0.006)	0.297	125.678	
0	18	15	4		0	18	13	6			165 856.434(0.005)	0.203	111.037	
0	15	−12	3		0	14	−13	1			165 894.438(0.005)	0.446	75.270	
0	18	12	6	+	0	18	9	9	−		166 045.421(0.003)	0.844	103.726	
0	10	5	5	−	0	9	5	4	−		166 106.125(0.002)	5.055	27.925	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	21	−10	11		0	20	13	8			166 124.855(0.008)	0.250	132.816	
1	10	−6	5		1	9	−6	4			166 140.820(0.003)	4.410	101.423	
1	7	5	3	+	1	6	2	4	+		166 152.029(0.003)	1.232	90.331	
1	11	4	7		1	10	4	6			166 166.109(0.003)	5.282	105.231	
1	12	9	4	+	1	11	10	1	+		166 290.556(0.008)	0.731	121.953	
0	19	15	4	−	0	19	13	7	+		166 331.504(0.004)	0.330	121.725	
0	21	−15	6		0	21	13	9			166 392.472(0.006)	0.275	144.432	
1	11	−5	7		1	10	4	6			166 425.490(0.003)	11.583	105.231	
1	25	*	17	+	1	25	*	18	−		166 475.420(0.006)	43.748	244.377	
0	14	9	6		0	13	−10	3			166 485.425(0.005)	0.519	60.503	
0	22	11	12		0	21	−12	9			166 654.605(0.009)	0.220	144.146	
1	10	6	4	+	1	9	6	3	+		166 706.347(0.003)	0.254	106.812	
1	11	5	6	−	1	10	6	5	−		166 712.809(0.003)	15.723	111.086	
1	8	5	3		1	7	4	3			166 742.250(0.004)	1.317	90.654	
1	16	−10	7		1	15	11	4			166 743.243(0.017)	0.308	153.475	
1	11	6	6	−	1	10	6	5	−		166 749.196(0.003)	0.530	111.086	
1	22	6	16		1	22	*	17			166 781.410(0.004)	17.584	200.533	
1	22	−7	16		1	22	*	17			166 781.419(0.004)	17.584	200.533	
0	20	−14	6		0	20	−11	9			166 812.576(0.005)	1.075	130.105	
1	13	11	2	−	1	12	12	1	−		166 853.403(0.011)	0.208	131.903	
1	8	−4	5		1	7	−3	5			166 872.972(0.002)	0.225	88.285	
1	11	5	6	−	1	10	5	5	−		166 873.438(0.003)	0.529	111.080	
1	11	6	6	−	1	10	5	5	−		166 909.825(0.003)	15.758	111.080	
0	19	−14	5		0	19	−11	8			166 921.220(0.007)	0.578	118.906	
1	30	13	17		1	30	−13	18			166 939.328(0.007)	4.374	340.490	
1	30	13	17		1	30	12	18			166 940.866(0.007)	30.686	340.490	
1	30	−14	17		1	30	−13	18			166 954.445(0.007)	30.684	340.490	
1	30	−14	17		1	30	12	18			166 955.983(0.007)	4.374	340.490	
0	20	10	10	+	0	19	13	7	+		166 971.978(0.008)	0.289	121.725	
0	20	14	6	+	0	20	11	9	−		167 052.967(0.004)	1.447	130.015	
1	10	5	5		1	9	5	4			167 193.640(0.003)	3.749	101.219	
0	6	−2	4		0	5	1	5			167 212.655(0.002)	0.221	6.515	
1	26	*	17	−	1	26	*	18	+		167 307.870(0.006)	48.758	261.876	
1	8	−5	4		1	7	3	4			167 334.459(0.006)	0.543	89.655	
1	17	−12	6		1	17	9	8			167 432.796(0.008)	0.384	167.935	
1	10	9	2	+	1	9	9	1	+		167 587.306(0.005)	1.136	108.930	
0	6	3	4		0	5	0	5			167 651.525(0.002)	0.221	6.515	
1	27	*	17	+	1	27	*	18	−		167 741.645(0.006)	53.887	280.098	
1	16	−9	8		1	15	10	5			167 746.932(0.015)	0.983	151.119	
0	22	15	8		0	22	−12	10			167 790.980(0.006)	0.244	156.365	
1	16	−13	4		1	15	−14	2			167 795.656(0.016)	0.919	161.894	
1	15	−10	6		1	14	−11	4			167 808.595(0.011)	0.771	144.548	
0	18	−12	6		0	18	−9	9			167 858.136(0.003)	0.700	103.821	
1	30	13	17	−	1	30	12	18	+		167 918.299(0.006)	34.317	339.014	
1	30	14	17	−	1	30	13	18	+		167 918.487(0.006)	34.317	339.014	
0	30	13	17	−	0	30	13	18	+		167 942.196(0.005)	5.664	265.468	
0	30	13	17	−	0	30	12	18	+		167 942.231(0.005)	29.010	265.468	
0	30	14	17	−	0	30	13	18	+		167 942.790(0.005)	29.010	265.468	
0	30	14	17	−	0	30	12	18	+		167 942.825(0.005)	5.664	265.468	
1	21	−15	7		1	21	−13	9			167 944.120(0.008)	0.689	219.149	
1	21	*	18	−	1	21	*	19	+		167 977.833(0.007)	17.380	176.053	
0	30	−13	17		0	30	13	18			167 978.035(0.005)	4.519	265.369	
0	30	−13	17		0	30	−12	18			167 978.047(0.005)	30.107	265.369	
0	30	14	17		0	30	13	18			167 978.294(0.005)	30.107	265.369	
0	30	14	17		0	30	−12	18			167 978.306(0.005)	4.519	265.369	
1	28	11	17	−	1	28	*	18	+		167 999.223(0.006)	29.450	299.032	
1	28	12	17	−	1	28	*	18	+		167 999.241(0.006)	29.450	299.032	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	6	2	4	+	0	5	1	5	+		168 045.599(0.002)	0.222	6.166	
1	29	12	17	+	1	29	*	18	−		168 055.051(0.006)	31.943	318.672	
1	29	13	17	+	1	29	*	18	−		168 055.111(0.006)	31.943	318.672	
1	10	7	4	+	1	9	6	3	+		168 080.006(0.005)	10.621	106.812	
0	10	6	5		0	9	−5	4			168 164.494(0.002)	7.732	28.226	
1	28	12	16		1	27	−15	13			168 187.069(0.097)	0.338	305.503	
1	29	12	17		1	29	−12	18			168 207.216(0.005)	4.065	320.017	
1	29	12	17		1	29	11	18			168 207.733(0.005)	28.479	320.017	
1	29	−13	17		1	29	−12	18			168 213.202(0.005)	28.479	320.017	
1	29	−13	17		1	29	11	18			168 213.719(0.005)	4.065	320.017	
1	12	4	8	+	1	11	5	7	+		168 323.521(0.004)	20.630	114.711	
1	12	5	8	+	1	11	5	7	+		168 324.085(0.004)	1.189	114.711	
1	12	4	8	+	1	11	4	7	+		168 326.040(0.004)	1.189	114.711	
1	12	5	8	+	1	11	4	7	+		168 326.603(0.004)	20.630	114.711	
1	20	−14	7		1	20	−12	9			168 351.470(0.008)	0.355	204.788	
1	21	*	16		1	21	*	17			168 366.978(0.004)	29.842	185.202	
0	19	−10	9		0	18	13	6			168 434.882(0.009)	0.185	111.037	
1	17	−14	4		1	17	12	5			168 537.813(0.007)	0.459	173.930	
1	8	−6	3		1	7	−5	3			168 589.832(0.004)	9.054	90.788	
1	20	*	19	−	1	20	*	20	+		168 599.198(0.013)	5.918	156.725	
0	12	−8	4		0	11	9	3			168 625.498(0.005)	0.465	44.489	
0	6	3	4	+	0	5	0	5	+		168 642.482(0.002)	0.221	6.166	
0	19	14	5	+	0	19	11	8	−		168 767.671(0.006)	0.935	118.760	
0	18	15	4	+	0	18	13	5	−		168 777.213(0.004)	0.218	111.284	
1	10	9	1	−	1	9	9	0	−		168 906.335(0.006)	1.164	108.934	
0	10	−7	3		0	9	−7	2			168 922.897(0.002)	3.685	30.139	
0	29	−12	17		0	29	*	18			168 924.509(0.005)	32.202	244.904	
0	29	13	17		0	29	*	18			168 924.582(0.005)	32.202	244.904	
1	13	6	7		1	12	7	5			168 967.341(0.006)	1.712	122.365	
0	29	12	17	+	0	29	12	18	−		168 981.871(0.005)	5.363	244.994	
0	29	12	17	+	0	29	11	18	−		168 981.881(0.005)	26.892	244.994	
0	29	13	17	+	0	29	12	18	−		168 982.052(0.005)	26.892	244.994	
0	29	13	17	+	0	29	11	18	−		168 982.062(0.005)	5.363	244.994	
1	10	8	3	−	1	9	8	2	−		169 046.577(0.004)	1.047	107.851	
1	14	6	8		1	13	7	6			169 228.235(0.008)	0.752	129.704	
0	18	14	5		0	18	−11	7			169 248.554(0.009)	0.232	107.969	
0	22	11	12	+	0	21	12	9	+		169 493.947(0.009)	0.243	144.045	
1	28	11	17		1	28	−11	18			169 514.433(0.007)	3.569	300.186	
1	28	11	17		1	28	10	18			169 514.586(0.007)	26.422	300.186	
1	28	−12	17		1	28	−11	18			169 516.524(0.007)	26.422	300.186	
1	28	−12	17		1	28	10	18			169 516.677(0.007)	3.569	300.186	
0	7	4	3	+	0	6	3	4	+		169 598.162(0.002)	1.306	11.791	
1	22	−15	8		1	22	−13	10			169 663.493(0.007)	0.669	231.144	
1	19	−14	6		1	19	−12	8			169 696.500(0.010)	0.199	193.857	
0	28	−11	17		0	28	*	18			169 759.821(0.004)	29.766	225.105	
0	28	12	17		0	28	*	18			169 759.840(0.004)	29.766	225.105	
1	13	*	10	−	1	12	4	9	−		169 832.189(0.006)	27.428	117.790	
1	13	*	10	−	1	12	3	9	−		169 832.211(0.006)	27.428	117.790	
0	7	−4	3		0	6	3	4			169 878.420(0.002)	1.249	12.108	
1	20	*	16		1	20	*	17			169 913.162(0.005)	24.347	170.511	
0	28	11	17	−	0	28	*	18	+		169 921.085(0.004)	29.823	225.179	
0	28	12	17	−	0	28	*	18	+		169 921.138(0.004)	29.823	225.179	
1	16	11	5		1	16	8	8			169 925.707(0.008)	0.466	156.502	
0	20	11	9	−	0	19	14	6	−		169 944.846(0.009)	0.224	124.346	
0	11	6	5	+	0	10	7	4	+		169 978.899(0.002)	4.739	35.162	
1	23	−11	13		1	22	12	10			170 004.364(0.048)	0.415	230.505	
1	20	−15	6		1	20	−13	8			170 014.663(0.008)	0.631	207.657	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	6	2	4		1	5	−1	5			170 072.876(0.003)	0.262	79.188	
0	10	7	3	−	0	9	7	2	−		170 087.127(0.002)	4.053	29.803	
0	10	6	5	−	0	9	5	4	−		170 108.169(0.002)	7.662	27.925	
0	14	10	4	+	0	13	11	3	+		170 118.014(0.004)	0.960	62.408	
0	7	4	3	+	0	6	2	4	+		170 193.085(0.002)	0.321	11.771	
0	8	7	2		0	7	6	2			170 196.039(0.001)	11.043	19.181	
0	14	9	6	+	0	13	10	3	+		170 259.800(0.004)	1.291	60.248	
1	20	14	6	+	1	20	12	9	−		170 274.649(0.006)	0.223	205.300	
0	7	−4	3		0	6	−2	4			170 315.978(0.002)	0.301	12.093	
0	20	−10	10		0	19	13	7			170 437.575(0.008)	0.256	121.662	
0	27	*	17		0	27	*	18			170 495.098(0.004)	54.624	205.973	
0	14	10	5		0	13	11	3			170 546.122(0.004)	0.872	62.215	
1	22	*	18	+	1	22	*	19	−		170 549.284(0.007)	22.917	190.538	
0	14	−10	4		0	13	−11	2			170 627.711(0.005)	0.895	62.619	
1	20	14	6	+	1	20	11	9	−		170 632.403(0.006)	0.301	205.288	
0	7	6	1	+	0	6	4	2	+		170 744.237(0.002)	0.367	13.417	
0	27	10	17	+	0	27	*	18	−		170 770.777(0.004)	27.372	206.028	
0	27	11	17	+	0	27	*	18	−		170 770.791(0.004)	27.372	206.028	
1	13	7	6		1	12	8	4			170 796.810(0.009)	2.531	124.007	
1	18	14	4		1	17	15	2			170 817.323(0.021)	0.327	184.246	
0	11	5	6	−	0	10	6	5	−		170 919.907(0.002)	9.240	33.599	
1	6	−3	4		1	5	0	5			170 991.319(0.003)	0.261	79.187	
1	27	10	17		1	27	−10	18			171 032.255(0.005)	2.908	280.997	
1	27	10	17		1	27	9	18			171 032.294(0.005)	24.830	280.997	
1	27	−11	17		1	27	−10	18			171 032.903(0.005)	24.830	280.997	
1	27	−11	17		1	27	9	18			171 032.942(0.005)	2.908	280.997	
0	11	−5	6		0	10	6	5			171 073.364(0.002)	9.560	33.835	
0	26	*	17		0	26	*	18			171 140.121(0.004)	49.668	187.511	
0	8	7	2	+	0	7	6	1	+		171 324.609(0.001)	11.350	19.112	
0	8	−7	1		0	7	−6	1			171 325.936(0.001)	11.168	19.488	
1	14	*	12	+	1	13	*	11	+		171 363.884(0.007)	66.293	120.338	
1	19	*	16		1	19	*	17			171 380.665(0.005)	18.652	156.467	
0	18	15	3	−	0	18	13	6	+		171 483.443(0.004)	0.216	111.195	
0	26	*	17	−	0	26	*	18	+		171 540.281(0.004)	49.790	187.541	
1	8	6	2	+	1	7	5	3	+		171 642.418(0.004)	3.266	95.874	
1	16	−14	3		1	16	12	4			171 653.523(0.007)	0.296	164.714	
0	25	*	17		0	25	*	18			171 703.627(0.004)	44.651	169.720	
1	28	−13	16		1	27	14	13			171 712.085(0.096)	0.346	305.386	
1	15	10	5		1	14	11	3			171 723.397(0.012)	2.120	145.391	
0	24	−11	13		0	23	14	10			171 823.852(0.010)	0.231	171.992	
0	7	−6	1		0	6	−4	2			171 875.356(0.002)	0.273	13.755	
0	11	6	6		0	10	6	5			171 881.045(0.002)	5.235	33.835	
1	14	12	3	−	1	13	13	0	−		171 897.518(0.011)	0.181	141.126	
0	11	8	4		0	10	−8	2			171 939.282(0.004)	0.179	37.127	
1	7	7	0		1	6	6	0			171 974.665(0.003)	13.243	91.542	
0	11	6	6	−	0	10	6	5	−		172 080.551(0.002)	5.371	33.599	
0	8	6	2	+	0	7	5	3	+		172 124.119(0.001)	6.130	17.839	
0	16	13	4	+	0	15	14	1	+		172 130.612(0.006)	0.412	86.228	
0	24	*	17		0	24	*	18			172 193.495(0.004)	39.559	152.601	
1	17	−9	9		1	16	10	6			172 205.708(0.017)	1.059	160.004	
0	24	11	13	−	0	23	14	10	−		172 212.439(0.010)	0.248	172.006	
0	16	13	3	−	0	15	14	2	−		172 234.361(0.006)	0.412	86.228	
0	25	*	17	+	0	25	*	18	−		172 237.632(0.004)	44.775	169.720	
1	10	−6	5		1	9	5	4			172 248.747(0.005)	6.068	101.219	
1	26	9	17		1	26	−9	18			172 335.726(0.005)	1.991	262.448	
1	26	9	17		1	26	8	18			172 335.735(0.005)	23.320	262.448	
1	26	−10	17		1	26	−9	18			172 335.900(0.005)	23.320	262.448	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	26	−10	17		1	26	8	18			172 335.908(0.005)	1.991	262.448	
1	19	13	6		1	19	−11	9			172 483.125(0.005)	0.239	191.098	
1	23	*	18	−	1	23	*	19	+		172 575.822(0.007)	28.340	205.786	
1	8	−6	3		1	7	4	3			172 599.981(0.008)	1.552	90.654	
0	23	*	17		0	23	*	18			172 616.900(0.004)	34.376	136.158	
1	21	−14	8		1	21	−12	10			172 703.824(0.007)	0.325	216.163	
1	16	−11	6		1	15	−12	4			172 715.643(0.013)	0.730	155.654	
0	17	11	6	−	0	17	8	9	+		172 740.185(0.003)	0.487	91.509	
1	18	*	16		1	18	*	17			172 743.020(0.006)	12.723	143.077	
1	7	4	3		1	6	−3	4			172 768.564(0.004)	1.300	84.891	
0	8	7	1	−	0	7	6	2	−		172 799.566(0.001)	11.255	19.078	
1	14	12	2	+	1	13	13	1	+		172 815.517(0.011)	0.180	141.126	
0	12	−4	8		0	11	5	7			172 819.876(0.002)	14.902	37.487	
0	12	5	8		0	11	5	7			172 828.691(0.002)	6.204	37.487	
0	24	*	17	−	0	24	*	18	+		172 869.801(0.004)	39.681	152.567	
0	12	−4	8		0	11	−4	7			172 869.875(0.002)	6.205	37.486	
0	12	5	8		0	11	−4	7			172 878.691(0.002)	14.904	37.486	
0	11	−6	5		0	10	7	4			172 967.607(0.003)	4.716	35.330	
0	22	*	17		0	22	*	18			172 980.431(0.004)	29.081	120.390	
1	15	*	14	−	1	14	*	13	−		173 011.147(0.010)	77.918	122.386	
0	12	4	8	+	0	11	5	7	+		173 195.079(0.002)	14.607	37.245	
0	12	5	8	+	0	11	5	7	+		173 210.086(0.002)	6.416	37.245	
0	12	4	8	+	0	11	4	7	+		173 274.185(0.002)	6.417	37.243	
0	12	5	8	+	0	11	4	7	+		173 289.192(0.002)	14.610	37.243	
0	21	*	17		0	21	*	18			173 290.175(0.004)	23.654	105.300	
0	13	−3	10		0	12	4	9			173 375.255(0.003)	19.740	40.475	
0	13	4	10		0	12	4	9			173 375.291(0.003)	7.200	40.475	
0	13	−3	10		0	12	−3	9			173 375.517(0.003)	7.200	40.475	
0	13	4	10		0	12	−3	9			173 375.553(0.003)	19.740	40.475	
0	23	*	17	+	0	23	*	18	−		173 442.867(0.004)	34.493	136.084	
1	19	−15	5		1	19	−13	7			173 461.818(0.008)	0.566	196.723	
0	20	*	17		0	20	*	18			173 551.787(0.005)	18.067	90.888	
0	10	−6	4		0	9	−6	3			173 586.857(0.002)	4.970	29.065	
1	16	12	4		1	15	−13	3			173 641.894(0.015)	1.477	158.922	
0	13	3	10	−	0	12	4	9	−		173 671.298(0.003)	19.318	40.227	
0	13	4	10	−	0	12	4	9	−		173 671.374(0.003)	7.567	40.227	
0	13	3	10	−	0	12	3	9	−		173 671.801(0.003)	7.567	40.227	
0	13	4	10	−	0	12	3	9	−		173 671.878(0.003)	19.318	40.227	
1	15	−14	2		1	15	12	3			173 680.581(0.008)	0.173	156.101	
1	25	8	17		1	25	*	18			173 758.861(0.005)	22.801	244.533	
1	25	−9	17		1	25	*	18			173 758.901(0.005)	22.801	244.533	
0	19	*	17		0	19	*	18			173 770.540(0.006)	12.289	77.156	
1	14	−8	7		1	13	−9	5			173 813.463(0.009)	0.664	131.924	
1	21	*	19	+	1	21	*	20	−		173 814.722(0.009)	11.741	170.255	
0	21	12	9	+	0	20	15	6	+		173 824.508(0.010)	0.172	138.247	
1	9	8	2	−	1	8	7	1	−		173 929.547(0.004)	12.598	102.049	
0	18	*	17		0	18	*	18			173 951.355(0.006)	6.282	64.106	
0	22	*	17	−	0	22	*	18	+		173 962.158(0.004)	29.190	120.273	
1	17	*	16		1	17	*	17			173 986.598(0.007)	6.522	130.350	
0	10	6	4	+	0	9	6	3	+		173 989.444(0.002)	5.152	28.757	
0	14	*	12		0	13	*	11			174 025.334(0.003)	65.620	42.797	
0	11	−5	6		0	10	−5	5			174 047.196(0.002)	5.308	33.736	
1	7	3	4	−	1	6	2	5	−		174 080.176(0.003)	0.604	89.041	
1	24	11	13		1	23	−14	10			174 084.826(0.055)	0.428	246.738	
1	11	−11	1		1	10	10	0			174 117.814(0.005)	1.404	118.802	
0	27	−12	15		0	26	15	12			174 152.368(0.018)	0.212	216.119	
1	7	4	4	−	1	6	1	5	−		174 160.856(0.003)	0.603	89.041	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	24	*	18	+	1	24	*	19	−		174 199.135(0.007)	33.665	221.784	
0	15	8	7	+	0	14	10	4	+		174 205.129(0.005)	0.208	68.083	
0	14	*	12	+	0	13	*	11	+		174 239.008(0.003)	65.546	42.531	
0	20	15	6		0	20	−12	8			174 241.054(0.010)	0.389	132.155	
1	14	9	6	+	1	13	10	3	+		174 244.059(0.008)	0.327	136.492	
0	15	11	5	+	0	14	12	2	+		174 250.764(0.005)	0.880	72.468	
1	8	6	2		1	7	5	2			174 274.688(0.003)	5.693	91.848	
0	21	*	17	+	0	21	*	18	−		174 432.370(0.004)	23.750	105.134	
0	16	13	4		0	15	14	2			174 434.932(0.006)	0.410	85.883	
1	11	5	6		1	10	−6	5			174 483.563(0.006)	6.032	106.965	
1	11	8	3	+	1	10	9	2	+		174 557.326(0.010)	2.077	114.520	
0	19	10	10		0	18	−11	7			174 605.115(0.007)	0.304	107.969	
1	11	10	1		1	10	−10	1			174 625.883(0.004)	2.747	116.195	
0	15	*	14		0	14	*	13			174 711.534(0.004)	77.528	44.466	
0	12	−7	5		0	11	−8	3			174 780.317(0.003)	0.863	43.243	
0	15	*	14	−	0	14	*	13	−		174 841.215(0.004)	77.485	44.171	
0	11	6	6		0	10	−5	5			174 854.877(0.002)	9.845	33.736	
0	20	*	17	−	0	20	*	18	+		174 857.663(0.005)	18.146	90.671	
0	27	12	15	+	0	26	15	12	+		174 875.078(0.018)	0.225	216.165	
0	8	−6	2		0	7	5	3			174 880.603(0.002)	2.906	18.083	
0	16	9	8		0	15	−10	5			174 893.399(0.005)	0.587	76.898	
0	11	5	6	−	0	10	5	5	−		174 921.951(0.002)	5.470	33.466	
1	16	*	16	+	1	15	*	15	+		174 957.464(0.013)	89.649	123.989	
0	21	−15	6		0	21	−12	9			174 970.063(0.007)	0.915	144.146	
1	10	−7	4		1	9	6	3			175 002.175(0.012)	1.212	102.540	
0	16	−13	3		0	15	−14	1			175 087.355(0.006)	0.418	86.244	
0	17	−11	6		0	17	−8	9			175 093.690(0.003)	0.410	91.620	
0	19	*	17	+	0	19	*	18	−		175 241.750(0.006)	12.346	76.883	
1	24	7	17		1	24	*	18			175 281.743(0.005)	20.250	227.251	
1	24	−8	17		1	24	*	18			175 281.752(0.005)	20.250	227.251	
1	11	6	5	+	1	10	7	4	+		175 394.987(0.003)	12.539	112.419	
0	16	*	16		0	15	*	15			175 413.119(0.005)	89.608	45.487	
0	16	*	16	+	0	15	*	15	+	175 450.120(0.100)	175 449.970(0.005)	89.597	45.151	6
0	27	13	15		0	26	−14	12			175 495.970(0.018)	0.212	216.074	
0	13	−9	4		0	12	10	3			175 501.344(0.006)	0.227	52.971	
1	25	*	18	−	1	25	*	19	+		175 520.571(0.007)	38.892	238.522	
1	11	9	2		1	10	9	1			175 571.081(0.004)	4.003	113.770	
1	14	*	12		1	13	−3	11			175 583.124(0.008)	32.355	116.014	
1	14	*	12		1	13	2	11			175 583.147(0.008)	32.355	116.014	
0	18	*	17	−	0	18	*	18	+	175 588.160(0.100)	175 587.967(0.006)	6.313	63.774	6
1	13	3	10		1	12	−4	9			175 591.426(0.006)	19.764	113.779	
1	13	−4	10		1	12	−4	9			175 592.145(0.006)	6.497	113.779	
1	13	3	10		1	12	3	9			175 594.787(0.006)	6.497	113.779	
1	13	−4	10		1	12	3	9			175 595.506(0.006)	19.764	113.779	
1	15	*	14		1	14	*	13			175 657.806(0.010)	76.947	117.511	
1	11	6	5		1	10	−7	4			175 710.942(0.009)	1.509	108.377	
1	16	*	16		1	15	*	15			175 715.378(0.013)	89.319	118.272	
1	11	7	5	+	1	10	7	4	+		175 826.316(0.003)	0.652	112.419	
1	12	4	8		1	11	−5	7			175 839.492(0.004)	14.096	110.782	
1	15	11	4		1	15	8	7			175 901.713(0.010)	0.220	147.607	
1	17	11	6		1	17	8	9			175 904.957(0.007)	0.691	165.668	
1	12	−5	8		1	11	−5	7			175 905.810(0.004)	5.916	110.782	
0	30	14	17		0	29	−15	14			175 966.547(0.035)	0.202	265.102	
1	18	15	4	+	1	18	12	7	−		176 059.293(0.009)	0.208	184.094	
0	11	6	6	−	0	10	5	5	−		176 082.595(0.002)	9.595	33.466	
1	12	4	8		1	11	4	7			176 098.873(0.004)	5.870	110.773	
1	13	9	5	+	1	12	10	2	+		176 132.016(0.006)	0.687	128.834	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	12	−5	8		1	11	4	7			176 165.191(0.004)	14.143	110.773	
1	22	11	11		1	21	−14	8			176 174.152(0.040)	0.311	221.924	
1	11	−9	3		1	10	−9	2			176 229.786(0.004)	1.470	112.433	
1	10	8	2	+	1	9	8	1	+		176 323.012(0.005)	1.688	107.941	
1	10	7	3	−	1	9	7	2	−		176 339.322(0.003)	0.943	107.376	
1	26	*	18	+	1	26	*	19	−		176 378.436(0.007)	43.889	255.993	
0	15	9	7		0	14	−10	4			176 506.653(0.005)	0.761	68.311	
0	9	7	3		0	8	−6	2			176 553.597(0.004)	1.958	23.916	
1	7	5	2		1	6	−4	3			176 583.607(0.009)	0.657	85.958	
0	21	15	6	−	0	21	12	9	+		176 685.065(0.006)	1.337	144.045	
1	18	−15	4		1	18	−13	6			176 754.716(0.008)	0.451	186.380	
1	11	6	5	+	1	10	6	4	+		176 768.646(0.003)	0.653	112.373	
0	30	14	17	−	0	29	15	14	−		176 791.081(0.035)	0.209	265.173	
0	27	13	15	+	0	26	14	12	+		176 825.208(0.018)	0.226	216.100	
1	23	*	17		1	23	*	18			176 889.103(0.005)	35.292	210.599	
1	27	*	18	−	1	27	*	19	+		176 942.247(0.008)	48.522	274.196	
1	18	12	6		1	18	9	9			176 982.064(0.007)	0.773	177.890	
1	11	−6	6		1	10	−6	5			177 010.241(0.004)	5.547	106.965	
0	7	6	2		0	6	4	3			177 025.462(0.003)	0.201	13.276	
0	11	10	2	−	0	10	10	1	−		177 041.962(0.002)	1.490	40.702	
0	11	10	1	+	0	10	10	0	+		177 065.182(0.002)	1.490	40.702	
0	15	11	4	−	0	14	12	3	−		177 065.688(0.005)	0.890	72.467	
0	8	8	1		0	7	7	1			177 106.844(0.002)	15.439	20.526	
1	11	7	5	+	1	10	6	4	+		177 199.975(0.004)	12.858	112.373	
0	22	15	7	−	0	22	13	10	+		177 221.725(0.003)	0.433	156.456	
1	11	8	3		1	10	8	2			177 257.725(0.004)	5.176	111.565	
1	21	*	20	−	1	21	*	21	+		177 328.802(0.016)	5.919	164.340	
0	11	−10	1		0	10	−10	0			177 362.245(0.002)	1.480	40.940	
1	22	*	19	−	1	22	*	20	+		177 409.560(0.008)	17.434	184.620	
0	11	10	2		0	10	10	1			177 503.883(0.002)	1.486	40.528	
0	16	9	8	+	0	15	10	5	+		177 613.704(0.005)	0.739	76.684	
1	12	5	7	−	1	11	6	6	−		177 634.747(0.004)	18.545	116.648	
1	12	6	7	−	1	11	6	6	−		177 643.444(0.004)	0.523	116.648	
1	12	5	7	−	1	11	5	6	−		177 671.134(0.004)	0.523	116.647	
1	12	6	7	−	1	11	5	6	−		177 679.831(0.004)	18.552	116.647	
1	7	−5	3		1	6	2	4			177 691.874(0.005)	0.916	84.861	
0	8	−8	0		0	7	−7	0			177 925.737(0.002)	15.413	20.884	
0	14	9	6		0	13	10	4			177 979.076(0.004)	0.749	60.119	
1	28	*	18	+	1	28	*	19	−		177 979.677(0.008)	54.081	293.095	
1	23	−15	9		1	23	−13	11			177 999.549(0.007)	0.477	243.579	
0	24	12	13		0	23	−13	10			178 068.648(0.010)	0.234	171.784	
0	19	10	10	−	0	18	11	7	−		178 221.953(0.007)	0.358	107.784	
1	29	*	18	−	1	29	*	19	+		178 224.661(0.008)	59.248	312.727	
1	17	−12	6		1	16	13	3			178 270.018(0.016)	0.690	167.573	
1	30	12	18	+	1	30	*	19	−		178 326.203(0.008)	32.140	333.066	
1	30	13	18	+	1	30	*	19	−		178 326.219(0.008)	32.140	333.066	
1	13	10	4	−	1	12	11	1	−		178 515.617(0.010)	0.711	130.111	
1	22	*	17		1	22	*	18			178 538.148(0.006)	29.943	194.578	
0	22	−15	7		0	22	13	10			178 569.606(0.005)	0.311	156.462	
0	11	7	5	+	0	10	7	4	+		178 596.929(0.002)	4.879	35.162	
0	15	−11	4		0	14	−12	2			178 614.793(0.005)	0.883	72.621	
1	30	12	18		1	30	−12	19			178 732.106(0.007)	4.132	334.529	
1	30	12	18		1	30	11	19			178 732.230(0.007)	28.617	334.529	
1	30	−13	18		1	30	−12	19			178 733.644(0.007)	28.617	334.529	
1	30	−13	18		1	30	11	19			178 733.768(0.007)	4.132	334.529	
0	16	13	3	−	0	16	10	6	+		178 777.142(0.006)	0.205	86.009	
1	23	11	12		1	22	−14	9			178 806.649(0.047)	0.419	234.068	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	11	9	3	+	0	10	9	2	+		178 839.454(0.002)	2.836	38.591	
0	15	10	6		0	14	−11	3			178 866.592(0.006)	0.401	70.276	
1	8	−7	2		1	7	−6	2			178 904.473(0.003)	15.757	92.054	
0	10	−7	3		0	9	7	3			178 929.877(0.003)	0.344	29.805	
0	8	8	1	−	0	7	7	0	−		178 933.088(0.001)	15.403	20.521	
0	8	8	0	+	0	7	7	1	+		178 979.975(0.001)	15.401	20.520	
0	15	11	5		0	14	12	3			179 060.801(0.005)	0.868	72.221	
1	13	4	9	+	1	12	5	8	+		179 120.442(0.006)	23.036	120.326	
1	13	5	9	+	1	12	5	8	+		179 120.558(0.006)	1.598	120.326	
1	13	4	9	+	1	12	4	8	+		179 121.006(0.006)	1.598	120.326	
1	13	5	9	+	1	12	4	8	+		179 121.122(0.006)	23.036	120.326	
1	16	10	6		1	16	7	9			179 121.941(0.006)	0.526	154.029	
0	7	5	3		0	6	3	4			179 122.123(0.002)	0.231	12.108	
0	30	−12	18		0	30	*	19			179 160.290(0.006)	32.375	259.393	
0	30	13	18		0	30	*	19			179 160.302(0.006)	32.375	259.393	
1	17	−15	3		1	17	−13	5			179 201.635(0.008)	0.301	176.639	
0	30	12	18	+	0	30	*	19	−		179 219.511(0.006)	32.422	259.490	
0	30	13	18	+	0	30	*	19	−		179 219.546(0.006)	32.422	259.490	
0	11	9	2	−	0	10	9	1	−		179 312.566(0.002)	2.837	38.593	
0	15	9	7	+	0	14	10	4	+		179 328.124(0.004)	1.198	68.083	
1	9	5	4		1	8	−5	4			179 355.922(0.006)	1.122	95.237	
0	11	−9	2		0	10	−9	1			179 386.431(0.002)	2.816	38.888	
1	11	−8	4		1	10	−8	3			179 463.965(0.004)	2.741	110.180	
0	9	−6	3		0	8	−5	3			179 465.052(0.001)	0.620	23.079	
1	11	5	6		1	10	5	5			179 538.670(0.003)	4.688	106.796	
0	7	5	3		0	6	−2	4			179 559.681(0.002)	0.893	12.093	
0	11	7	5		0	10	7	4			179 571.226(0.002)	4.652	35.330	
1	25	−12	14		1	24	13	11			179 670.440(0.065)	0.414	259.382	
1	17	12	5		1	17	9	8			179 737.871(0.009)	0.354	167.935	
0	11	9	3		0	10	9	2			179 791.940(0.002)	2.818	38.491	
1	20	−10	11		1	19	11	8			179 849.513(0.029)	0.670	192.577	
1	27	12	15		1	26	−15	12			179 904.324(0.085)	0.397	290.930	
0	29	*	18		0	29	*	19			179 935.276(0.006)	59.856	238.902	
1	29	11	18		1	29	−11	19			179 959.009(0.007)	3.594	314.015	
1	29	11	18		1	29	10	19			179 959.044(0.007)	26.737	314.015	
1	29	−12	18		1	29	−11	19			179 959.526(0.007)	26.737	314.015	
1	29	−12	18		1	29	10	19			179 959.561(0.007)	3.594	314.015	
0	18	−14	4		0	18	−11	7			180 062.378(0.008)	0.233	107.969	
0	29	11	18	−	0	29	*	19	+		180 098.346(0.006)	29.979	238.986	
0	29	12	18	−	0	29	*	19	+		180 098.356(0.006)	29.979	238.986	
1	14	8	6		1	13	9	4			180 113.291(0.010)	2.432	133.104	
1	23	*	19	+	1	23	*	20	−		180 157.595(0.009)	23.008	199.777	
1	21	*	17		1	21	*	18			180 172.096(0.006)	24.424	179.192	
1	15	−8	8		1	14	−9	6			180 213.607(0.011)	0.180	139.707	
0	11	8	4	−	0	10	8	3	−		180 259.516(0.002)	4.011	36.761	
1	18	10	8		1	17	12	5			180 360.134(0.021)	0.210	173.930	
0	21	14	7	+	0	21	12	10	−		180 505.712(0.003)	0.298	141.562	
1	14	*	11	−	1	13	*	10	−		180 573.758(0.007)	60.556	123.455	
0	24	12	13	−	0	23	13	10	−		180 619.597(0.011)	0.256	171.727	
0	28	*	18		0	28	*	19			180 620.625(0.005)	54.921	219.080	
0	23	11	12	−	0	22	14	9	−		180 677.649(0.009)	0.293	159.313	
1	11	7	4		1	10	7	3			180 702.415(0.003)	6.186	109.631	
1	17	−14	4		1	16	−15	2			180 740.605(0.019)	0.894	173.523	
1	16	−15	2		1	16	−13	4			180 824.018(0.009)	0.177	167.491	
0	28	*	18	+	0	28	*	19	−		180 899.670(0.006)	55.030	219.145	
0	12	7	5	−	0	11	8	4	−		180 918.925(0.003)	3.447	42.774	
1	9	8	1	+	1	8	7	2	+		181 016.553(0.002)	11.931	101.903	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	11	7	4	−	1	10	8	3	−		181 031.261(0.007)	8.226	113.489	
0	23	−11	12		0	22	14	9			181 053.883(0.009)	0.273	159.291	
1	28	10	18		1	28	−10	19			181 146.597(0.007)	2.830	294.144	
1	28	10	18		1	28	9	19			181 146.605(0.007)	25.052	294.144	
1	28	−11	18		1	28	−10	19			181 146.749(0.007)	25.052	294.144	
1	28	−11	18		1	28	9	19			181 146.758(0.007)	2.830	294.144	
0	27	*	18		0	27	*	19			181 224.451(0.005)	49.935	199.928	
0	7	5	3	+	0	6	3	4	+		181 314.289(0.002)	0.241	11.791	
0	17	14	4	−	0	16	15	1	−		181 318.728(0.007)	0.387	98.017	
0	22	15	7	−	0	22	12	10	+		181 325.289(0.004)	1.590	156.319	
0	17	14	3	+	0	16	15	2	+		181 360.260(0.007)	0.388	98.017	
1	8	7	1		1	7	6	1			181 411.941(0.003)	8.970	93.389	
0	22	−15	7		0	22	−12	10			181 478.709(0.005)	1.331	156.365	
0	27	*	18	−	0	27	*	19	+		181 631.172(0.005)	50.049	199.969	
1	8	7	2	+	1	7	4	3	+		181 646.011(0.005)	1.932	95.844	
0	7	6	2		0	6	−3	3			181 701.549(0.003)	0.342	13.120	
1	20	*	17		1	20	*	18			181 739.716(0.007)	18.704	164.449	
0	26	*	18		0	26	*	19			181 754.100(0.005)	44.885	181.448	
0	7	5	3	+	0	6	2	4	+		181 909.212(0.002)	0.898	11.771	
1	7	2	5	+	1	6	1	6	+		181 918.394(0.004)	0.206	87.477	
1	7	3	5	+	1	6	0	6	+		181 921.828(0.004)	0.206	87.477	
1	16	11	5		1	15	12	3			181 960.398(0.014)	2.101	156.101	
1	15	*	13	+	1	14	*	12	+		182 063.054(0.010)	72.047	126.054	
1	11	−6	6		1	10	5	5			182 065.348(0.005)	8.078	106.796	
0	16	10	6	+	0	16	7	9	−		182 109.233(0.003)	0.259	79.935	
0	25	*	18		0	25	*	19			182 216.288(0.005)	39.758	163.642	
0	21	11	10	−	0	20	14	7	−		182 276.193(0.009)	0.315	135.421	
0	26	*	18	+	0	26	*	19	−		182 299.548(0.005)	45.001	181.460	
1	24	*	19	−	1	24	*	20	+		182 312.048(0.009)	28.471	215.703	
0	21	14	7	+	0	21	11	10	−		182 339.656(0.003)	1.196	141.501	
1	27	9	18		1	27	*	19			182 416.131(0.007)	25.391	274.913	
1	27	−10	18		1	27	*	19			182 416.170(0.007)	25.391	274.913	
0	7	6	2	−	0	6	4	3	−		182 593.207(0.002)	0.250	12.987	
0	24	*	18		0	24	*	19			182 617.212(0.005)	34.537	146.510	
0	21	−14	7		0	21	12	10			182 632.341(0.004)	0.221	141.586	
0	11	8	4		0	10	8	3			182 697.827(0.002)	3.789	36.768	
0	12	−5	7		0	11	6	6			182 735.681(0.002)	12.135	39.568	
1	17	−11	7		1	16	12	4			182 858.021(0.020)	0.183	164.714	
0	25	*	18	−	0	25	*	19	+		182 910.625(0.005)	39.874	163.619	
0	12	6	7		0	11	6	6			182 917.252(0.002)	5.878	39.568	
0	23	*	18		0	23	*	19			182 962.625(0.005)	29.205	130.055	
1	22	*	20	+	1	22	*	21	−		183 013.080(0.011)	11.762	178.516	
0	12	5	7	−	0	11	6	6	−		183 026.565(0.002)	11.829	39.339	
1	30	−14	17		1	29	15	14			183 044.191(0.124)	0.363	339.954	
0	15	10	6	−	0	14	11	3	−		183 075.453(0.004)	1.354	70.059	
1	19	*	17		1	19	*	18			183 205.221(0.008)	12.751	150.356	
0	17	14	4		0	16	15	2			183 214.644(0.007)	0.385	97.643	
0	22	*	18		0	22	*	19			183 257.908(0.005)	23.741	114.277	
1	10	8	3	−	1	9	7	2	−		183 287.718(0.006)	10.289	107.376	
0	12	6	7	−	0	11	6	6	−		183 305.318(0.002)	6.046	39.339	
1	11	10	2	−	1	10	10	1	−		183 356.893(0.006)	1.248	115.815	
0	11	−8	3		0	10	−8	2			183 365.598(0.002)	3.848	37.127	
0	13	−4	9		0	12	5	8			183 432.658(0.003)	17.147	43.252	
0	13	5	9		0	12	5	8			183 434.089(0.003)	6.839	43.252	
0	13	−4	9		0	12	−4	8			183 441.473(0.003)	6.839	43.252	
0	13	5	9		0	12	−4	8			183 442.904(0.003)	17.148	43.252	
0	18	14	4	+	0	18	11	7	−		183 451.456(0.007)	0.381	107.784	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	24	*	18	+	0	24	*	19	−		183 469.502(0.005)	34.650	146.448	
1	9	9	1	+	1	8	8	0	+		183 499.362(0.003)	19.153	102.809	
0	21	*	18		0	21	*	19			183 508.113(0.006)	18.121	99.179	
0	16	12	5	−	0	15	13	2	−		183 509.759(0.005)	0.829	83.281	
0	12	−5	7		0	11	−5	6			183 543.362(0.002)	5.891	39.541	
1	21	−14	8		1	21	11	10			183 592.129(0.008)	0.422	215.800	
1	9	5	4		1	8	4	4			183 624.574(0.003)	0.254	95.094	
1	16	*	15	−	1	15	*	14	−		183 681.151(0.012)	83.704	128.157	
0	20	*	18		0	20	*	19			183 717.999(0.007)	12.315	84.760	
0	12	6	7		0	11	−5	6			183 724.934(0.002)	12.187	39.541	
1	26	8	18		1	26	*	19			183 792.560(0.007)	22.878	256.317	
1	26	−9	18		1	26	*	19			183 792.568(0.007)	22.878	256.317	
0	13	4	9	+	0	12	5	8	+		183 806.996(0.003)	16.801	43.023	
0	13	5	9	+	0	12	5	8	+		183 809.637(0.003)	7.110	43.023	
1	11	8	4	−	1	10	8	3	−		183 816.806(0.003)	0.522	113.489	
0	13	4	9	+	0	12	4	8	+		183 822.003(0.003)	7.110	43.022	
1	19	15	5	+	1	19	12	8	−		183 822.401(0.009)	0.187	194.512	
0	13	5	9	+	0	12	4	8	+		183 824.645(0.003)	16.801	43.022	
0	8	6	2	+	0	7	4	3	+		183 840.246(0.002)	0.706	17.449	
0	21	−14	7		0	21	−11	10			183 874.236(0.004)	1.020	141.545	
1	9	9	0	−	1	8	8	1	−		183 889.900(0.003)	19.197	102.800	
0	19	*	18		0	19	*	19			183 892.058(0.007)	6.289	71.023	
0	9	7	3	+	0	8	6	2	+		183 900.832(0.002)	9.340	23.581	
1	11	10	1	+	1	10	10	0	+		183 972.654(0.006)	1.256	115.816	
0	23	*	18	−	0	23	*	19	+		183 980.642(0.005)	29.311	129.948	
0	14	*	11		0	13	4	10			184 011.498(0.003)	29.815	46.258	
0	14	*	11		0	13	−3	10			184 011.535(0.003)	29.815	46.258	
1	25	*	19	+	1	25	*	20	−		184 038.858(0.009)	33.837	232.383	
1	11	−7	5		1	10	−7	4			184 113.343(0.004)	3.795	108.377	
0	8	−6	2		0	7	−4	3			184 124.305(0.002)	0.587	17.774	
0	12	5	7	−	0	11	5	6	−		184 187.209(0.002)	6.065	39.301	
0	9	6	4		0	8	5	4			184 211.675(0.001)	0.297	22.352	
0	20	−15	5		0	20	−12	8			184 278.669(0.008)	0.402	132.155	
1	9	4	5		1	8	−4	5			184 289.314(0.003)	0.242	93.852	
0	17	−14	3		0	16	−15	1			184 295.188(0.007)	0.392	97.971	
0	14	3	11	−	0	13	4	10	−		184 301.995(0.003)	21.473	46.020	
0	14	4	11	−	0	13	4	10	−		184 302.006(0.003)	8.289	46.020	
0	14	3	11	−	0	13	3	10	−		184 302.072(0.003)	8.289	46.020	
0	14	4	11	−	0	13	3	10	−		184 302.083(0.003)	21.473	46.020	
1	12	9	3	−	1	11	10	2	−		184 330.881(0.011)	1.312	121.931	
1	15	−9	7		1	14	−10	5			184 351.538(0.011)	0.938	141.876	
1	20	13	7		1	20	−11	10			184 352.500(0.005)	0.265	201.835	
0	11	8	3	+	0	10	8	2	+		184 423.904(0.002)	4.062	36.802	
0	22	*	18	+	0	22	*	19	−		184 447.970(0.005)	23.836	114.120	
0	12	6	7	−	0	11	5	6	−		184 465.962(0.002)	11.897	39.301	
1	18	13	5		1	17	14	3			184 471.861(0.020)	0.639	180.298	
0	16	−10	6		0	16	−7	9			184 523.856(0.003)	0.223	80.068	
1	8	5	3	−	1	7	4	4	−		184 539.655(0.003)	1.842	94.850	
1	18	*	17		1	18	*	18			184 549.168(0.009)	6.531	136.921	
0	15	*	13		0	14	*	12			184 671.024(0.004)	71.395	48.602	
0	8	5	3	−	0	7	4	4	−		184 800.707(0.002)	2.231	16.596	
0	16	12	4	+	0	15	13	3	+		184 852.020(0.005)	0.833	83.280	
0	21	*	18	−	0	21	*	19	+		184 874.950(0.006)	18.199	98.968	
0	15	*	13	+	0	14	*	12	+		184 882.241(0.004)	71.323	48.343	
0	22	11	11	−	0	21	14	8	−		184 923.508(0.009)	0.328	147.094	
1	11	6	5		1	10	6	4			185 010.042(0.004)	4.765	108.067	
1	29	*	19	+	1	29	*	20	−		185 202.471(0.074)	39.870	306.549	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	20	*	18	+	0	20	*	19	−		185 264.657(0.007)	12.373	84.491	
1	19	13	6		1	19	10	9			185 276.469(0.007)	0.876	190.671	
1	25	*	18		1	25	*	19			185 306.577(0.007)	40.632	238.352	
0	26	−12	14		0	25	15	11			185 330.829(0.015)	0.248	201.962	
0	16	*	15		0	15	*	14			185 359.847(0.005)	83.322	50.294	
0	13	−8	5		0	12	−9	3			185 394.763(0.004)	1.060	51.489	
1	26	*	19	−	1	26	*	20	+		185 436.038(0.009)	39.120	249.807	
1	9	−6	4		1	8	−5	4			185 463.849(0.003)	4.729	95.237	
0	16	*	15	−	0	15	*	14	−		185 488.526(0.005)	83.280	50.003	
0	8	−5	3		0	7	4	4			185 529.230(0.002)	2.049	16.890	
0	19	*	18	−	0	19	*	19	+		185 619.833(0.008)	6.320	70.692	
1	17	*	17	+	1	16	*	16	+		185 621.333(0.016)	95.445	129.825	
1	19	11	8		1	18	−13	6			185 783.232(0.025)	0.200	186.380	
1	17	−13	5		1	16	−14	3			185 844.441(0.018)	1.442	170.440	
1	12	7	5		1	11	−8	4			185 848.295(0.012)	0.666	116.166	
1	15	9	6		1	15	6	9			185 863.107(0.005)	0.331	143.002	
0	26	12	14	+	0	25	15	11	+		185 935.469(0.015)	0.265	201.999	
1	22	*	21	−	1	22	*	22	+		186 055.784(0.020)	5.920	172.309	
0	17	*	17		0	16	*	16			186 062.947(0.006)	95.411	51.338	
0	21	11	11		0	20	−12	8			186 063.931(0.009)	0.298	132.155	
0	17	*	17	+	0	16	*	16	+		186 099.110(0.006)	95.401	51.003	
1	12	5	7		1	11	−6	6			186 121.245(0.005)	9.879	112.869	
1	7	−6	2		1	6	3	3			186 138.155(0.008)	0.194	85.846	
1	14	3	11		1	13	−4	10			186 144.065(0.007)	22.063	119.636	
1	14	−4	11		1	13	−4	10			186 144.216(0.007)	7.119	119.636	
1	14	3	11		1	13	3	10			186 144.784(0.007)	7.119	119.636	
1	14	−4	11		1	13	3	10			186 144.935(0.007)	22.063	119.636	
0	7	−3	4		0	6	2	5			186 151.840(0.002)	0.568	10.632	
1	17	−10	8		1	16	11	5			186 184.656(0.018)	0.966	162.171	
1	15	*	13		1	14	*	12			186 194.894(0.010)	70.523	121.871	
0	12	−7	5		0	11	8	4			186 206.634(0.004)	2.972	42.862	
1	23	−15	9		1	23	12	11			186 270.775(0.009)	0.517	243.303	
1	16	*	15		1	15	*	14			186 294.701(0.013)	82.757	123.370	
1	13	4	9		1	12	−5	8			186 307.384(0.006)	16.646	116.650	
1	13	−5	9		1	12	−5	8			186 323.141(0.006)	6.387	116.650	
1	26	15	11		1	26	13	13			186 329.589(0.006)	0.291	287.159	
1	11	9	3	+	1	10	9	2	+		186 350.589(0.005)	1.583	114.520	
1	17	*	17		1	16	*	16			186 361.968(0.016)	95.130	124.133	
1	13	4	9		1	12	4	8			186 373.702(0.006)	6.377	116.647	
1	13	−5	9		1	12	4	8			186 389.459(0.006)	16.656	116.647	
0	9	7	3		0	8	6	3			186 451.161(0.002)	6.747	23.586	
0	16	9	7	−	0	15	11	4	−		186 486.549(0.006)	0.199	78.373	
1	8	6	3	−	1	7	3	4	−		186 547.567(0.003)	1.733	94.847	
0	9	−7	2		0	8	−6	2			186 560.577(0.002)	7.229	23.916	
1	17	7	10		1	16	8	8			186 666.946(0.016)	0.278	156.502	
1	27	*	19	+	1	27	*	20	−		186 744.932(0.010)	43.984	267.967	
0	7	3	4	−	0	6	2	5	−		186 756.317(0.002)	0.570	10.301	
1	9	−5	5		1	8	−4	5			186 767.016(0.002)	0.530	93.852	
0	8	5	3	−	0	7	3	4	−		186 771.960(0.002)	0.545	16.531	
1	12	6	6	+	1	11	7	5	+		186 843.177(0.004)	15.311	118.284	
1	23	*	20	−	1	23	*	21	+		186 860.709(0.011)	17.483	193.544	
1	24	*	18		1	24	*	19			186 944.807(0.007)	35.402	221.015	
1	12	7	6	+	1	11	7	5	+		186 954.513(0.004)	0.897	118.284	
1	28	*	19	−	1	28	*	20	+		186 983.036(0.009)	49.031	286.858	
1	12	−6	7		1	11	−6	6			186 998.344(0.004)	6.079	112.869	
0	8	−5	3		0	7	−3	4			187 008.361(0.002)	0.501	16.841	
0	22	−11	11		0	21	14	8			187 056.828(0.009)	0.303	147.036	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	12	8	5		0	11	−8	3			187 171.725(0.003)	0.334	43.243	
0	16	−12	4		0	15	−13	2			187 176.977(0.006)	0.841	83.374	
0	11	−6	5		0	10	−6	4			187 186.747(0.002)	5.463	34.855	
1	12	6	6	+	1	11	6	5	+		187 274.506(0.004)	0.896	118.269	
0	16	12	5		0	15	13	3			187 330.382(0.006)	0.828	82.988	
1	12	7	6	+	1	11	6	5	+		187 385.842(0.004)	15.403	118.269	
0	7	4	4		0	6	−1	5			187 645.202(0.002)	0.559	10.631	
1	7	3	4		1	6	−2	5			187 691.958(0.004)	0.670	83.394	
0	21	−11	10		0	20	14	7			187 770.229(0.010)	0.258	135.282	
0	20	15	5	−	0	20	12	8	+		187 798.853(0.007)	0.652	132.002	
0	20	13	7	−	0	20	11	10	+		187 800.492(0.003)	0.181	127.320	
0	10	7	4		0	9	−6	3			187 805.997(0.003)	5.998	29.065	
1	22	−14	9		1	22	11	11			187 888.465(0.007)	0.217	227.800	
1	8	−8	1		1	7	−7	1			187 905.788(0.003)	12.121	95.213	
1	15	9	6		1	14	10	4			187 946.511(0.012)	2.416	142.933	
1	11	7	4	−	1	10	7	3	−		187 979.657(0.004)	0.458	113.258	
0	11	6	5	+	0	10	6	4	+		188 008.161(0.002)	5.683	34.561	
0	13	−7	6		0	12	−8	4			188 011.446(0.003)	0.289	50.113	
0	29	14	16		0	28	−15	13			188 016.509(0.029)	0.229	249.524	
1	14	11	4	+	1	13	12	1	+		188 399.839(0.011)	0.633	139.053	
1	13	5	8	−	1	12	6	7	−		188 492.349(0.006)	20.764	122.573	
1	13	6	8	−	1	12	6	7	−		188 494.517(0.006)	1.105	122.573	
1	13	5	8	−	1	12	5	7	−		188 501.047(0.006)	1.105	122.573	
1	13	6	8	−	1	12	5	7	−		188 503.214(0.006)	20.765	122.573	
0	7	6	2	−	0	6	3	3	−		188 515.255(0.002)	0.435	12.790	
0	20	13	7	−	0	20	10	10	+		188 552.144(0.003)	0.754	127.295	
1	30	*	19	−	1	30	*	20	+		188 604.592(0.012)	59.409	326.775	
1	12	5	7		1	11	5	6			188 647.923(0.004)	5.666	112.785	
1	23	*	18		1	23	*	19			188 663.377(0.007)	30.033	204.305	
0	15	9	7		0	14	10	5			188 700.092(0.005)	0.325	67.904	
0	7	4	4	−	0	6	1	5	−		188 748.544(0.002)	0.558	10.300	
1	22	−15	8		1	22	12	10			188 824.503(0.010)	0.416	230.505	
0	13	8	5	+	0	12	9	4	+		188 833.871(0.004)	2.515	51.118	
0	12	6	6	+	0	11	7	5	+		188 995.012(0.002)	8.104	41.120	
1	14	7	7		1	13	8	5			189 025.018(0.009)	2.469	131.209	
1	9	7	2	−	1	8	6	3	−		189 039.879(0.004)	4.766	101.070	
1	27	−13	15		1	26	14	12			189 119.021(0.085)	0.421	290.626	
0	29	14	16	−	0	28	15	13	−		189 206.861(0.029)	0.241	249.574	
0	16	11	6		0	15	−12	3			189 414.815(0.007)	0.239	80.803	
1	12	−6	7		1	11	5	6			189 525.022(0.005)	10.559	112.785	
1	8	8	1	−	1	7	5	2	−		189 565.860(0.009)	0.547	96.477	
1	9	6	3		1	8	5	3			189 583.001(0.003)	3.678	96.216	
1	20	13	7		1	20	10	10			189 596.435(0.006)	1.210	201.660	
1	9	−6	4		1	8	4	4			189 732.501(0.007)	1.108	95.094	
0	26	13	14		0	25	−14	11			189 739.336(0.015)	0.250	201.816	
1	24	*	20	+	1	24	*	21	−		189 786.680(0.011)	23.091	209.372	
0	21	11	11	+	0	20	12	8	+		189 882.411(0.009)	0.343	132.002	
0	12	−6	6		0	11	7	5			189 886.997(0.002)	8.476	41.320	
1	14	4	10	+	1	13	5	9	+		189 905.893(0.007)	25.842	126.301	
1	14	5	10	+	1	13	5	9	+		189 905.916(0.007)	1.616	126.301	
1	14	4	10	+	1	13	4	9	+		189 906.009(0.007)	1.616	126.301	
1	14	5	10	+	1	13	4	9	+		189 906.032(0.007)	25.842	126.301	
1	19	12	7		1	19	9	10			190 017.828(0.005)	0.920	188.087	
0	30	*	19		0	30	*	20			190 078.339(0.008)	60.163	253.052	
1	7	−4	4		1	6	1	5			190 126.740(0.003)	0.653	83.393	
1	30	11	19		1	30	−11	20			190 233.594(0.013)	3.551	328.183	
1	30	11	19		1	30	10	20			190 233.602(0.013)	26.741	328.183	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	30	−12	19		1	30	−11	20			190 233.718(0.013)	26.741	328.183	
1	30	−12	19		1	30	10	20			190 233.726(0.013)	3.551	328.183	
0	30	*	19	−	0	30	*	20	+		190 237.255(0.008)	60.255	253.145	
1	12	−12	1		1	11	11	0			190 296.533(0.006)	1.381	127.361	
1	22	*	18		1	22	*	19			190 394.223(0.008)	24.492	188.227	
1	20	12	8		1	19	−14	6			190 590.314(0.030)	0.175	199.517	
1	16	10	7	−	1	15	11	4	−		190 597.733(0.013)	0.285	154.513	
0	15	10	6		0	14	11	4			190 627.712(0.005)	0.956	69.883	
1	12	11	1		1	11	−11	1			190 712.119(0.005)	2.725	124.610	
0	29	*	19		0	29	*	20			190 721.596(0.007)	55.202	232.541	
1	29	10	19		1	29	*	20			190 739.192(0.049)	26.297	307.652	
1	29	−11	19		1	29	*	20			190 739.227(0.049)	26.297	307.652	
1	11	8	4	−	1	10	7	3	−		190 765.202(0.006)	10.731	113.258	
0	11	−7	4		0	10	−7	3			190 815.627(0.002)	5.099	35.774	
1	26	12	14		1	25	−15	11			190 899.738(0.074)	0.453	276.710	
0	29	*	19	+	0	29	*	20	−		190 998.476(0.007)	55.301	232.615	
1	19	14	5		1	18	15	3			191 006.308(0.024)	0.624	193.822	
1	16	−10	7		1	15	−11	5			191 067.141(0.013)	1.055	152.663	
0	20	−13	7		0	20	−10	10			191 100.794(0.004)	0.644	127.347	
0	11	7	4	−	0	10	7	3	−		191 239.168(0.002)	5.353	35.476	
0	28	*	19		0	28	*	20			191 290.403(0.007)	50.186	212.700	
1	15	*	12	−	1	14	*	11	−		191 308.288(0.010)	66.269	129.478	
0	18	10	9		0	17	−11	6			191 386.763(0.007)	0.539	97.461	
1	20	−14	7		1	20	11	9			191 438.238(0.010)	0.284	204.018	
1	12	10	2		1	11	10	1			191 528.081(0.005)	4.001	122.020	
1	13	10	3	+	1	12	11	2	+		191 569.200(0.012)	0.887	130.102	
0	9	7	2	−	0	8	6	3	−		191 620.389(0.001)	8.717	23.411	
0	28	*	19	−	0	28	*	20	+		191 698.554(0.007)	50.292	212.751	
1	12	−10	3		1	11	−10	2			191 732.835(0.005)	1.478	120.872	
1	11	9	2	−	1	10	9	1	−		191 743.742(0.006)	1.966	114.568	
0	27	*	19		0	27	*	20			191 791.020(0.007)	45.103	193.531	
0	26	13	14	+	0	25	14	11	+		191 964.004(0.015)	0.270	201.798	
0	10	7	4	+	0	9	6	3	+		192 018.706(0.002)	7.866	28.757	
0	12	7	6	+	0	11	7	5	+		192 028.314(0.002)	5.681	41.120	
1	25	*	20	−	1	25	*	21	+		192 067.120(0.011)	28.590	225.977	
0	12	7	6		0	11	7	5			192 067.979(0.002)	5.541	41.320	
1	21	*	18		1	21	*	19			192 072.425(0.008)	18.750	172.785	
1	13	8	5		1	12	−9	4			192 226.275(0.014)	0.213	124.797	
1	23	*	21	+	1	23	*	22	−		192 227.792(0.014)	11.780	187.132	
0	26	*	19		0	26	*	20			192 229.242(0.006)	39.942	175.036	
0	27	*	19	+	0	27	*	20	−		192 343.171(0.007)	45.213	193.553	
1	28	9	19		1	28	*	20			192 405.084(0.009)	25.462	287.726	
1	28	−10	19		1	28	*	20			192 405.093(0.009)	25.462	287.726	
1	22	−11	12		1	21	12	9			192 474.688(0.041)	0.610	217.968	
1	12	6	6		1	11	−7	5			192 527.536(0.008)	3.884	114.519	
1	16	7	9		1	15	8	7			192 531.993(0.013)	0.600	147.607	
0	17	13	5	+	0	16	14	2	+		192 604.858(0.006)	0.782	94.848	
0	25	*	19		0	25	*	20			192 610.476(0.006)	34.686	157.217	
1	16	*	14	+	1	15	*	13	+		192 758.144(0.012)	77.807	132.127	
0	14	−9	5		0	13	−10	3			192 775.614(0.005)	1.092	60.503	
0	26	*	19	−	0	26	*	20	+		192 937.289(0.006)	40.053	175.024	
0	24	*	19		0	24	*	20			192 939.800(0.006)	29.319	140.074	
0	9	8	2		0	8	7	2			192 963.884(0.002)	13.443	24.858	
1	12	9	3		1	11	9	2			192 979.725(0.005)	5.201	119.627	
0	12	11	2	+	0	11	11	1	+		192 986.868(0.003)	1.496	48.943	
0	12	11	1	−	0	11	11	0	−		192 995.279(0.003)	1.496	48.943	
1	17	12	5		1	16	−13	4			193 026.810(0.018)	2.071	167.491	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	21	14	7		1	21	−12	10			193 028.426(0.007)	0.198	216.163	
0	17	13	4	−	0	16	14	3	−		193 212.768(0.006)	0.783	94.847	
0	23	*	19		0	23	*	20			193 222.017(0.007)	23.822	123.610	
0	12	−11	1		0	11	−11	0			193 335.732(0.003)	1.486	49.127	
0	12	11	2		0	11	11	1			193 405.367(0.003)	1.494	48.715	
1	11	−7	5		1	10	6	4			193 412.443(0.008)	4.650	108.067	
0	22	*	19		0	22	*	20			193 461.688(0.007)	18.170	107.824	
0	25	*	19	+	0	25	*	20	−		193 485.241(0.006)	34.795	157.165	
0	13	−5	8		0	12	6	7			193 556.699(0.003)	14.486	45.670	
0	13	6	8		0	12	6	7			193 592.629(0.003)	6.505	45.670	
1	20	*	18		1	20	*	19			193 651.187(0.009)	12.776	157.989	
0	21	*	19		0	21	*	20			193 663.161(0.008)	12.339	92.719	
0	16	10	7		0	15	−11	4			193 677.607(0.006)	0.776	78.579	
0	13	−5	8		0	12	−5	7			193 738.271(0.003)	6.507	45.664	
1	27	*	19		1	27	*	20			193 772.117(0.009)	45.877	268.449	
0	13	6	8		0	12	−5	7			193 774.201(0.003)	14.495	45.664	
0	11	7	5		0	10	−6	4			193 790.366(0.002)	7.550	34.855	
0	20	*	19		0	20	*	20			193 830.582(0.009)	6.295	78.295	
1	9	−7	3		1	8	−6	3			193 835.088(0.003)	13.396	96.411	
0	22	12	10	+	0	21	15	7	+		193 838.919(0.010)	0.307	149.854	
1	8	8	0		1	7	7	0			193 851.346(0.003)	15.410	97.278	
1	14	10	5	−	1	13	11	2	−		193 863.369(0.009)	0.975	137.468	
0	9	−8	1		0	8	−7	1			193 870.872(0.002)	13.495	25.203	
1	26	*	20	+	1	26	*	21	−		193 898.033(0.012)	33.994	243.339	
1	24	−15	10		1	24	−13	12			193 902.465(0.012)	0.186	256.400	
0	13	5	8	−	0	12	6	7	−		193 973.912(0.003)	14.166	45.454	
0	24	*	19	−	0	24	*	20	+		193 990.804(0.006)	29.422	139.977	
0	13	6	8	−	0	12	6	7	−		194 033.047(0.003)	6.715	45.454	
0	14	−4	10		0	13	5	9			194 046.255(0.003)	19.396	49.371	
0	14	5	10		0	13	5	9			194 046.472(0.003)	7.463	49.371	
0	14	−4	10		0	13	−4	9			194 047.685(0.003)	7.463	49.371	
0	14	5	10		0	13	−4	9			194 047.902(0.003)	19.396	49.371	
0	11	−8	3		0	10	8	3			194 124.144(0.004)	0.191	36.768	
1	19	−10	10		1	18	11	7			194 216.136(0.024)	1.142	181.681	
0	16	11	6	+	0	15	12	3	+		194 223.983(0.005)	1.342	80.636	
0	13	5	8	−	0	12	5	7	−		194 252.665(0.003)	6.718	45.444	
1	8	5	3		1	7	−4	4			194 307.486(0.006)	1.511	89.735	
0	13	6	8	−	0	12	5	7	−		194 311.800(0.003)	14.178	45.444	
1	8	4	4	+	1	7	3	5	+		194 319.060(0.003)	1.079	93.545	
1	17	*	16	−	1	16	*	15	−		194 348.883(0.016)	89.492	134.284	
0	14	4	10	+	0	13	5	9	+		194 411.818(0.003)	18.974	49.154	
0	14	5	10	+	0	13	5	9	+		194 412.257(0.003)	7.813	49.154	
0	14	4	10	+	0	13	4	9	+		194 414.459(0.003)	7.813	49.154	
0	14	5	10	+	0	13	4	9	+		194 414.898(0.003)	18.975	49.154	
1	12	−9	4		1	11	−9	3			194 423.035(0.004)	2.804	118.312	
0	23	*	19	+	0	23	*	20	−		194 457.281(0.007)	23.914	123.461	
0	9	8	2	−	0	8	7	1	−		194 538.987(0.002)	13.578	24.842	
0	14	9	5	−	0	13	10	4	−		194 548.802(0.005)	1.938	60.204	
1	8	5	4	+	1	7	2	5	+		194 563.979(0.003)	1.073	93.545	
0	18	10	9	−	0	17	11	6	−		194 591.076(0.006)	0.660	97.271	
0	15	*	12		0	14	*	11			194 650.274(0.004)	65.385	52.396	
1	23	*	22	−	1	23	*	23	+		194 778.961(0.026)	5.919	180.635	
0	12	10	3	−	0	11	10	2	−		194 785.640(0.002)	2.861	46.607	
1	23	12	11		1	22	−15	8			194 868.773(0.048)	0.258	236.803	
0	22	*	19	−	0	22	*	20	+		194 887.560(0.007)	18.248	107.620	
0	15	*	12	−	0	14	4	11	−		194 935.618(0.004)	32.641	52.167	
0	15	*	12	−	0	14	3	11	−		194 935.629(0.004)	32.641	52.167	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	14	8	6		1	14	5	9			194 966.413(0.005)	0.180	132.609	
1	12	7	5	−	1	11	8	4	−		194 977.188(0.005)	12.086	119.621	
0	12	10	2	+	0	11	10	1	+		194 984.686(0.003)	2.861	46.608	
1	18	13	5		1	18	10	8			195 017.005(0.009)	0.311	179.946	
1	19	*	18		1	19	*	19			195 104.272(0.011)	6.539	143.848	
0	9	8	1	+	0	8	7	2	+		195 151.634(0.002)	13.546	24.827	
0	12	−10	2		0	11	−10	1			195 248.335(0.003)	2.842	46.856	
0	21	*	19	+	0	21	*	20	−		195 284.178(0.008)	12.396	92.454	
1	26	*	19		1	26	*	20			195 284.227(0.009)	40.750	249.803	
0	16	*	14		0	15	*	13			195 316.678(0.005)	77.174	54.762	
1	27	*	20	−	1	27	*	21	+		195 379.716(0.012)	39.317	261.450	
1	11	8	3	+	1	10	8	2	+		195 478.640(0.004)	1.607	113.822	
1	15	7	8		1	14	8	6			195 521.307(0.010)	1.409	139.112	
0	25	−12	13		0	24	15	10			195 523.229(0.012)	0.293	188.183	
0	16	*	14	+	0	15	*	13	+		195 525.568(0.004)	77.103	54.510	
0	12	10	3		0	11	10	2			195 539.959(0.003)	2.849	46.448	
0	25	12	13	+	0	24	15	10	+		195 610.397(0.013)	0.313	188.221	
0	20	*	19	−	0	20	*	20	+		195 649.375(0.009)	6.327	77.965	
0	17	13	5		0	16	14	3			195 667.155(0.006)	0.780	94.516	
1	12	8	4		1	11	8	3			195 746.368(0.005)	6.349	117.478	
1	16	10	6		1	15	11	4			195 752.221(0.014)	2.487	153.475	
1	11	−8	4		1	10	7	3			195 924.572(0.014)	0.254	109.631	
1	12	8	5	−	1	11	8	4	−		195 994.351(0.004)	0.676	119.621	
0	17	−13	4		0	16	−14	2			196 006.589(0.006)	0.794	94.880	
0	17	*	16		0	16	*	15			196 007.740(0.005)	89.118	56.477	
1	17	−11	7		1	16	−12	5			196 008.802(0.016)	1.071	164.276	
0	17	*	16	−	0	16	*	15	−		196 135.472(0.005)	89.077	56.191	
1	18	*	18	+	1	17	*	17	+		196 284.378(0.019)	101.240	136.016	
1	24	*	21	−	1	24	*	22	+		196 329.693(0.013)	17.527	202.823	
0	17	−9	8		0	16	−11	5			196 332.390(0.006)	0.174	87.616	
1	15	12	4	−	1	14	13	1	−		196 424.055(0.012)	0.549	148.786	
0	9	−7	2		0	8	6	3			196 458.141(0.003)	1.650	23.586	
0	12	−6	6		0	11	−6	5			196 490.616(0.002)	5.756	41.099	
1	18	−10	9		1	17	11	6			196 516.267(0.020)	1.404	171.536	
0	13	−8	5		0	12	9	4			196 560.437(0.005)	1.708	51.116	
1	28	*	20	+	1	28	*	21	−		196 615.602(0.013)	44.546	280.299	
0	11	7	5	+	0	10	6	4	+		196 626.191(0.002)	7.745	34.561	
0	12	8	5	−	0	11	8	4	−		196 686.390(0.002)	5.074	42.774	
1	22	15	7	−	1	22	13	10	+		196 710.622(0.008)	0.225	231.178	
1	15	3	12		1	14	−4	11			196 711.778(0.010)	24.293	125.845	
1	15	−4	12		1	14	−4	11			196 711.810(0.010)	7.802	125.845	
1	15	3	12		1	14	3	11			196 711.929(0.010)	7.802	125.845	
1	15	−4	12		1	14	3	11			196 711.960(0.010)	24.293	125.845	
0	18	*	18		0	17	*	17			196 712.386(0.007)	101.215	57.544	
0	12	9	4	+	0	11	9	3	+		196 712.403(0.002)	4.084	44.556	
0	18	*	18	+	0	17	*	17	+		196 747.874(0.006)	101.205	57.211	
1	14	4	10		1	13	−5	9			196 773.495(0.007)	19.126	122.865	
1	14	−5	10		1	13	−5	9			196 777.064(0.007)	6.874	122.865	
1	14	4	10		1	13	4	9			196 789.252(0.007)	6.871	122.864	
1	14	−5	10		1	13	4	9			196 792.821(0.007)	19.128	122.864	
1	16	*	14		1	15	*	13			196 810.769(0.013)	76.332	128.082	
0	16	10	7	−	0	15	11	4	−		196 857.821(0.005)	1.517	78.373	
1	14	11	3	−	1	13	12	2	−		196 865.620(0.013)	0.664	139.050	
1	24	−15	10		1	24	12	12			196 877.027(0.007)	0.214	256.301	
1	16	−9	8		1	15	−10	6			196 922.352(0.014)	0.555	150.146	
1	17	*	16		1	16	*	15			196 932.556(0.016)	88.566	129.584	
0	23	12	12		0	22	−13	9			196 940.572(0.010)	0.299	158.763	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	25	*	19		1	25	*	20			196 953.075(0.009)	35.499	231.783	
1	22	15	7	−	1	22	12	10	+		196 998.675(0.008)	0.293	231.168	
1	13	5	8		1	12	−6	7			197 003.940(0.006)	12.998	119.107	
1	18	*	18		1	17	*	17			197 008.482(0.020)	100.939	130.350	
1	9	7	2		1	8	6	2			197 169.136(0.003)	7.703	97.661	
1	30	*	20	+	1	30	*	21	−		197 200.986(0.013)	53.713	320.197	
1	18	11	7		1	18	8	10			197 216.342(0.005)	0.580	175.103	
1	7	6	1		1	6	4	2			197 223.224(0.005)	0.265	86.810	
1	10	9	2	+	1	9	8	1	+		197 244.326(0.004)	15.201	107.941	
1	13	−6	8		1	12	−6	7			197 256.536(0.006)	6.523	119.107	
1	12	8	4	+	1	11	9	3	+		197 474.209(0.009)	6.356	120.736	
0	12	6	6	+	0	11	6	5	+		197 613.042(0.002)	5.958	40.832	
1	12	7	5	−	1	11	7	4	−		197 762.733(0.005)	0.675	119.528	
1	15	10	6	−	1	14	11	3	−		197 790.725(0.010)	0.622	145.616	
0	17	9	8	−	0	16	11	5	−		197 871.727(0.006)	0.230	87.431	
1	13	5	8		1	12	5	7			197 881.039(0.006)	6.396	119.078	
1	13	6	7	+	1	12	7	6	+		197 900.657(0.006)	18.309	124.520	
1	13	7	7	+	1	12	7	6	+		197 927.965(0.006)	0.761	124.520	
1	13	6	7	+	1	12	6	6	+		198 011.993(0.006)	0.761	124.516	
1	13	7	7	+	1	12	6	6	+		198 039.301(0.006)	18.331	124.516	
0	7	−2	5		0	6	1	6			198 092.750(0.002)	0.190	8.814	
1	13	−6	8		1	12	5	7			198 133.635(0.006)	13.182	119.078	
0	7	3	5		0	6	0	6			198 176.057(0.002)	0.190	8.814	
1	12	−7	6		1	11	−7	5			198 259.685(0.005)	5.447	114.519	
0	19	12	7	+	0	19	9	10	−		198 310.417(0.004)	0.432	113.719	
0	12	−9	3		0	11	−9	2			198 387.891(0.002)	4.014	44.871	
0	15	−10	5		0	14	−11	3			198 542.682(0.006)	1.113	70.276	
1	18	−14	5		1	17	−15	3			198 549.525(0.021)	1.409	182.617	
0	12	8	5		0	11	8	4			198 598.042(0.002)	4.669	42.862	
0	12	7	6		0	11	−6	5			198 671.598(0.003)	9.287	41.099	
0	12	9	4		0	11	9	3			198 697.387(0.002)	3.991	44.489	
0	10	8	3		0	9	−7	2			198 729.420(0.004)	0.605	30.139	
1	24	*	19		1	24	*	20			198 744.995(0.009)	30.111	214.386	
1	12	8	5	−	1	11	7	4	−		198 779.896(0.005)	12.756	119.528	
1	29	−14	16		1	28	15	13			198 865.798(0.110)	0.434	324.217	
1	12	11	2	+	1	11	11	1	+		198 874.219(0.006)	1.323	123.469	
0	12	9	3	−	0	11	9	2	−		198 955.683(0.002)	4.099	44.574	
0	17	10	8		0	16	−11	5			198 969.328(0.006)	0.870	87.616	
1	12	11	1	−	1	11	11	0	−		199 126.779(0.006)	1.325	123.469	
1	10	6	4		1	9	−6	4			199 179.670(0.009)	0.500	101.423	
0	7	2	5	+	0	6	1	6	+		199 184.914(0.002)	0.190	8.466	
0	15	10	5	+	0	14	11	4	+		199 199.227(0.005)	1.612	70.040	
1	12	−8	5		1	11	−8	4			199 253.966(0.005)	3.792	116.166	
0	7	3	5	+	0	6	0	6	+		199 305.657(0.002)	0.190	8.466	
1	14	5	9	−	1	13	6	8	−		199 326.229(0.007)	22.826	128.861	
1	14	6	9	−	1	13	6	8	−		199 326.733(0.007)	1.845	128.861	
1	14	5	9	−	1	13	5	8	−		199 328.397(0.007)	1.845	128.861	
1	14	6	9	−	1	13	5	8	−		199 328.901(0.007)	22.827	128.861	
1	25	*	21	+	1	25	*	22	−		199 435.023(0.014)	23.166	219.324	
1	9	−7	3		1	8	5	3			199 692.820(0.012)	0.303	96.216	
0	9	9	1		0	8	8	1			199 873.852(0.002)	17.644	26.434	
1	29	*	20	−	1	29	*	21	+		199 889.914(0.070)	38.320	299.882	
0	9	6	3	+	0	8	5	4	+		199 986.219(0.002)	3.660	22.087	
1	25	12	13		1	24	−15	10			200 123.658(0.065)	0.468	262.868	
0	9	−9	0		0	8	−8	0			200 425.435(0.002)	17.617	26.819	
1	23	*	19		1	23	*	20			200 580.638(0.009)	24.552	197.615	
0	12	7	6	+	0	11	6	5	+		200 646.344(0.003)	9.083	40.832	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	$\mu^2 S$ (D^2)	E_1 (cm^{-1})	Ref.
1	15	*	11	+	1	14	5	10	+		200 681.049(0.010)	30.290	132.635	
1	15	*	11	+	1	14	4	10	+		200 681.073(0.010)	30.290	132.635	
0	23	12	12	−	0	22	13	9	−		200 719.756(0.010)	0.337	158.648	
0	8	6	3		0	7	4	4			200 724.180(0.002)	0.289	16.890	
1	18	−12	7		1	17	13	4			200 744.734(0.020)	1.059	176.705	
0	30	*	20		0	30	*	21			200 802.226(0.010)	55.468	246.354	
1	12	6	6		1	11	6	5			200 929.937(0.004)	5.010	114.238	
1	30	10	20		1	30	*	21			200 945.375(0.012)	27.781	321.480	
1	30	−11	20		1	30	*	21			200 945.383(0.012)	27.781	321.480	
1	12	7	5		1	11	7	4			201 070.452(0.005)	6.386	115.658	
0	30	*	20	+	0	30	*	21	−		201 072.106(0.010)	55.558	246.438	
0	10	−7	3		0	9	−6	3			201 110.936(0.002)	1.846	29.065	
0	16	11	6		0	15	12	4			201 182.830(0.006)	1.115	80.411	
1	15	12	3	+	1	14	13	2	+		201 186.740(0.013)	0.545	148.785	
0	9	−6	3		0	8	5	4			201 265.538(0.002)	3.106	22.352	
0	8	7	1	−	0	7	5	2	−		201 285.353(0.002)	0.317	18.128	
1	10	5	5		1	9	−5	5			201 306.382(0.005)	0.560	100.082	
0	19	−12	7		0	19	−9	10			201 323.563(0.004)	0.373	113.787	
0	29	*	20		0	29	*	21			201 340.967(0.009)	50.422	225.825	
1	10	9	1	−	1	9	8	2	−		201 380.440(0.003)	15.150	107.851	
1	24	*	22	+	1	24	*	23	−		201 457.982(0.018)	11.795	196.104	
0	22	−12	10		0	21	15	7			201 517.059(0.011)	0.229	149.643	
0	17	10	8	−	0	16	11	5	−		201 603.819(0.006)	1.177	87.431	
0	18	14	5	−	0	17	15	2	−		201 661.657(0.007)	0.739	107.168	
0	28	14	15		0	27	−15	12			201 674.230(0.023)	0.266	234.240	
0	9	9	1	+	0	8	8	0	+		201 674.465(0.002)	17.596	26.490	
0	9	9	0	−	0	8	8	1	−		201 690.552(0.002)	17.596	26.490	
0	29	*	20	−	0	29	*	21	+		201 745.938(0.009)	50.520	225.886	
0	28	*	20		0	28	*	21			201 816.455(0.009)	45.308	205.968	
1	26	*	21	−	1	26	*	22	+		201 838.261(0.014)	28.698	236.607	
0	18	14	4	+	0	17	15	3	+		201 926.351(0.007)	0.740	107.168	
0	24	12	12	+	0	23	15	9	+		201 938.996(0.011)	0.360	174.891	
1	16	*	13	−	1	15	*	12	−		202 036.233(0.012)	71.990	135.860	
0	8	−7	1		0	7	−5	2			202 097.128(0.003)	0.265	18.462	
0	8	6	3		0	7	−3	4			202 203.311(0.003)	0.936	16.841	
0	27	*	20		0	27	*	21			202 233.731(0.008)	40.113	186.785	
0	23	12	11	+	0	22	15	8	+		202 313.884(0.010)	0.372	162.081	
0	28	*	20	+	0	28	*	21	−		202 370.952(0.009)	45.411	206.000	
1	22	*	19		1	22	*	20			202 379.381(0.010)	18.790	181.476	
1	24	−12	13		1	23	13	10			202 475.854(0.056)	0.560	245.805	
1	8	−6	3		1	7	3	4			202 549.634(0.007)	0.801	89.655	
1	8	3	5	−	1	7	2	6	−		202 561.905(0.003)	0.530	91.961	
1	8	4	5	−	1	7	1	6	−		202 576.614(0.003)	0.530	91.961	
0	23	15	8	−	0	23	13	11	+		202 585.132(0.004)	0.263	168.871	
0	26	*	20		0	26	*	21			202 597.555(0.008)	34.824	168.278	
1	12	9	4	+	1	11	9	3	+		202 776.998(0.005)	1.076	120.736	
1	29	*	20		1	29	*	21			202 851.731(0.043)	48.430	300.886	
1	12	10	3	−	1	11	10	2	−		202 878.229(0.006)	2.008	121.931	
0	25	*	20		0	25	*	21			202 912.450(0.008)	29.424	150.448	
0	27	*	20	−	0	27	*	21	+		202 951.440(0.008)	40.219	186.784	
0	13	−6	7		0	12	7	6			202 993.739(0.003)	11.461	47.726	
0	13	6	7	+	0	12	7	6	+		203 054.108(0.003)	11.093	47.525	
0	24	−12	12		0	23	15	9			203 107.214(0.011)	0.337	174.831	
0	8	7	2		0	7	5	3			203 123.596(0.003)	0.233	18.083	
1	16	13	4	+	1	15	14	1	+		203 157.788(0.014)	0.479	159.318	
1	9	6	3	+	1	8	5	4	+		203 176.360(0.004)	2.449	100.035	
1	7	2	5		1	6	−1	6			203 177.964(0.003)	0.230	81.499	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	24	*	20		0	24	*	21			203 182.739(0.008)	23.895	133.297	
1	21	12	10	−	1	20	13	7	−		203 260.780(0.033)	0.172	209.673	
1	21	−15	7		1	21	12	9			203 343.413(0.011)	0.186	217.968	
1	24	12	12		1	23	−15	9			203 392.781(0.056)	0.396	249.517	
0	23	*	20		0	23	*	21			203 412.581(0.009)	18.215	116.824	
1	7	−3	5		1	6	0	6			203 435.856(0.003)	0.230	81.499	
1	17	*	15	+	1	16	*	14	+		203 449.372(0.015)	83.571	138.557	
0	26	*	20	+	0	26	*	21	−		203 491.132(0.008)	34.929	168.237	
1	24	*	23	−	1	24	*	24	+		203 497.176(0.032)	5.917	189.316	
0	13	7	7		0	12	7	6			203 560.258(0.003)	6.209	47.726	
0	28	14	15	−	0	27	15	12	−		203 583.472(0.023)	0.284	234.255	
0	22	*	20		0	22	*	21			203 605.986(0.010)	12.360	101.032	
0	16	12	5	−	0	16	9	8	+		203 645.538(0.003)	0.179	82.609	
1	9	−8	2		1	8	−7	2			203 672.045(0.003)	17.969	98.022	
1	28	*	20		1	28	*	21			203 742.195(0.011)	46.021	280.930	
0	21	*	20		0	21	*	21			203 766.829(0.011)	6.300	85.922	
1	27	*	21	+	1	27	*	22	−		203 775.627(0.015)	34.136	254.653	
1	9	8	1		1	8	7	1			203 821.655(0.003)	10.968	99.440	
0	8	−4	4		0	7	3	5			203 821.769(0.002)	0.995	15.424	
0	23	15	8	−	0	23	12	11	+		203 834.825(0.004)	1.078	168.829	
0	13	7	7	+	0	12	7	6	+		203 896.075(0.003)	6.376	47.525	
0	8	−4	4		0	7	−2	5			203 904.921(0.002)	0.234	15.421	
1	21	14	7		1	21	11	10			203 916.731(0.008)	0.754	215.800	
0	16	11	5	−	0	15	12	4	−		203 962.618(0.006)	1.434	80.628	
0	25	*	20	−	0	25	*	21	+		203 993.260(0.008)	29.525	150.360	
0	8	4	4	+	0	7	3	5	+		204 002.506(0.002)	1.006	15.114	
1	21	*	19		1	21	*	20			204 081.372(0.011)	12.797	165.978	
0	11	−7	4		0	10	7	4			204 120.566(0.003)	0.183	35.330	
0	8	4	4	+	0	7	2	5	+		204 123.001(0.002)	0.243	15.110	
0	18	14	5		0	17	15	3			204 124.968(0.007)	0.736	106.805	
1	8	4	4		1	7	−3	5			204 128.157(0.004)	1.178	88.285	
0	14	−5	9		0	13	6	8			204 171.084(0.003)	16.768	52.127	
0	14	6	9		0	13	6	8			204 177.544(0.003)	7.130	52.127	
0	14	−5	9		0	13	−5	8			204 207.014(0.003)	7.130	52.126	
0	14	6	9		0	13	−5	8			204 213.475(0.003)	16.769	52.126	
0	16	−11	5		0	15	−12	3			204 244.111(0.006)	1.178	80.803	
0	14	−9	5		0	13	10	4			204 269.266(0.006)	0.985	60.119	
0	17	12	6	−	0	16	13	3	−		204 281.802(0.006)	1.295	91.973	
1	15	8	7		1	14	9	5			204 282.890(0.012)	2.725	140.793	
0	8	6	3	−	0	7	4	4	−		204 304.612(0.002)	0.323	16.596	
1	18	−11	8		1	17	12	5			204 451.378(0.022)	0.921	173.930	
0	24	*	20	+	0	24	*	21	−		204 460.615(0.008)	23.986	133.157	
1	17	11	6		1	16	12	4			204 494.413(0.017)	2.556	164.714	
0	13	7	6	−	0	12	8	5	−		204 569.387(0.003)	6.622	49.335	
0	14	5	9	−	0	13	6	8	−		204 607.568(0.003)	16.407	51.926	
0	14	6	9	−	0	13	6	8	−		204 619.040(0.003)	7.392	51.926	
0	14	5	9	−	0	13	5	8	−		204 666.703(0.003)	7.393	51.924	
0	15	−4	11		0	14	5	10			204 667.650(0.004)	21.665	55.844	
0	15	5	11		0	14	5	10			204 667.681(0.004)	8.066	55.844	
0	15	−4	11		0	14	−4	10			204 667.867(0.004)	8.066	55.844	
0	15	5	11		0	14	−4	10			204 667.898(0.004)	21.665	55.844	
0	14	6	9	−	0	13	5	8	−		204 678.175(0.003)	16.410	51.924	
1	18	−13	6		1	17	−14	4			204 697.566(0.021)	1.988	179.552	
0	10	7	4		0	9	6	4			204 859.859(0.002)	1.317	28.496	
0	23	*	20	−	0	23	*	21	+		204 895.604(0.009)	18.292	116.627	
0	18	−14	4		0	17	−15	2			204 958.054(0.007)	0.748	107.138	
1	18	*	17	−	1	17	*	16	−		205 014.402(0.019)	95.281	140.767	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	9	6	3	+	0	8	4	4	+		205 017.610(0.002)	0.797	21.919	
0	15	4	11	+	0	14	5	10	+		205 023.748(0.004)	21.137	55.639	
0	15	5	11	+	0	14	5	10	+		205 023.818(0.004)	8.526	55.639	
0	15	4	11	+	0	14	4	10	+		205 024.187(0.004)	8.526	55.639	
0	15	5	11	+	0	14	4	10	+		205 024.257(0.004)	21.137	55.639	
0	9	−6	3		0	8	−4	4			205 128.772(0.002)	0.728	22.223	
0	13	−6	7		0	12	−6	6			205 174.721(0.003)	6.250	47.654	
1	9	8	2	−	1	8	5	3	−		205 208.857(0.007)	1.928	101.006	
0	16	10	7		0	15	11	5			205 220.823(0.006)	0.666	78.194	
1	27	*	20		1	27	*	21			205 220.942(0.011)	40.857	261.604	
1	10	6	4		1	9	5	4			205 287.596(0.004)	1.398	101.219	
0	16	*	13		0	15	*	12			205 290.508(0.004)	71.143	58.889	
0	22	*	20	+	0	22	*	21	−		205 300.308(0.010)	12.418	100.772	
1	28	*	21	−	1	28	*	22	+		205 344.340(0.015)	39.496	273.450	
0	23	−15	8		0	23	13	11			205 417.460(0.005)	0.199	168.862	
1	16	13	3	−	1	15	14	2	−		205 455.202(0.014)	0.473	159.318	
0	13	9	5		0	12	−9	3			205 492.900(0.004)	0.381	51.489	
1	18	11	8	+	1	17	12	5	+		205 499.240(0.019)	0.265	175.012	
0	16	*	13	−	0	15	*	12	−		205 571.039(0.004)	71.043	58.670	
1	20	*	19		1	20	*	20			205 652.336(0.013)	6.545	151.130	
0	21	*	20	−	0	21	*	21	+		205 676.530(0.011)	6.332	85.593	
0	20	11	10		0	19	−12	7			205 678.298(0.008)	0.487	120.503	
0	13	7	7		0	12	−6	6			205 741.240(0.003)	11.624	47.654	
1	25	*	22	−	1	25	*	23	+		205 814.947(0.017)	17.566	212.459	
1	13	6	7		1	12	−7	6			205 948.141(0.007)	7.813	121.132	
0	17	*	15		0	16	*	14			205 962.114(0.005)	82.955	61.277	
0	12	−8	4		0	11	−8	3			205 963.503(0.003)	4.959	43.243	
0	23	−12	11		0	22	15	8			206 047.032(0.011)	0.333	161.962	
1	8	6	2		1	7	−5	3			206 061.979(0.012)	0.307	90.788	
0	13	6	7	+	0	12	6	6	+		206 087.410(0.003)	6.435	47.424	
0	17	*	15	+	0	16	*	14	+	206 168.760(0.050)	206 168.792(0.005)	82.885	61.032	8
1	19	10	9		1	18	12	6			206 203.817(0.025)	0.239	183.793	
0	23	−15	8		0	23	−12	11			206 249.919(0.005)	0.942	168.835	
0	8	6	3	−	0	7	3	4	−		206 275.865(0.002)	0.996	16.531	
1	12	10	2	+	1	11	10	1	+		206 286.065(0.007)	2.179	121.953	
1	10	10	1	−	1	9	9	0	−		206 293.312(0.003)	21.469	108.934	
1	10	8	2	+	1	9	7	3	+		206 359.789(0.004)	6.918	106.939	
1	10	−6	5		1	9	−5	5			206 361.489(0.003)	1.592	100.082	
1	10	10	0	+	1	9	9	1	+		206 451.684(0.003)	21.492	108.930	
1	13	−13	1		1	12	12	0			206 550.534(0.008)	1.355	136.589	
1	13	7	6		1	12	−8	5			206 604.402(0.010)	2.300	122.813	
1	29	*	21	+	1	29	*	22	−		206 631.297(0.016)	44.780	292.989	
0	14	−8	6		0	13	−9	4			206 651.012(0.004)	0.626	58.825	
0	18	*	17		0	17	*	16		206 655.240(0.050)	206 655.175(0.006)	94.915	63.015	8
0	12	8	4	+	0	11	8	3	+		206 661.753(0.003)	5.376	42.954	
1	12	−7	6		1	11	6	5			206 662.086(0.006)	7.447	114.238	
0	18	*	17	−	0	17	*	16	−	206 782.030(0.050)	206 782.011(0.006)	94.873	62.733	8
0	13	−7	6		0	12	8	5			206 803.223(0.003)	6.913	49.486	
1	13	12	1		1	12	−12	1			206 873.134(0.007)	2.694	133.709	
1	26	*	20		1	26	*	21			206 917.751(0.011)	35.586	242.901	
0	13	7	7	+	0	12	6	6	+		206 929.377(0.003)	11.305	47.424	
1	19	*	19	+	1	18	*	18	+		206 946.600(0.024)	107.036	142.564	
1	13	7	6	−	1	12	8	5	−		206 968.385(0.006)	14.834	126.158	
1	9	7	3	+	1	8	5	4	+		206 970.795(0.004)	0.180	100.035	
1	19	13	6		1	18	14	4			207 100.388(0.024)	0.887	189.943	
1	9	7	3	+	1	8	4	4	+		207 212.289(0.004)	2.173	100.027	
1	15	4	11		1	14	−5	10			207 263.453(0.010)	21.550	129.428	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	15	−5	11		1	14	−5	10			207 264.237(0.010)	7.389	129.428	
1	15	4	11		1	14	4	10			207 267.022(0.010)	7.389	129.428	
1	15	−5	11		1	14	4	10			207 267.806(0.010)	21.550	129.428	
1	11	9	3	+	1	10	8	2	+		207 271.903(0.006)	11.770	113.822	
1	13	8	6	−	1	12	8	5	−		207 277.097(0.006)	1.190	126.158	
1	13	−11	3		1	12	−11	2			207 289.004(0.006)	1.484	130.129	
1	16	3	13		1	15	−4	12			207 289.868(0.013)	26.463	132.407	
1	16	−4	13		1	15	−4	12			207 289.874(0.013)	8.540	132.407	
1	16	3	13		1	15	3	12			207 289.899(0.013)	8.540	132.407	
1	16	−4	13		1	15	3	12			207 289.905(0.013)	26.463	132.407	
0	19	*	19		0	18	*	18		207 361.390(0.050)	207 361.415(0.007)	107.018	64.106	8
0	19	*	19	+	0	18	*	18	+	207 396.240(0.050)	207 396.242(0.007)	107.008	63.774	8
1	17	*	15		1	16	*	14			207 429.478(0.016)	82.139	134.647	
1	14	5	9		1	13	−6	8			207 520.868(0.007)	15.702	125.687	
1	13	11	2		1	12	11	1			207 558.074(0.007)	3.985	130.971	
1	18	*	17		1	17	*	16			207 571.053(0.020)	94.374	136.153	
1	14	−6	9		1	13	−6	8			207 586.255(0.007)	6.989	125.687	
1	17	10	7		1	17	7	10			207 598.774(0.005)	0.339	162.729	
1	19	*	19		1	18	*	18			207 654.850(0.024)	106.747	136.921	
0	25	13	13		0	24	−14	10			207 660.313(0.013)	0.307	187.780	
0	8	5	4		0	7	3	5			207 685.003(0.002)	0.224	15.424	
0	8	5	4		0	7	−2	5			207 768.155(0.002)	0.945	15.421	
1	14	5	9		1	13	5	8			207 773.464(0.008)	6.956	125.678	
1	14	−6	9		1	13	5	8			207 838.851(0.008)	15.747	125.678	
1	30	*	21	−	1	30	*	22	+		207 854.230(0.017)	49.839	313.264	
0	12	−7	5		0	11	−7	4			207 895.356(0.002)	6.033	42.139	
1	22	14	8		1	22	−12	11			207 961.624(0.007)	0.242	227.939	
1	13	7	6	−	1	12	7	5	−		207 985.548(0.006)	1.191	126.125	
0	17	11	7		0	16	−12	4			208 000.109(0.007)	0.683	89.618	
0	19	15	4	−	0	19	12	7	+		208 030.328(0.007)	0.254	120.334	
1	13	8	6	−	1	12	7	5	−		208 294.260(0.006)	15.046	126.125	
1	15	11	5	+	1	14	12	2	+		208 298.698(0.011)	1.108	146.891	
1	10	−5	6		1	9	−4	6			208 356.937(0.002)	0.200	98.311	
1	19	8	11		1	18	9	9			208 417.002(0.024)	0.235	177.890	
0	12	7	5	−	0	11	7	4	−		208 449.589(0.002)	6.247	41.856	
1	10	−7	4		1	9	−6	4			208 478.770(0.003)	9.312	101.423	
1	13	−7	7		1	12	−7	6			208 500.263(0.006)	6.536	121.132	
0	10	8	3	−	0	9	7	2	−		208 597.443(0.002)	11.518	29.803	
1	8	−5	4		1	7	2	5			208 653.791(0.004)	1.059	88.277	
0	10	8	3		0	9	7	3			208 736.400(0.002)	10.465	29.805	
1	25	*	20		1	25	*	21			208 784.826(0.011)	30.180	224.818	
1	13	10	3		1	12	10	2			208 805.535(0.006)	5.211	128.408	
1	14	6	8	+	1	13	7	7	+		208 814.709(0.007)	20.874	131.122	
1	17	−10	8		1	16	−11	6			208 816.987(0.016)	0.879	161.416	
1	14	7	8	+	1	13	7	7	+		208 821.877(0.007)	1.008	131.122	
1	10	−6	5		1	9	4	5			208 839.192(0.005)	0.292	99.999	
1	14	6	8	+	1	13	6	7	+		208 842.017(0.007)	1.007	131.121	
1	14	7	8	+	1	13	6	7	+		208 849.185(0.007)	20.879	131.121	
0	13	12	2	−	0	12	12	1	−		208 934.559(0.003)	1.500	57.939	
0	13	12	1	+	0	12	12	0	+		208 937.544(0.003)	1.500	57.939	
0	8	5	4	+	0	7	3	5	+		209 033.898(0.002)	0.230	15.114	
1	26	*	22	+	1	26	*	23	−		209 101.197(0.017)	23.235	229.632	
1	17	14	4	−	1	16	15	1	−		209 130.474(0.016)	0.424	170.656	
0	8	5	4	+	0	7	2	5	+		209 154.392(0.002)	0.938	15.110	
1	21	13	8		1	21	−11	11			209 223.749(0.006)	0.185	212.939	
1	12	8	4	+	1	11	8	3	+		209 267.472(0.005)	0.943	120.343	
0	13	−12	1		0	12	−12	0			209 308.826(0.003)	1.491	58.065	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	13	12	2		0	12	12	1			209 310.849(0.003)	1.500	57.662	
0	20	11	10	+	0	19	12	7	+		209 422.453(0.008)	0.586	120.334	
0	10	−8	2		0	9	−7	2			209 487.965(0.002)	10.739	30.139	
0	8	7	2	+	0	7	5	3	+		209 488.703(0.002)	0.270	17.839	
1	13	−10	4		1	12	−10	3			209 633.821(0.006)	2.837	127.268	
0	17	12	5	+	0	16	13	4	+		209 643.155(0.006)	1.326	91.969	
0	18	11	7	−	0	18	8	10	+		209 748.282(0.004)	0.242	100.787	
1	9	−9	1		1	8	−8	1			209 833.485(0.003)	14.203	101.481	
1	8	2	6	+	1	7	*	7	+		210 044.163(0.004)	0.191	90.110	
1	8	3	6	+	1	7	*	7	+		210 044.804(0.004)	0.191	90.110	
1	8	6	2		1	7	4	3			210 072.129(0.008)	0.232	90.654	
1	17	14	3	+	1	16	15	2	+		210 096.547(0.016)	0.422	170.656	
1	15	5	10	−	1	14	6	9	−		210 144.997(0.010)	25.333	135.510	
1	15	6	10	−	1	14	6	9	−		210 145.106(0.010)	2.148	135.510	
1	15	5	10	−	1	14	5	9	−		210 145.501(0.010)	2.148	135.510	
1	15	6	10	−	1	14	5	9	−		210 145.610(0.010)	25.333	135.510	
0	17	12	6		0	16	13	4			210 153.204(0.006)	1.205	91.701	
0	15	−10	5		0	14	11	4			210 303.802(0.007)	0.565	69.883	
0	13	11	3	+	0	12	11	2	+		210 693.578(0.003)	2.881	55.380	
1	25	*	23	+	1	25	*	24	−		210 702.843(0.022)	11.809	205.431	
1	24	*	20		1	24	*	21			210 732.062(0.012)	24.604	207.356	
0	13	11	2	−	0	12	11	1	−		210 773.873(0.003)	2.881	55.380	
1	26	−13	14		1	25	14	11			210 822.390(0.075)	0.532	276.055	
0	17	−12	5		0	16	−13	3			210 901.796(0.006)	1.235	92.084	
1	21	13	8		1	21	10	11			211 022.391(0.006)	0.880	212.879	
1	13	9	4		1	12	9	3			211 069.539(0.006)	6.389	126.064	
0	9	7	2	−	0	8	5	3	−		211 124.294(0.002)	0.632	22.761	
0	13	−11	2		0	12	−11	1			211 143.739(0.003)	2.862	55.576	
0	25	13	13	+	0	24	14	10	+		211 182.511(0.013)	0.339	187.704	
1	20	14	6		1	20	11	9			211 326.605(0.009)	0.377	204.018	
0	13	11	3		0	12	11	2			211 328.731(0.003)	2.874	55.166	
1	13	9	4	−	1	12	10	3	−		211 338.145(0.011)	4.323	128.698	
0	13	8	6	−	0	12	8	5	−		211 360.292(0.003)	5.965	49.335	
0	30	*	21		0	30	*	22		211 378.350(0.050)	211 378.401(0.012)	50.644	239.303	8
0	17	11	7	+	0	16	12	4	+		211 429.852(0.006)	1.692	89.446	
1	16	*	12	+	1	15	*	11	+		211 446.665(0.012)	66.258	139.329	
1	27	*	22	−	1	27	*	23	+		211 621.678(0.018)	28.794	247.594	
0	9	−7	2		0	8	−5	3			211 653.091(0.002)	0.492	23.079	
1	13	6	7		1	12	6	6			211 680.290(0.006)	5.948	120.941	
1	21	−11	11		1	20	12	8			211 775.773(0.035)	1.036	205.874	
0	30	*	21	−	0	30	*	22	+	211 775.950(0.050)	211 776.008(0.012)	50.735	239.373	8
0	29	*	21		0	29	*	22		211 831.930(0.050)	211 831.962(0.011)	45.500	218.759	
0	13	8	6		0	12	8	5			211 867.686(0.003)	5.790	49.486	
1	22	14	8		1	22	11	11			212 115.704(0.008)	0.956	227.800	
1	25	*	24	−	1	25	*	25	+		212 209.298(0.039)	5.914	198.352	
0	28	*	21		0	28	*	22		212 230.780(0.050)	212 230.789(0.011)	40.273	198.888	8
0	8	7	2		0	7	−4	3			212 367.299(0.004)	0.196	17.774	
1	20	14	6		1	19	15	4			212 384.604(0.029)	0.997	203.983	
0	29	*	21	+	0	29	*	22	−	212 384.830(0.050)	212 384.770(0.011)	45.597	218.801	8
1	30	*	21		1	30		22			212 438.766(0.015)	51.238	314.394	
0	10	8	2	+	0	9	7	3	+		212 470.093(0.002)	11.275	29.715	
0	11	8	4		0	10	−7	3			212 504.350(0.004)	4.482	35.774	
0	27	*	21		0	27	*	22		212 579.120(0.050)	212 579.096(0.010)	34.952	179.694	
1	10	7	3		1	9	6	3			212 583.136(0.003)	5.971	102.540	
0	18	−11	7		0	18	−8	10			212 629.979(0.004)	0.214	100.876	
1	23	*	20		1	23	*	21			212 660.924(0.013)	18.825	190.521	
1	17	*	14	−	1	16	*	13	−		212 758.001(0.015)	77.721	142.599	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	13	10	4	−	0	12	10	3	−		212 840.574(0.003)	4.137	53.105	
0	26	*	21		0	26	*	22		212 880.940(0.050)	212 880.938(0.010)	29.521	161.177	8
0	28	*	21	−	0	28	*	22	+	212 954.320(0.050)	212 954.341(0.011)	40.375	198.897	8
1	20	12	8	+	1	19	15	5	+		213 122.427(0.029)	0.191	200.644	
0	25	*	21		0	25	*	22		213 140.270(0.050)	213 140.239(0.010)	23.963	143.339	8
1	12	9	3	−	1	11	9	2	−		213 331.008(0.005)	2.261	120.964	
0	17	13	5	+	0	17	10	8	−		213 339.619(0.004)	0.188	94.156	
0	24	*	21		0	24	*	22		213 360.810(0.050)	213 360.821(0.011)	18.257	126.180	8
0	27	*	21	+	0	27	*	22	−	213 488.020(0.050)	213 487.978(0.010)	35.054	179.662	8
0	18	−10	8		0	17	−12	5			213 525.517(0.007)	0.187	99.119	
0	23	*	21		0	23	*	22		213 546.470(0.050)	213 546.418(0.012)	12.380	109.701	8
0	22	14	8	+	0	22	11	11	−		213 573.417(0.004)	0.657	153.262	
1	13	−9	5		1	12	−9	4			213 650.506(0.006)	3.970	124.797	
1	29	*	21		1	29	*	22			213 657.042(0.014)	46.144	293.759	
1	28	*	22	+	1	28	*	23	−		213 672.008(0.019)	34.262	266.323	
0	18	13	6	+	0	17	14	3	+		213 698.560(0.006)	1.236	104.067	
0	22	*	21		0	22	*	22			213 700.694(0.013)	6.305	93.904	
0	13	−10	3		0	12	−10	2			213 855.782(0.003)	4.102	53.369	
0	13	10	3	+	0	12	10	2	+		213 936.329(0.003)	4.141	53.112	
1	13	8	5	+	1	12	9	4	+		213 981.570(0.008)	11.187	127.500	
0	26	*	21	−	0	26	*	22	+	213 988.500(0.050)	213 988.472(0.010)	29.619	161.099	8
0	13	9	5	+	0	12	9	4	+		214 036.340(0.003)	5.219	51.118	
0	18	10	8	+	0	17	12	5	+		214 121.511(0.007)	0.260	98.962	
1	18	*	16	+	1	17	*	15	+		214 136.930(0.019)	89.340	145.343	
1	13	−7	7		1	12	6	6			214 232.412(0.007)	9.587	120.941	
1	13	12	2	−	1	12	12	1	−		214 263.632(0.007)	1.374	131.903	
0	14	−6	8		0	13	7	7			214 266.464(0.003)	13.980	54.516	
0	13	10	4		0	12	10	3			214 302.481(0.003)	4.098	52.971	
1	13	12	1	+	1	12	12	0	+		214 356.900(0.007)	1.374	131.903	
0	14	7	8		0	13	7	7			214 392.483(0.003)	6.829	54.516	
1	9	5	4	−	1	8	4	5	−		214 398.338(0.003)	1.631	98.718	
0	25	*	21	+	0	25	*	22	−	214 458.180(0.050)	214 458.195(0.010)	24.052	143.207	8
1	18	12	6		1	17	−13	5			214 468.070(0.021)	2.575	176.639	
1	12	−8	5		1	11	7	4			214 476.122(0.011)	2.158	115.658	
1	22	*	20		1	22	*	21			214 496.076(0.014)	12.817	174.321	
1	12	9	4	+	1	11	8	3	+		214 570.261(0.008)	11.078	120.343	
1	10	−7	4		1	9	5	4			214 586.696(0.008)	0.901	101.219	
0	14	6	8	+	0	13	7	7	+		214 661.117(0.003)	13.626	54.326	
0	15	−5	10		0	14	6	9			214 759.737(0.004)	19.032	58.938	
0	15	6	10		0	14	6	9			214 760.812(0.004)	7.747	58.938	
0	15	−5	10		0	14	−5	9			214 766.197(0.004)	7.747	58.938	
0	15	6	10		0	14	−5	9			214 767.273(0.004)	19.032	58.938	
0	14	−6	8		0	13	−6	7			214 832.984(0.003)	6.837	54.497	
0	14	7	8	+	0	13	7	7	+		214 861.388(0.003)	7.036	54.326	
1	18	8	10		1	17	9	8			214 890.791(0.020)	0.453	167.935	
0	24	*	21	−	0	24	*	22	+	214 899.110(0.050)	214 899.149(0.011)	18.333	125.988	8
0	14	7	8		0	13	−6	7			214 959.002(0.003)	14.011	54.497	
1	9	6	4	−	1	8	3	5	−		215 028.495(0.003)	1.609	98.718	
1	28	*	21		1	28	*	22			215 122.009(0.014)	40.952	273.754	
0	15	5	10	−	0	14	6	9	−		215 187.334(0.004)	18.608	58.751	
0	15	6	10	−	0	14	6	9	−		215 189.413(0.004)	8.082	58.751	
0	15	5	10	−	0	14	5	9	−		215 198.807(0.004)	8.082	58.751	
0	15	6	10	−	0	14	5	9	−		215 200.885(0.004)	18.609	58.751	
1	9	9	0		1	8	8	0			215 251.088(0.004)	17.595	103.744	
0	16	*	12		0	15	5	11			215 295.101(0.004)	32.601	62.671	
0	16	*	12		0	15	−4	11			215 295.131(0.004)	32.601	62.671	
0	23	*	21	+	0	23	*	22	−	215 313.000(0.050)	215 313.021(0.012)	12.437	109.444	8

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	$\mu^2 S$ (D^2)	E_1 (cm^{-1})	Ref.
1	26	*	23	−	1	26	*	24	+		215 314.906(0.021)	17.602	222.450	
1	29	*	22	−	1	29	*	23	+		215 329.767(0.019)	39.657	285.807	
0	14	6	8	+	0	13	6	7	+		215 503.084(0.003)	7.047	54.298	
1	16	9	7		1	15	10	5			215 508.740(0.014)	2.634	151.119	
1	14	8	6		1	13	−9	5			215 511.958(0.012)	1.186	131.924	
1	22	12	10	+	1	21	15	7	+		215 593.295(0.039)	0.171	223.977	
0	18	13	6		0	18	10	9			215 608.142(0.005)	0.175	103.845	
0	16	4	12	+	0	15	5	11	+		215 642.325(0.004)	23.290	62.478	
0	16	5	12	+	0	15	5	11	+		215 642.335(0.004)	9.246	62.478	
0	16	4	12	+	0	15	4	11	+		215 642.394(0.004)	9.246	62.478	
0	16	5	12	+	0	15	4	11	+		215 642.405(0.004)	23.290	62.478	
1	19	*	18	−	1	18	*	17	−		215 677.763(0.023)	101.073	147.605	
0	22	*	21	−	0	22	*	22	+		215 701.229(0.013)	6.337	93.577	
0	14	7	8	+	0	13	6	7	+		215 703.354(0.003)	13.667	54.298	
0	10	9	2		0	9	8	2			215 753.328(0.002)	15.729	31.295	
1	13	8	5		1	12	8	4			215 911.173(0.006)	7.304	124.007	
0	17	*	14		0	16	*	13		215 931.500(0.050)	215 931.505(0.005)	76.906	65.737	8
0	10	7	3	−	0	9	6	4	−		216 011.589(0.002)	5.719	28.271	
0	16	−11	5		0	15	12	4			216 012.126(0.008)	0.285	80.411	
1	13	9	5	+	1	12	9	4	+		216 127.525(0.006)	0.768	127.500	
1	21	*	20		1	21	*	21			216 193.694(0.016)	6.551	158.766	
0	17	*	14	−	0	16	*	13	−	216 207.500(0.050)	216 207.495(0.005)	76.808	65.527	8
1	23	13	11	+	1	22	14	8	+		216 304.598(0.045)	0.189	236.182	
0	10	−9	1		0	9	−8	1			216 388.398(0.002)	15.740	31.670	
0	18	13	5	−	0	17	14	4	−		216 429.987(0.007)	1.246	104.065	
0	18	*	16		0	17	*	15		216 607.220(0.050)	216 607.204(0.006)	88.738	68.147	8
0	13	9	5		0	12	9	4			216 658.574(0.003)	4.779	51.116	
1	30	*	22	+	1	30	*	23	−		216 681.839(0.020)	44.982	306.036	
1	18	−11	8		1	17	−12	6			216 756.453(0.020)	1.022	173.520	
1	23	15	8		1	23	−13	11			216 774.108(0.009)	0.227	243.579	
0	14	9	6		0	13	−9	4			216 780.214(0.004)	0.208	58.825	
0	18	*	16	+	0	17	*	15	+	216 811.750(0.050)	216 811.776(0.006)	88.669	67.909	8
1	27	*	21		1	27	*	22			216 842.202(0.014)	35.662	254.371	
0	14	8	6	+	0	13	9	5	+		216 852.089(0.004)	5.050	58.257	
1	20	10	10		1	19	12	7			216 881.071(0.029)	0.190	194.426	
0	22	−14	8		0	22	−11	11			216 898.996(0.004)	0.574	153.276	
0	19	−10	9		0	18	−12	6			216 911.516(0.007)	0.180	109.420	
1	17	11	7	+	1	16	12	4	+		216 954.010(0.016)	0.542	164.909	
1	19	−14	6		1	18	−15	4			217 086.606(0.025)	1.997	192.276	
1	13	−8	6		1	12	−8	5			217 286.817(0.006)	5.027	122.813	
0	19	*	18		0	18	*	17		217 302.100(0.050)	217 302.118(0.007)	100.712	69.908	8
0	12	−8	4		0	11	8	4			217 389.819(0.004)	0.387	42.862	
0	19	*	18	−	0	18	*	17	−	217 428.120(0.050)	217 428.108(0.007)	100.671	69.631	8
0	10	9	2	+	0	9	8	1	+		217 473.885(0.002)	15.797	31.337	
1	20	*	20	+	1	19	*	19	+		217 608.002(0.028)	112.832	149.467	
0	8	−3	5		0	7	2	6			217 662.530(0.002)	0.498	13.618	
0	10	9	1	−	0	9	8	2	−		217 714.815(0.002)	15.786	31.331	
1	14	6	8		1	13	−7	7			217 718.843(0.008)	11.593	128.087	
0	17	12	6	−	0	17	9	9	+		217 763.748(0.003)	0.189	91.523	
1	16	4	12		1	15	−5	11			217 776.180(0.013)	23.911	136.342	
1	16	−5	12		1	15	−5	11			217 776.349(0.013)	7.953	136.342	
1	16	4	12		1	15	4	11			217 776.964(0.013)	7.953	136.342	
1	16	−5	12		1	15	4	11			217 777.132(0.013)	23.911	136.342	
1	17	*	14		1	16	*	13			217 875.052(0.016)	75.818	139.321	
1	15	5	10		1	14	−6	9			217 930.981(0.010)	18.262	132.611	
1	15	−6	10		1	14	−6	9			217 946.754(0.010)	7.460	132.611	
1	15	5	10		1	14	5	9			217 996.367(0.010)	7.453	132.609	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	8	4	5		0	7	−1	6			218 008.707(0.002)	0.497	13.618	
0	20	*	20		0	19	*	19		218 010.000(0.050)	218 010.014(0.008)	112.822	71.023	8
1	15	−6	10		1	14	5	9			218 012.141(0.010)	18.272	132.609	
0	20	*	20	+	0	19	*	19	+	218 044.210(0.050)	218 044.191(0.008)	112.812	70.692	8
1	11	6	5		1	10	−6	5			218 048.891(0.007)	0.636	106.965	
1	18	*	16		1	17	*	15			218 050.147(0.020)	87.944	141.566	
1	18	−10	9		1	17	−11	7			218 152.659(0.020)	0.272	170.814	
0	10	−7	3		0	9	6	4			218 164.798(0.002)	3.997	28.496	
0	22	12	11		0	21	−13	8			218 184.657(0.009)	0.447	146.008	
1	19	*	18		1	18	*	17			218 209.954(0.024)	100.180	143.077	
1	14	7	7	−	1	13	8	6	−		218 266.300(0.007)	17.773	133.072	
1	20	*	20		1	19	*	19			218 301.018(0.029)	112.554	143.848	
0	18	13	6		0	17	14	4			218 323.463(0.007)	1.209	103.754	
0	11	−7	4		0	10	−6	4			218 339.706(0.002)	0.348	34.855	
1	14	8	7	−	1	13	8	6	−		218 347.578(0.007)	1.216	133.072	
0	27	14	14		0	26	−15	11			218 524.053(0.019)	0.318	219.194	
1	21	12	9	+	1	20	15	6	+		218 560.316(0.034)	0.191	212.001	
1	14	−7	8		1	13	−7	7			218 574.186(0.008)	7.116	128.087	
1	14	7	7	−	1	13	7	6	−		218 575.012(0.007)	1.215	133.062	
0	18	−13	5		0	17	−14	3			218 593.941(0.007)	1.230	104.118	
0	8	3	5	−	0	7	2	6	−		218 648.301(0.002)	0.498	13.292	
1	14	8	7	−	1	13	7	6	−		218 656.289(0.007)	17.833	133.062	
1	20	11	9		1	19	−13	7			218 704.285(0.029)	0.208	196.723	
0	19	11	9		0	18	−12	6			218 737.926(0.007)	0.861	109.420	
1	13	11	3	+	1	12	11	2	+		218 745.049(0.007)	2.304	130.102	
0	11	8	4	−	0	10	7	3	−		218 769.831(0.002)	9.460	35.476	
1	27	*	23	+	1	27	*	24	−		218 783.857(0.022)	23.297	240.296	
1	26	*	21		1	26	*	22			218 784.324(0.014)	30.240	235.603	
1	28	−14	15		1	27	15	12			218 786.312(0.097)	0.527	308.681	
1	16	8	8		1	15	9	6			218 860.936(0.013)	2.109	149.202	
1	16	11	6	+	1	15	12	3	+		218 894.159(0.013)	1.028	155.496	
1	10	−8	3		1	9	−7	3			218 933.924(0.003)	16.198	102.877	
1	9	6	3		1	8	−5	4			218 940.443(0.009)	1.188	95.237	
0	19	10	9	+	0	18	12	6	+		218 958.706(0.007)	0.228	109.264	
1	19	−11	9		1	18	12	6			218 997.161(0.025)	1.766	183.793	
0	8	4	5	−	0	7	1	6	−		219 140.154(0.002)	0.496	13.292	
0	13	−7	6		0	12	−7	5			219 194.631(0.003)	6.328	49.073	
1	13	8	5	+	1	12	8	4	+		219 284.360(0.006)	0.747	127.323	
0	18	11	8		0	17	−12	5			219 341.101(0.007)	1.031	99.119	
0	17	11	7		0	16	12	5			219 429.049(0.006)	0.978	89.237	
1	20	12	8		1	20	9	11			219 473.590(0.005)	0.556	198.554	
0	10	−8	2		0	9	7	3			219 494.945(0.004)	0.542	29.805	
1	20	12	9	−	1	19	13	6	−		219 502.673(0.028)	0.260	197.978	
1	16	12	5	−	1	15	13	2	−		219 509.517(0.014)	1.074	157.113	
1	16	9	7		1	16	6	10			219 550.340(0.005)	0.189	150.984	
0	9	5	4	−	0	8	4	5	−		219 562.632(0.002)	1.558	20.601	
1	15	9	6		1	14	−10	5			219 630.673(0.015)	0.520	141.876	
1	10	8	2		1	9	7	2			219 649.158(0.003)	9.692	104.238	
1	15	6	9	+	1	14	7	8	+		219 682.650(0.010)	22.857	138.088	
1	15	7	9	+	1	14	7	8	+		219 684.514(0.010)	1.825	138.088	
1	15	6	9	+	1	14	6	8	+		219 689.818(0.010)	1.825	138.087	
1	15	7	9	+	1	14	6	8	+		219 691.682(0.010)	22.858	138.087	
1	9	9	1	+	1	8	6	2	+		219 777.035(0.011)	0.344	101.599	
0	9	−5	4		0	8	4	5			219 928.053(0.002)	1.513	20.890	
0	13	−9	4		0	12	−9	3			219 933.964(0.003)	4.920	51.489	
1	26	*	24	+	1	26	*	25	−		219 961.637(0.027)	11.821	215.113	
1	13	7	6		1	12	7	5			220 010.072(0.006)	5.879	122.365	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	9	5	4	−	0	8	3	5	−		220 051.330(0.002)	0.392	20.585	
1	16	10	6		1	15	−11	5			220 076.119(0.017)	0.213	152.663	
0	18	12	7		0	17	−13	4			220 084.724(0.008)	0.517	101.418	
0	15	−9	6		0	14	−10	4			220 199.622(0.005)	1.018	68.311	
1	14	6	8		1	13	6	7			220 270.965(0.008)	6.851	128.002	
0	9	−5	4		0	8	−3	5			220 272.237(0.002)	0.370	20.878	
0	12	8	5		0	11	−7	4			220 286.765(0.003)	7.492	42.139	
0	13	7	6	−	0	12	7	5	−		220 336.853(0.003)	6.577	48.809	
1	13	11	2	−	1	12	11	1	−		220 553.291(0.007)	2.362	130.111	
1	17	8	9		1	16	9	7			220 665.109(0.016)	1.034	158.307	
1	11	10	2	−	1	10	9	1	−		220 743.870(0.004)	18.003	114.568	
1	25	*	21		1	25	*	22			220 848.928(0.015)	24.650	217.452	
1	10	7	3	−	1	9	6	4	−		220 857.959(0.005)	3.166	105.891	
1	13	10	4	−	1	12	10	3	−		220 874.487(0.006)	1.856	128.698	
1	9	5	4		1	8	−4	5			220 879.759(0.004)	1.756	93.852	
0	13	9	4	−	0	12	9	3	−		220 887.402(0.003)	5.354	51.211	
1	26	*	25	−	1	26	*	26	+		220 914.219(0.048)	5.911	207.744	
1	16	5	11	−	1	15	6	10	−		220 950.929(0.012)	28.131	142.519	
1	16	6	11	−	1	15	6	10	−		220 950.953(0.012)	2.167	142.519	
1	16	5	11	−	1	15	5	10	−		220 951.038(0.012)	2.167	142.519	
1	16	6	11	−	1	15	5	10	−		220 951.062(0.012)	28.131	142.519	
0	14	−8	6		0	13	9	5			221 092.076(0.004)	4.981	58.343	
1	14	−7	8		1	13	6	7			221 126.308(0.008)	12.149	128.002	
0	8	7	2	+	0	7	4	3	+		221 204.830(0.003)	0.278	17.449	
1	28	*	23	−	1	28	*	24	+		221 411.139(0.022)	28.878	258.937	
1	13	9	5	+	1	12	8	4	+		221 430.314(0.008)	12.606	127.323	
0	19	11	9	+	0	18	12	6	+		221 603.561(0.007)	1.083	109.264	
0	27	14	14	−	0	26	15	11	−		221 645.136(0.019)	0.346	219.156	
1	8	3	5		1	7	−2	6			221 830.580(0.003)	0.607	86.421	
0	30	*	22		0	30	*	23			221 838.733(0.014)	45.679	231.904	
0	14	10	5		0	13	−10	3			221 885.182(0.006)	0.215	60.503	
0	19	14	6		0	19	11	9			221 940.183(0.006)	0.180	116.716	
0	14	7	7	−	0	13	8	6	−		221 953.451(0.003)	10.053	56.385	
0	18	11	8	+	0	17	12	5	+		221 995.475(0.006)	1.620	98.962	
1	19	−12	8		1	18	13	5			222 003.061(0.024)	1.398	186.451	
1	14	10	4	+	1	13	11	3	+		222 010.543(0.012)	2.743	137.399	
1	20	−11	10		1	19	12	7			222 125.006(0.029)	1.724	194.426	
1	17	*	13	+	1	16	*	12	+		222 203.373(0.015)	71.947	146.383	
0	29	*	22		0	29	*	23			222 221.200(0.014)	40.423	211.346	
0	22	12	11	−	0	21	13	8	−		222 356.477(0.009)	0.527	145.862	
0	30	*	22	+	0	30	*	23	−		222 386.087(0.014)	45.771	231.955	
0	14	−7	7		0	13	8	6			222 456.755(0.003)	10.496	56.554	
0	28	*	22		0	28	*	23			222 555.580(0.013)	35.072	191.465	
0	10	10	1		0	9	9	1			222 653.997(0.002)	19.841	33.101	
1	8	−4	5		1	7	1	6			222 760.214(0.003)	0.606	86.421	
0	19	14	6	−	0	18	15	3	−		222 791.689(0.007)	1.176	116.915	
0	18	13	6	+	0	18	10	9	−		222 821.758(0.004)	0.227	103.762	
1	11	10	1	+	1	10	9	2	+		222 837.032(0.004)	18.138	114.520	
0	27	*	22		0	27	*	23			222 845.527(0.013)	29.611	172.261	
1	14	−14	1		1	13	13	0			222 879.499(0.011)	1.327	146.473	
1	14	−12	3		1	13	−12	2			222 884.443(0.008)	1.488	140.200	
1	24	*	21		1	24	*	22			222 917.198(0.015)	18.856	199.921	
0	10	−10	0		0	9	−9	0			222 928.216(0.002)	19.817	33.504	
0	29	*	22	−	0	29	*	23	+		222 946.975(0.014)	40.520	211.364	
0	26	*	22		0	26	*	23			223 094.623(0.013)	24.025	153.736	
1	11	6	5		1	10	5	5			223 103.998(0.004)	0.377	106.796	
1	14	−13	2		1	13	−13	1			223 117.266(0.009)	2.656	143.478	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	9	4	5	+	1	8	3	6	+		223 232.505(0.003)	0.931	97.116	
1	9	5	5	+	1	8	2	6	+		223 285.255(0.003)	0.930	97.116	
0	25	*	22		0	25	*	23			223 306.405(0.014)	18.294	135.890	
0	9	7	3		0	8	5	4			223 446.597(0.003)	0.313	22.352	
1	14	7	7		1	13	−8	6			223 456.966(0.010)	5.439	130.060	
1	18	*	15	−	1	17	*	14	−		223 473.954(0.019)	83.459	149.696	
0	28	*	22	+	0	28	*	23	−		223 476.397(0.013)	35.170	191.443	
0	24	*	22		0	24	*	23		223 484.380(0.100)	223 484.388(0.015)	12.398	118.725	6
1	30	*	22		1	30	*	23			223 568.836(0.019)	46.150	306.937	
1	29	*	23	+	1	29	*	24	−		223 592.179(0.024)	34.368	278.348	
0	23	*	22		0	23	*	23			223 632.069(0.016)	6.309	102.242	
1	14	12	2		1	13	12	1			223 671.583(0.009)	3.958	140.609	
0	18	12	7	−	0	17	13	4	−		223 746.525(0.006)	1.745	101.292	
1	20	−13	8		1	19	14	5			223 771.155(0.031)	0.444	200.193	
0	11	−8	3		0	10	−7	3			223 930.667(0.002)	4.818	35.774	
0	27	*	22	−	0	27	*	23	+		223 976.790(0.013)	29.707	172.191	
0	14	8	7		0	13	8	6			224 002.899(0.003)	6.545	56.554	
1	11	9	2	−	1	10	8	3	−		224 077.605(0.004)	9.791	113.489	
0	19	14	5	+	0	18	15	4	+		224 103.163(0.007)	1.180	116.914	
0	19	11	8	−	0	18	13	5	−		224 112.705(0.008)	0.228	111.284	
1	19	−12	8		1	18	−13	6			224 144.822(0.025)	0.623	186.380	
0	14	8	7	−	0	13	8	6	−		224 171.103(0.003)	6.708	56.385	
0	12	8	5	−	0	11	7	4	−		224 217.054(0.003)	8.365	41.856	
0	13	8	6		0	12	−7	5			224 259.095(0.003)	8.860	49.073	
1	17	10	7		1	16	11	5			224 340.013(0.017)	2.518	162.171	
1	19	−13	7		1	18	−14	5			224 341.940(0.025)	2.269	189.240	
0	10	10	1	−	0	9	9	0	−		224 379.915(0.002)	19.787	33.217	
0	10	10	0	+	0	9	9	1	+		224 385.316(0.002)	19.787	33.217	
0	26	*	22	+	0	26	*	23	−		224 450.179(0.013)	24.113	153.612	
1	23	−12	12		1	22	13	9			224 653.736(0.048)	0.860	232.584	
1	14	11	3		1	13	11	2			224 728.603(0.008)	5.205	137.895	
1	19	*	17	+	1	18	*	16	+		224 820.992(0.023)	95.112	152.486	
1	27	*	24	−	1	27	*	25	+		224 827.984(0.026)	17.633	232.796	
0	14	13	2	+	0	13	13	1	+		224 885.990(0.004)	1.504	67.690	
0	14	13	1	−	0	13	13	0	−		224 887.033(0.004)	1.504	67.690	
1	23	*	21		1	23	*	22			224 895.479(0.017)	12.834	183.020	
0	25	*	22	−	0	25	*	23	+		224 898.226(0.014)	18.370	135.705	
0	15	−6	9		0	14	7	8			224 957.529(0.004)	16.334	61.668	
0	15	7	9		0	14	7	8			224 982.614(0.004)	7.442	61.668	
1	14	−11	4		1	13	−11	3			224 987.040(0.008)	2.859	137.043	
1	29	*	22		1	29	*	23			224 991.325(0.018)	41.038	286.254	
1	23	15	8		1	23	12	11			225 045.334(0.009)	0.753	243.303	
0	15	−6	9		0	14	−6	8			225 083.547(0.004)	7.444	61.664	
0	15	7	9		0	14	−6	8			225 108.632(0.004)	16.339	61.664	
0	14	13	2		0	13	13	1			225 218.076(0.004)	1.505	67.371	
0	14	−13	1		0	13	−13	0			225 279.311(0.004)	1.496	67.755	
0	24	*	22	+	0	24	*	23	−		225 322.275(0.015)	12.455	118.472	
1	30	*	23	−	1	30	*	24	+		225 339.198(0.025)	39.799	298.520	
0	16	−5	11		0	15	6	10			225 357.920(0.005)	21.303	66.102	
0	16	6	11		0	15	6	10			225 358.088(0.005)	8.350	66.102	
0	16	−5	11		0	15	−5	10			225 358.995(0.005)	8.350	66.102	
0	16	6	11		0	15	−5	10			225 359.163(0.005)	21.303	66.102	
0	15	6	9	+	0	14	7	8	+		225 435.024(0.004)	15.956	61.493	
0	15	7	9	+	0	14	7	8	+		225 477.846(0.004)	7.698	61.493	
0	15	6	9	+	0	14	6	8	+		225 635.295(0.004)	7.700	61.487	
0	18	14	5	−	0	18	11	8	+		225 656.474(0.004)	0.183	106.367	
0	15	7	9	+	0	14	6	8	+		225 678.117(0.004)	15.964	61.487	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	15	9	6	−	0	14	10	5	−		225 707.666(0.005)	3.737	67.902	
0	23	*	22	−	0	23	*	23	+		225 723.400(0.016)	6.342	101.915	
0	16	5	11	−	0	15	6	10	−		225 771.558(0.005)	20.787	65.929	
0	16	6	11	−	0	15	6	10	−		225 771.915(0.005)	8.783	65.929	
0	16	5	11	−	0	15	5	10	−		225 773.636(0.005)	8.783	65.929	
0	16	6	11	−	0	15	5	10	−		225 773.994(0.005)	20.787	65.929	
1	10	9	1		1	9	8	1			225 797.669(0.003)	12.981	106.239	
0	11	8	4		0	10	7	4			225 809.289(0.002)	4.211	35.330	
0	21	13	8	−	0	21	10	11	+		225 812.965(0.004)	0.386	138.330	
0	17	*	13		0	16	*	12			225 926.457(0.005)	70.948	69.852	
0	17	*	13	+	0	16	5	12	+		226 265.457(0.005)	35.411	69.671	
0	17	*	13	+	0	16	4	12	+		226 265.467(0.005)	35.411	69.671	
0	10	−7	3		0	9	−5	4			226 282.474(0.002)	0.855	28.226	
1	20	*	19	−	1	19	*	18	−	226 339.010(0.100)	226 339.011(0.028)	106.865	154.799	6
0	19	14	6		0	18	15	4			226 345.040(0.008)	1.165	116.569	
0	10	7	3	−	0	9	5	4	−		226 383.637(0.002)	0.950	27.925	
1	11	−7	5		1	10	−6	5			226 451.292(0.003)	4.453	106.965	
0	18	*	15		0	17	*	14		226 572.830(0.100)	226 572.809(0.006)	82.672	72.939	6
0	14	12	3	−	0	13	12	2	−		226 593.512(0.004)	2.897	64.908	
1	14	10	4		1	13	10	3			226 622.376(0.008)	6.402	135.373	
0	14	12	2	+	0	13	12	1	+		226 624.872(0.004)	2.897	64.909	
0	13	−8	5		0	12	−8	4			226 632.327(0.003)	6.389	50.113	
1	22	*	21		1	22	*	22			226 728.612(0.020)	6.557	166.758	
1	28	*	22		1	28	*	23			226 729.473(0.018)	35.728	266.191	
1	21	12	9		1	20	−14	7			226 773.430(0.035)	0.311	210.404	
0	18	*	15	−	0	17	*	14	−	226 844.490(0.050)	226 844.481(0.006)	82.576	72.739	8
0	19	−14	5		0	18	−15	3			226 900.685(0.008)	1.185	116.906	
0	13	8	5	+	0	12	8	4	+		226 919.248(0.003)	6.598	49.847	
1	14	8	6	+	1	13	9	5	+		226 941.447(0.008)	14.325	134.709	
0	14	−12	2		0	13	−12	1			227 056.752(0.004)	2.879	65.047	
0	13	8	6	−	0	12	7	5	−		227 127.757(0.003)	8.822	48.809	
0	14	12	3		0	13	12	2			227 145.731(0.004)	2.894	64.644	
0	19	*	17		0	18	*	16		227 251.890(0.050)	227 251.856(0.006)	94.523	75.373	8
0	9	7	3		0	8	−4	4			227 309.831(0.003)	0.728	22.223	
0	19	*	17	+	0	18	*	16	+	227 454.460(0.050)	227 454.417(0.006)	94.455	75.142	8
0	14	−7	7		0	13	−7	6			227 521.218(0.003)	6.667	56.385	
1	11	7	4		1	10	6	4			227 582.475(0.004)	3.417	108.067	
1	8	7	1		1	7	5	2			227 591.477(0.005)	0.291	91.848	
1	14	9	6	+	1	13	9	5	+		227 705.735(0.007)	1.304	134.709	
1	10	8	3	−	1	9	6	4	−		227 806.355(0.004)	0.259	105.891	
1	9	−6	4		1	8	3	5			227 907.075(0.005)	1.331	93.821	
0	20	*	19		0	19	*	18			227 948.538(0.007)	106.510	77.156	
0	9	6	4		0	8	4	5			228 045.729(0.002)	0.326	20.890	
1	17	13	5	+	1	16	14	2	+		228 065.942(0.016)	0.967	168.141	
0	20	*	19	−	0	19	*	18	−	228 073.690(0.050)	228 073.732(0.007)	106.469	76.883	8
1	11	−6	6		1	10	−5	6			228 104.001(0.003)	0.444	105.261	
1	19	13	6		1	18	−14	5			228 197.196(0.026)	0.410	189.240	
1	21	*	21	+	1	20	*	20	+		228 268.585(0.034)	118.628	156.725	
1	17	4	13		1	16	−5	12			228 305.766(0.016)	26.201	143.606	
1	17	−5	13		1	16	−5	12			228 305.801(0.016)	8.579	143.606	
1	17	4	13		1	16	4	12			228 305.934(0.016)	8.579	143.606	
1	17	−5	13		1	16	4	12			228 305.970(0.016)	26.201	143.606	
1	14	−10	5		1	13	−10	4			228 311.654(0.008)	4.077	134.260	
1	16	5	11		1	15	−6	10			228 342.837(0.013)	20.769	139.881	
1	16	−6	11		1	15	−6	10			228 346.461(0.013)	7.930	139.881	
1	16	5	11		1	15	5	10			228 358.610(0.013)	7.928	139.881	
1	16	−6	11		1	15	5	10			228 362.234(0.013)	20.771	139.881	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	10	−9	2		1	9	−8	2			228 367.879(0.003)	20.145	104.816	
0	9	6	4		0	8	−3	5			228 389.912(0.002)	1.287	20.878	
1	22	15	7		1	22	12	10			228 399.496(0.009)	0.486	230.505	
1	10	8	3	−	1	9	5	4	−		228 421.903(0.005)	2.519	105.870	
1	18	*	15		1	17	*	14			228 465.092(0.020)	81.626	146.589	
1	28	*	24	+	1	28	*	25	−		228 481.730(0.027)	23.353	251.316	
1	15	6	9		1	14	−7	8			228 585.418(0.010)	14.612	135.377	
0	21	*	21		0	20	*	20		228 658.140(0.050)	228 658.161(0.009)	118.625	78.295	8
1	19	*	17		1	18	*	16			228 672.155(0.024)	93.749	148.839	
0	21	*	21	+	0	20	*	20	+	228 691.770(0.050)	228 691.701(0.009)	118.615	77.965	8
0	9	7	3	+	0	8	5	4	+		228 697.349(0.002)	0.383	22.087	
0	14	7	7	−	0	13	7	6	−		228 744.355(0.003)	6.880	56.158	
1	27	*	22		1	27	*	23			228 744.674(0.018)	30.292	246.740	
0	14	11	4	+	0	13	11	3	+		228 789.311(0.003)	4.179	62.408	
1	15	−7	9		1	14	−7	8			228 831.288(0.010)	7.615	135.377	
1	20	*	19		1	19	*	18			228 849.082(0.029)	105.986	150.356	
1	21	*	21		1	20	*	20			228 946.940(0.035)	118.361	151.130	
0	14	8	7		0	13	−7	6			229 067.362(0.004)	10.969	56.385	
1	14	8	6	+	1	13	8	5	+		229 087.401(0.007)	1.310	134.638	
0	16	−10	6		0	15	−11	4			229 159.886(0.006)	1.236	78.579	
1	27	*	25	+	1	27	*	26	−		229 233.684(0.034)	11.831	225.150	
1	15	7	8	−	1	14	8	7	−		229 272.360(0.010)	20.712	140.356	
0	14	11	3	−	0	13	11	2	−		229 288.761(0.004)	4.180	62.411	
1	15	8	8	−	1	14	8	7	−		229 293.943(0.010)	1.129	140.356	
1	15	7	8	−	1	14	7	7	−		229 353.638(0.010)	1.129	140.353	
1	15	8	8	−	1	14	7	7	−		229 375.221(0.010)	20.726	140.353	
0	21	−13	8		0	21	−10	11			229 378.572(0.005)	0.343	138.357	
0	24	13	12		0	23	−14	9			229 394.641(0.011)	0.422	173.961	
1	11	11	1	+	1	10	10	0	+		229 408.992(0.004)	23.706	115.816	
1	15	11	4	−	1	14	12	3	−		229 419.579(0.014)	1.773	146.860	
1	15	6	9		1	14	6	8			229 440.761(0.010)	7.535	135.349	
1	11	11	0	−	1	10	10	1	−		229 467.212(0.004)	23.715	115.815	
1	25	14	12	−	1	24	15	9	−		229 473.392(0.061)	0.209	265.137	
0	14	−11	3		0	13	−11	2			229 530.901(0.004)	4.151	62.619	
1	13	10	3	+	1	12	10	2	+		229 593.693(0.007)	2.774	128.834	
1	14	13	2	+	1	13	13	1	+		229 604.193(0.008)	1.409	141.126	
1	27	*	26	−	1	27	*	27	+		229 610.850(0.059)	5.907	217.491	
1	14	13	1	−	1	13	13	0	−		229 635.853(0.008)	1.409	141.126	
1	14	−8	7		1	13	−8	6			229 669.642(0.008)	6.575	130.060	
1	15	−7	9		1	14	6	8			229 686.631(0.010)	14.765	135.349	
1	21	9	12		1	20	10	10			229 803.404(0.035)	0.200	201.660	
1	14	9	6	+	1	13	8	5	+		229 851.690(0.008)	14.771	134.638	
0	14	11	4		0	13	11	3			229 881.631(0.004)	4.158	62.215	
1	13	9	4	−	1	12	9	3	−		229 885.493(0.006)	1.725	128.080	
0	9	6	4	−	0	8	4	5	−		229 934.680(0.002)	0.335	20.601	
0	14	9	6	+	0	13	9	5	+		229 947.835(0.003)	6.205	58.257	
0	9	6	4	−	0	8	3	5	−		230 423.378(0.002)	1.272	20.585	
0	19	13	7		0	18	−14	4			230 445.207(0.010)	0.308	113.975	
1	14	9	5		1	13	9	4			230 498.743(0.008)	7.559	133.104	
1	16	6	10	+	1	15	7	9	+		230 529.873(0.012)	24.961	145.415	
1	16	7	10	+	1	15	7	9	+		230 530.321(0.012)	2.522	145.415	
1	16	6	10	+	1	15	6	9	+		230 531.737(0.012)	2.522	145.415	
1	16	7	10	+	1	15	6	9	+		230 532.185(0.012)	24.962	145.415	
0	19	14	6	−	0	19	11	9	+		230 546.174(0.004)	0.249	116.656	
1	13	−8	6		1	12	7	5			230 692.488(0.008)	6.215	122.365	
1	19	−11	9		1	18	−12	7			230 745.454(0.025)	0.414	183.401	
0	14	10	5	−	0	13	10	4	−		230 766.565(0.003)	5.324	60.204	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	26	*	22		1	26	*	23			230 931.442(0.018)	24.689	227.900	
0	14	8	7	−	0	13	7	6	−		230 962.008(0.004)	10.656	56.158	
1	10	9	2	+	1	9	6	3	+		231 075.538(0.009)	1.621	106.812	
0	13	−9	4		0	12	9	4			231 099.638(0.005)	0.414	51.116	
0	9	8	2		0	8	6	3			231 104.442(0.003)	0.264	23.586	
1	9	3	6	−	1	8	2	7	−		231 104.705(0.004)	0.491	95.238	
1	9	4	6	−	1	8	1	7	−		231 107.639(0.004)	0.491	95.238	
1	29	*	24	−	1	29	*	25	+		231 193.746(0.027)	28.941	270.637	
0	14	9	6		0	13	9	5			231 221.278(0.003)	5.899	58.343	
1	10	−10	1		1	9	−9	1			231 291.979(0.003)	16.299	108.480	
0	18	12	7		0	17	13	5			231 330.433(0.007)	1.224	101.043	
0	11	9	3		0	10	8	3			231 462.149(0.002)	13.365	36.768	
1	11	−7	5		1	10	5	5			231 506.399(0.007)	0.547	106.796	
0	20	15	6		0	20	12	9			231 526.219(0.007)	0.177	130.244	
0	18	11	8		0	17	12	6			231 571.777(0.007)	0.454	98.711	
0	16	10	6	+	0	15	11	5	+		231 715.516(0.006)	2.833	78.280	
1	14	9	5	−	1	13	10	4	−		231 720.626(0.011)	9.521	136.066	
1	17	*	12	−	1	16	6	11	−		231 745.096(0.015)	33.121	149.890	
1	17	*	12	−	1	16	5	11	−		231 745.120(0.015)	33.121	149.890	
1	12	10	3	−	1	11	9	2	−		231 878.357(0.006)	13.920	120.964	
1	19	11	8		1	19	8	11			231 898.103(0.005)	0.322	184.842	
0	11	−9	2		0	10	−8	2			232 178.773(0.002)	13.494	37.127	
0	30	*	23		0	30	*	24			232 205.563(0.017)	40.563	224.158	
1	18	11	7		1	17	12	5			232 369.262(0.021)	2.444	173.930	
0	15	−9	6		0	14	10	5			232 393.061(0.006)	3.138	67.904	
0	9	−8	1		0	8	−6	2			232 452.487(0.003)	0.280	23.916	
0	11	9	3	+	0	10	8	2	+		232 458.632(0.002)	13.791	36.802	
0	9	8	1	+	0	8	6	2	+		232 516.218(0.003)	0.293	23.581	
0	29	*	23		0	29	*	24			232 527.370(0.017)	35.183	203.590	
0	28	*	23		0	28	*	24			232 806.404(0.017)	29.695	183.699	
0	30	*	23	−	0	30	*	24	+		232 930.113(0.017)	40.655	224.186	
1	18		14	+	1	17	*	13	+		232 951.751(0.019)	77.648	153.794	
1	22	13	10	+	1	21	14	7	+		233 020.196(0.039)	0.266	223.405	
0	27	*	23		0	27	*	24			233 045.952(0.017)	24.083	164.487	
1	25	*	22		1	25	*	23			233 148.184(0.019)	18.884	209.675	
0	26	*	23		0	26	*	24			233 249.314(0.017)	18.329	145.955	
1	9	−7	3		1	8	4	4			233 318.914(0.009)	0.462	95.094	
1	14	−9	6		1	13	−9	5			233 347.923(0.008)	4.975	131.924	
0	14	10	5		0	13	10	4			233 378.834(0.003)	5.060	60.119	
0	25	*	23		0	25	*	24			233 419.817(0.018)	12.414	128.104	
0	29	*	23	+	0	29	*	24	−		233 456.867(0.017)	35.278	203.577	
1	11	−8	4		1	10	−7	4			233 505.532(0.004)	13.542	108.377	
1	30	*	24	+	1	30	*	25	−		233 560.448(0.030)	34.433	290.729	
0	24	*	23		0	24	*	24			233 560.841(0.019)	6.313	110.934	
1	20	13	7		1	19	14	5			233 579.767(0.029)	1.062	200.193	
0	11	8	3	+	0	10	7	4	+		233 586.421(0.002)	8.286	35.162	
0	9	7	3	+	0	8	4	4	+		233 728.740(0.002)	0.855	21.919	
0	24	13	12	+	0	23	14	9	+		233 771.777(0.011)	0.487	173.840	
0	10	6	4	+	0	9	5	5	+		233 801.710(0.002)	2.336	26.762	
0	28	*	23	−	0	28	*	24	+		233 958.474(0.017)	29.788	183.639	
1	16	12	4	+	1	15	13	3	+		234 055.196(0.016)	1.251	157.101	
0	14	−10	4		0	13	−10	3		234 078.760(0.100)	234 078.621(0.004)	5.119	60.503	6
1	10	6	4	+	1	9	5	5	+		234 091.631(0.004)	2.225	104.564	
1	25	−13	13		1	24	14	10			234 107.903(0.065)	0.731	261.767	
1	14	7	7		1	13	7	6			234 139.381(0.007)	6.302	129.704	
1	14	12	3	−	1	13	12	2	−		234 154.445(0.008)	2.499	139.050	
1	19	*	16	−	1	18	*	15	−		234 184.410(0.023)	89.203	157.150	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	19	12	8	−	1	18	13	5	−		234 202.930(0.023)	0.482	186.700	
0	11	9	2	−	0	10	8	3	−	234 234.810(0.100)	234 234.768(0.002)	13.701	36.761	6
1	21	11	10		1	20	13	7			234 303.789(0.035)	0.229	207.984	
1	28	*	25	−	1	28	*	26	+		234 352.540(0.032)	17.660	243.499	
0	27	*	23	+	0	27	*	24	−		234 436.676(0.017)	24.170	164.371	
0	19	13	7	+	0	18	14	4	+		234 497.079(0.007)	1.725	113.903	
0	10	−6	4		0	9	5	5			234 713.558(0.002)	2.200	27.026	
1	18	14	5	−	1	17	15	2	−		234 729.894(0.020)	0.856	179.979	
0	15	−7	8		0	14	8	7			234 785.281(0.004)	13.333	64.026	
1	30	*	23		1	30	*	24			234 808.401(0.022)	41.004	299.104	
1	22	13	9		1	21	−15	7			234 838.522(0.041)	0.261	224.751	
0	14	10	4	+	0	13	10	3	+		234 867.250(0.004)	5.370	60.248	
0	26	*	23	−	0	26	*	24	+		234 892.843(0.017)	18.404	145.777	
1	14	12	2	+	1	13	12	1	+		234 972.960(0.008)	2.515	139.053	
0	15	7	8	−	0	14	8	7	−		235 019.372(0.004)	12.927	63.862	
0	17	−11	6		0	16	−12	4			235 123.950(0.007)	1.306	89.618	
0	15	8	8		0	14	8	7			235 174.143(0.004)	7.173	64.026	
1	11	8	3		1	10	7	3			235 239.761(0.003)	8.120	109.631	
1	12	7	5		1	11	−7	5			235 240.485(0.009)	0.260	114.519	
1	24	*	22		1	24	*	23			235 279.664(0.021)	12.849	192.073	
0	25	*	23	+	0	25	*	24	−		235 328.017(0.018)	12.471	127.855	
1	24	15	9		1	24	−13	12			235 344.537(0.015)	0.239	256.400	
0	10	6	4	+	0	9	4	5	+		235 349.829(0.002)	0.603	26.711	
1	20	*	18	+	1	19	*	17	+		235 501.715(0.028)	100.887	159.985	
1	10	7	4	+	1	9	4	5	+		235 517.399(0.003)	2.155	104.563	
0	16	−6	10		0	15	7	9		235 526.810(0.100)	235 526.776(0.005)	18.633	69.172	6
0	16	7	10		0	15	7	9		235 531.410(0.100)	235 531.354(0.005)	8.052	69.172	6
0	16	−6	10		0	15	−6	9		235 551.970(0.100)	235 551.862(0.005)	8.052	69.172	6
0	16	7	10		0	15	−6	9		235 556.530(0.100)	235 556.439(0.005)	18.634	69.172	6
0	15	8	8	−	0	14	8	7	−	235 615.310(0.100)	235 615.261(0.004)	7.374	63.862	6
1	8	2	6		1	7	−1	7			235 644.237(0.003)	0.203	84.166	
1	21	14	7		1	20	15	5			235 645.670(0.034)	1.420	214.741	
1	8	−3	6		1	7	0	7			235 705.916(0.003)	0.203	84.166	
0	24	*	23	−	0	24	*	24	+		235 742.967(0.020)	6.346	110.609	
0	21	12	10		0	20	−13	7			235 784.929(0.008)	0.785	133.721	
0	10	−6	4		0	9	−4	5			235 830.973(0.002)	0.558	26.989	
1	14	10	5	−	1	13	10	4	−		235 901.043(0.008)	1.151	136.066	
0	19	13	7		0	19	10	10			235 902.470(0.004)	0.204	113.793	
0	17	11	6	−	0	16	12	5	−	235 924.250(0.100)	235 924.180(0.007)	2.285	89.402	6
0	17	−5	12		0	16	6	11		235 967.520(0.100)	235 967.351(0.005)	23.599	73.619	6
0	17	6	12		0	16	6	11		235 967.520(0.100)	235 967.375(0.005)	8.924	73.619	6
0	17	−5	12		0	16	−5	11		235 967.520(0.100)	235 967.518(0.005)	8.924	73.619	6
0	17	6	12		0	16	−5	11		235 967.520(0.100)	235 967.543(0.005)	23.599	73.619	6
0	16	6	10	+	0	15	7	9	+	236 006.990(0.050)	236 006.981(0.005)	18.204	69.014	8
0	16	7	10	+	0	15	7	9	+	236 015.420(0.050)	236 015.436(0.005)	8.372	69.014	8
0	12	9	4		0	11	−8	3			236 035.392(0.005)	2.185	43.243	
0	16	6	10	+	0	15	6	9	+	236 049.930(0.100)	236 049.803(0.005)	8.372	69.013	6
0	16	7	10	+	0	15	6	9	+	236 058.320(0.100)	236 058.258(0.005)	18.205	69.013	6
0	19	12	8		0	18	−13	5			236 137.680(0.008)	1.005	111.410	
1	10	10	0		1	9	9	0			236 163.764(0.004)	19.800	110.924	
0	16	−9	7		0	15	−10	5			236 217.937(0.005)	0.364	76.898	
1	20	9	11		1	19	10	9			236 304.039(0.029)	0.334	190.671	
1	17	12	6	−	1	16	13	3	−		236 313.774(0.016)	1.373	166.171	
1	22	11	11		1	21	13	8			236 323.375(0.041)	0.200	219.917	
0	15	−7	8		0	14	−7	7			236 331.425(0.004)	7.196	63.974	
0	17	5	12	−	0	16	6	11	−		236 367.248(0.005)	22.952	73.460	
0	17	6	12	−	0	16	6	11	−		236 367.307(0.005)	9.493	73.460	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	$\mu^2 S$ (D^2)	E_1 (cm^{-1})	Ref.
0	17	5	12	−	0	16	5	11	−		236 367.605(0.005)	9.493	73.460	
0	17	6	12	−	0	16	5	11	−		236 367.664(0.005)	22.952	73.460	
1	23	15	8	−	1	23	13	11	+		236 497.118(0.009)	0.183	243.398	
1	23	14	9		1	23	−12	12			236 527.211(0.008)	0.185	240.078	
0	9	−4	5		0	8	3	6			236 547.540(0.002)	0.880	19.099	
0	18	*	14		0	17	*	13		236 560.320(0.100)	236 560.217(0.006)	76.697	77.388	6
0	9	−4	5		0	8	−2	6			236 561.269(0.002)	0.202	19.098	
1	29	*	23		1	29	*	24			236 582.400(0.022)	35.787	278.363	
1	23	15	8	−	1	23	12	11	+		236 586.995(0.009)	0.181	243.395	
1	20	−14	7		1	19	−15	5			236 680.706(0.030)	2.632	202.509	
0	15	8	8		0	14	−7	7			236 720.287(0.004)	13.427	63.974	
1	15	8	7		1	14	−9	6			236 832.377(0.012)	3.402	139.707	
0	18	*	14	+	0	17	*	13	+	236 891.510(0.100)	236 891.518(0.006)	76.575	77.218	6
1	14	8	6		1	13	8	5			236 936.189(0.008)	7.305	131.209	
1	17	13	4	−	1	16	14	3	−		236 947.295(0.017)	0.986	168.137	
1	21	*	20	−	1	20	*	19	−		236 998.189(0.033)	112.659	162.349	
0	19	*	16		0	18	*	15		237 214.260(0.100)	237 214.110(0.006)	88.441	80.497	6
1	15	7	8		1	14	−8	7			237 219.802(0.010)	9.730	137.721	
0	11	−8	3		0	10	7	4			237 235.606(0.003)	3.601	35.330	
0	15	7	8	−	0	14	7	7	−	237 237.120(0.100)	237 237.024(0.004)	7.409	63.788	6
1	23	*	22		1	23	*	23			237 257.299(0.024)	6.562	175.105	
0	9	4	5	+	0	8	3	6	+		237 280.249(0.002)	0.881	18.796	
0	9	4	5	+	0	8	2	6	+		237 301.542(0.002)	0.209	18.795	
0	9	−7	2		0	8	−4	4			237 316.811(0.003)	0.254	22.223	
1	13	−9	5		1	12	8	4			237 335.404(0.013)	0.647	124.007	
0	21	11	10	−	0	20	13	7	−		237 337.993(0.008)	0.211	133.584	
0	20	14	7		0	20	11	10			237 386.866(0.006)	0.232	127.363	
0	9	8	2	−	0	8	6	3	−		237 425.219(0.002)	0.277	23.411	
0	19	*	16	−	0	18	*	15	−		237 481.655(0.006)	88.348	80.305	
1	11	8	3	+	1	10	7	4	+		237 552.859(0.005)	4.191	112.419	
0	9	5	5		0	8	3	6			237 664.955(0.002)	0.201	19.099	
0	9	5	5		0	8	−2	6			237 678.684(0.002)	0.874	19.098	
1	17	9	8		1	16	10	6			237 750.695(0.017)	2.466	160.004	
0	15	10	6		0	14	−10	4			237 769.782(0.005)	0.428	68.311	
0	15	8	8	−	0	14	7	7	−		237 832.913(0.004)	13.053	63.788	
0	20	*	18		0	19	*	17			237 895.997(0.007)	100.310	82.953	
1	23	14	9		1	23	11	12			237 904.407(0.008)	0.705	240.032	
1	20	−12	9		1	19	13	6			237 935.798(0.029)	1.937	196.851	
1	14	11	4	+	1	13	11	3	+		237 983.837(0.008)	2.603	137.399	
0	20	*	18	+	0	19	*	17	+	238 096.640(0.050)	238 096.639(0.007)	100.243	82.729	8
1	29	*	25	+	1	29	*	26	−		238 193.619(0.033)	23.403	262.691	
1	28	*	27	−	1	28	*	28	+		238 298.119(0.072)	5.902	227.594	
1	24	15	9		1	24	12	12			238 319.099(0.009)	0.788	256.301	
1	15	13	2		1	14	13	1			238 512.487(0.010)	1.490	151.080	
1	28	*	26	+	1	28	*	27	−		238 518.364(0.041)	11.839	235.542	
0	11	10	2		0	10	9	2			238 547.662(0.002)	17.973	38.491	
0	20	−11	9		0	19	−13	6			238 570.130(0.008)	0.232	122.147	
0	21	*	20		0	20	*	19			238 594.408(0.008)	112.308	84.760	
0	20	12	8	+	0	20	9	11	−		238 643.336(0.004)	0.232	124.042	
1	15	8	7	+	1	14	9	6	+		238 653.227(0.010)	17.088	142.305	
1	28	*	23		1	28	*	24			238 666.855(0.022)	30.336	258.230	
0	21	*	20	−	0	20	*	19	−	238 718.930(0.100)	238 718.856(0.008)	112.268	84.491	6
1	17	5	12		1	16	−6	11			238 781.563(0.016)	23.241	147.498	
1	17	−6	12		1	16	−6	11			238 782.368(0.016)	8.404	147.498	
1	17	5	12		1	16	5	11			238 785.186(0.016)	8.404	147.498	
1	17	−6	12		1	16	5	11			238 785.992(0.016)	23.242	147.498	
0	15	8	7	+	0	14	9	6	+	238 812.670(0.100)	238 812.580(0.004)	8.629	65.928	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	9	5	5	+	0	8	3	6	+		238 828.368(0.002)	0.208	18.796	
1	18	4	14		1	17	−5	13			238 847.091(0.020)	28.422	151.222	
1	18	−5	14		1	17	−5	13			238 847.099(0.020)	9.268	151.222	
1	18	4	14		1	17	4	13			238 847.127(0.020)	9.268	151.222	
1	18	−5	14		1	17	4	13			238 847.135(0.020)	28.422	151.222	
0	9	5	5	+	0	8	2	6	+		238 849.661(0.002)	0.871	18.795	
0	19	12	8	−	0	18	13	5	−		238 863.612(0.007)	1.941	111.284	
1	15	9	7	+	1	14	9	6	+		238 880.807(0.010)	1.697	142.305	
0	11	−10	1		0	10	−9	1		238 899.020(0.100)	238 898.958(0.002)	17.962	38.888	6
1	22	*	22	+	1	21	*	21	+		238 928.348(0.040)	124.424	164.340	
1	9	4	5		1	8	−3	6			238 961.660(0.004)	1.071	92.028	
1	16	6	10		1	15	−7	9			239 040.071(0.013)	17.273	143.010	
1	19	*	16		1	18	*	15			239 058.470(0.024)	87.431	154.209	
1	19	12	7		1	18	13	5			239 065.195(0.026)	0.206	186.451	
0	12	−8	4		0	11	−7	4			239 078.542(0.002)	0.911	42.139	
1	16	−7	10		1	15	−7	9			239 104.306(0.013)	8.124	143.010	
0	21	12	10	−	0	20	13	7	−		239 171.937(0.008)	0.958	133.584	
1	15	−15	1		1	14	14	0			239 278.139(0.014)	1.301	157.007	
1	16	6	10		1	15	6	9			239 285.942(0.013)	8.102	143.002	
1	20	*	18		1	19	*	17			239 295.048(0.029)	99.553	156.467	
0	22	*	22		0	21	*	21			239 305.837(0.010)	124.428	85.922	a
0	22	*	22	+	0	21	*	21	+		239 338.752(0.010)	124.419	85.593	a
1	16	−7	10		1	15	6	9			239 350.176(0.013)	17.312	143.002	
1	10	6	4		1	9	−5	5			239 400.339(0.006)	2.135	100.082	
1	18	14	4	+	1	17	15	3	+		239 403.751(0.020)	0.845	179.978	
0	20	11	9	−	0	19	13	6	−		239 411.702(0.008)	0.296	122.029	
1	15	8	7	+	1	14	8	6	+		239 417.515(0.010)	1.696	142.279	
1	13	10	4	−	1	12	9	3	−		239 421.835(0.009)	11.857	128.080	
1	15	−14	2		1	14	−14	1			239 450.053(0.012)	2.614	153.907	
1	21	*	20		1	20	*	19			239 488.298(0.034)	111.791	157.989	
1	22	*	22		1	21	*	21			239 592.574(0.041)	124.167	158.766	
0	18	12	6	+	0	17	13	5	+		239 597.768(0.007)	1.980	101.272	
1	15	9	7	+	1	14	8	6	+		239 645.095(0.010)	17.234	142.279	
0	19	13	7	+	0	19	10	10	−		239 726.582(0.003)	0.219	113.729	
1	15	−8	8		1	14	−8	7			239 748.067(0.010)	7.572	137.721	
0	26	14	13		0	25	−15	10			239 826.237(0.016)	0.410	204.342	
1	15	−13	3		1	14	−13	2			239 880.544(0.011)	3.919	150.921	
0	18	−12	6		0	17	−13	4			239 881.283(0.008)	1.375	101.418	
1	16	7	9	−	1	15	8	8	−		240 177.191(0.012)	22.989	148.004	
1	16	8	9	−	1	15	8	8	−		240 183.198(0.012)	1.664	148.004	
1	16	7	9	−	1	15	7	8	−		240 198.774(0.012)	1.664	148.003	
1	16	8	9	−	1	15	7	8	−		240 204.781(0.012)	22.993	148.003	
0	11	10	2	−	0	10	9	1	−		240 264.143(0.002)	18.006	38.593	
1	14	−8	7		1	13	7	6			240 352.057(0.009)	8.885	129.704	
0	11	10	1	+	0	10	9	2	+		240 355.217(0.002)	18.002	38.591	
0	15	−8	7		0	14	9	6			240 384.684(0.004)	9.106	66.056	
1	15	−12	4		1	14	−12	3			240 429.335(0.010)	2.876	147.635	
1	22	−12	11		1	21	13	8			240 477.455(0.041)	1.409	219.917	
1	9	7	2		1	8	5	3			240 499.015(0.006)	0.412	96.216	
0	16	−10	6		0	15	11	5			240 703.101(0.007)	1.855	78.194	
1	15	12	3		1	14	12	2			240 754.633(0.011)	5.185	148.070	
0	15	14	2	−	0	14	14	1	−		240 840.789(0.005)	1.507	78.194	
0	15	14	1	+	0	14	14	0	+		240 841.148(0.005)	1.507	78.194	
0	24	15	9	−	0	24	12	12	+		240 842.436(0.005)	0.573	181.627	
1	30	*	25	−	1	30	*	26	+		240 933.203(0.033)	28.958	282.692	
1	27	*	23		1	27	*	24			240 979.622(0.022)	24.723	238.702	
0	20	15	6	+	0	20	12	9	−		241 015.937(0.005)	0.253	130.207	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	15	14	2		0	14	14	1			241 125.695(0.005)	1.510	77.840	
0	10	8	2	+	0	9	6	3	+		241 181.223(0.003)	0.541	28.757	
0	14	−8	6		0	13	−8	5			241 190.213(0.003)	6.974	57.673	
1	19	12	7		1	18	−13	6			241 206.956(0.025)	2.690	186.380	
0	15	−14	1		0	14	−14	0			241 245.519(0.005)	1.500	78.197	
1	14	9	5	−	1	13	9	4	−		241 256.968(0.008)	1.074	135.748	
0	19	13	7		0	18	14	5			241 259.031(0.007)	1.421	113.614	
1	17	6	11	+	1	16	7	10	+		241 361.904(0.015)	27.536	153.105	
1	17	7	11	+	1	16	7	10	+		241 362.005(0.015)	2.754	153.105	
1	17	6	11	+	1	16	6	10	+		241 362.352(0.015)	2.754	153.105	
1	17	7	11	+	1	16	6	10	+		241 362.453(0.015)	27.536	153.105	
1	18	12	7	−	1	17	13	4	−		241 420.578(0.019)	0.968	176.041	
1	9	−5	5		1	8	2	6			241 500.886(0.003)	1.057	92.026	
0	21	15	7		0	21	12	10			241 526.515(0.007)	0.239	141.586	
1	27	−14	14		1	26	15	11			241 618.686(0.085)	0.670	293.375	
0	10	−8	2		0	9	−6	3			241 676.004(0.003)	0.428	29.065	
1	11	9	2		1	10	8	2			241 688.900(0.003)	11.673	111.565	
1	20	−12	9		1	19	−13	7			241 791.054(0.029)	0.620	196.723	
0	20	−12	8		0	20	−9	11			241 812.685(0.004)	0.212	124.089	
1	12	6	6		1	11	−6	6			241 968.588(0.006)	0.280	112.869	
0	14	8	6	+	0	13	8	5	+		242 054.558(0.003)	7.234	57.417	
1	21	−13	9		1	20	14	6			242 284.356(0.036)	0.743	211.067	
1	15	11	4		1	14	11	3			242 347.468(0.011)	6.403	145.391	
0	30	*	24		0	30	*	25			242 494.732(0.021)	35.287	216.069	
0	15	13	3	+	0	14	13	2	+		242 497.686(0.004)	2.911	75.191	
0	15	13	2	−	0	14	13	1	−		242 509.623(0.004)	2.911	75.191	
1	18	*	13	−	1	17	*	12	−		242 528.257(0.019)	71.902	157.620	
1	8	−8	1		1	7	6	1			242 592.601(0.006)	0.181	93.389	
0	20	12	9		0	19	−13	6			242 737.200(0.008)	1.191	122.147	
0	29	*	24		0	29	*	25			242 763.698(0.021)	29.772	195.492	
1	12	10	2	+	1	11	9	3	+		242 772.507(0.004)	13.222	120.736	
1	11	−8	4		1	10	6	4			242 804.632(0.011)	0.230	108.067	
0	20	14	7	−	0	20	11	10	+		242 862.293(0.004)	0.270	127.320	
0	15	−13	2		0	14	−13	1			242 979.086(0.004)	2.895	75.270	
0	15	13	3		0	14	13	2			242 981.228(0.004)	2.911	74.883	
0	28	*	24		0	28	*	25			242 994.259(0.021)	24.136	175.594	
0	14	−9	5		0	13	−9	4			243 070.403(0.004)	6.401	58.825	
0	27	*	24		0	27	*	25			243 189.505(0.021)	18.361	156.375	
0	14	9	5	−	0	13	9	4	−		243 283.508(0.004)	6.706	58.579	
1	15	−11	5		1	14	−11	4			243 284.188(0.010)	4.137	144.548	
0	26	*	24		0	26	*	25			243 352.619(0.022)	12.429	137.838	
1	26	*	23		1	26	*	24			243 353.726(0.023)	18.907	219.783	
0	30	*	24	+	0	30	*	25	−		243 429.761(0.021)	35.378	216.066	
1	15	7	8		1	14	7	7			243 432.478(0.010)	7.189	137.514	
0	25	*	24		0	25	*	25			243 486.895(0.024)	6.317	119.982	
1	12	7	5		1	11	6	5			243 642.885(0.005)	1.262	114.238	
1	19	*	15	+	1	18	*	14	+		243 692.308(0.023)	83.358	161.565	
1	11	−9	3		1	10	−8	3			243 787.385(0.004)	18.536	110.180	
1	10	5	5	−	1	9	4	6	−		243 820.241(0.003)	1.407	102.947	
0	19	13	6	−	0	18	14	5	−		243 873.975(0.007)	1.809	113.894	
1	29	*	26	−	1	29	*	27	+		243 886.855(0.039)	17.684	254.556	
0	29	*	24	−	0	29	*	25	+		243 933.721(0.021)	29.863	195.440	
0	15	9	7	+	0	14	9	6	+		243 935.574(0.004)	7.024	65.928	
1	10	6	5	−	1	9	3	6	−		243 983.788(0.003)	1.403	102.947	
1	20	−13	8		1	19	−14	6			244 034.528(0.029)	2.301	199.517	
1	19	9	10		1	18	10	8			244 064.373(0.024)	0.686	179.946	
0	15	9	7		0	14	9	6			244 099.849(0.004)	6.856	66.056	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	26	14	13	−	0	25	15	10	−		244 139.618(0.016)	0.463	204.251	
1	21	15	6		1	21	12	9			244 206.258(0.010)	0.231	217.968	
0	20	14	7	−	0	19	15	4	−		244 254.418(0.008)	1.671	127.273	
1	14	11	3	−	1	13	11	2	−		244 275.849(0.009)	3.118	137.468	
1	12	11	2	+	1	11	10	1	+		244 310.557(0.005)	20.732	121.953	
0	28	*	24	+	0	28	*	25	−		244 417.754(0.021)	24.222	175.486	
0	15	12	4	−	0	14	12	3	−		244 656.909(0.004)	4.212	72.467	
1	18	11	7		1	17	−12	6			244 674.337(0.022)	0.725	173.520	
1	16	9	7		1	15	−10	6			244 684.160(0.015)	1.985	150.146	
0	12	9	4	+	0	11	8	3	+		244 747.130(0.003)	11.531	42.954	
0	24	−15	9		0	24	−12	12			244 802.822(0.005)	0.513	181.606	
0	12	8	5		0	11	7	5			244 836.105(0.002)	0.519	41.320	
0	15	12	3	+	0	14	12	2	+		244 873.424(0.004)	4.212	72.468	
0	27	*	24	−	0	27	*	25	+		244 882.983(0.022)	18.436	156.203	
1	20	*	17	−	1	19	*	16	−		244 889.649(0.027)	94.953	164.961	
1	15	14	2	−	1	14	14	1	−		244 936.601(0.010)	1.435	151.148	
1	15	14	1	+	1	14	14	0	+		244 946.644(0.010)	1.435	151.148	
0	19	−13	6		0	18	−14	4			244 987.440(0.008)	1.485	113.975	
0	20	12	9	−	0	19	13	6	−		245 179.584(0.007)	1.598	122.029	
1	21	−12	10		1	20	13	7			245 192.094(0.035)	1.988	207.984	
1	12	11	1	−	1	11	10	2	−		245 237.099(0.005)	20.840	121.931	
0	15	−12	3		0	14	−12	2			245 298.491(0.004)	4.187	72.621	
0	26	*	24	+	0	26	*	25	−		245 330.186(0.023)	12.486	137.593	
1	15	10	5		1	14	10	4			245 410.945(0.010)	7.603	142.933	
1	14	10	5	−	1	13	9	4	−		245 437.384(0.010)	12.493	135.748	
0	11	−11	0		0	10	−10	0			245 437.801(0.002)	22.017	40.940	
0	11	11	1		0	10	10	1			245 444.937(0.002)	22.035	40.528	
0	15	12	4		0	14	12	3			245 519.699(0.004)	4.201	72.221	
1	18	10	8		1	18	7	11			245 553.470(0.005)	0.187	171.755	
0	14	−10	4		0	13	10	4			245 572.272(0.006)	0.225	60.119	
1	25	*	23		1	25	*	24			245 648.634(0.026)	12.862	201.481	
0	16	−7	9		0	15	8	8			245 758.734(0.005)	15.820	71.870	
0	25	*	24	−	0	25	*	25	+		245 759.849(0.024)	6.349	119.658	
0	16	8	9		0	15	8	8			245 844.528(0.005)	7.776	71.870	
1	15	−8	8		1	14	7	7			245 960.743(0.010)	11.143	137.514	
1	10	7	3		1	9	−6	4			246 059.730(0.012)	0.604	101.423	
0	17	−6	11		0	16	7	10			246 093.205(0.005)	20.919	77.029	
0	17	7	11		0	16	7	10			246 093.982(0.005)	8.651	77.029	
0	17	−6	11		0	16	−6	10			246 097.783(0.005)	8.651	77.029	
0	17	7	11		0	16	−6	10			246 098.560(0.005)	20.919	77.029	
0	16	−7	9		0	15	−7	8			246 147.596(0.005)	7.781	71.857	
1	21	*	19	+	1	20	*	18	+		246 179.238(0.033)	106.666	167.841	
0	16	7	9	−	0	15	8	8	−		246 229.589(0.005)	15.417	71.722	
0	16	8	9		0	15	−7	8			246 233.390(0.005)	15.838	71.857	
1	22	13	9		1	22	10	12			246 259.273(0.006)	0.480	224.370	
1	24	14	11	−	1	23	15	8	−		246 331.478(0.053)	0.280	251.286	
0	16	8	9	−	0	15	8	8	−		246 370.309(0.005)	8.024	71.722	
1	30	*	24		1	30	*	25			246 403.690(0.028)	35.837	290.885	
1	15	9	6	−	1	14	10	5	−		246 514.431(0.011)	13.616	143.935	
0	17	−11	6		0	16	12	5			246 552.890(0.008)	1.113	89.237	
0	17	6	11	+	0	16	7	10	+		246 556.628(0.005)	20.412	76.887	
0	17	7	11	+	0	16	7	10	+		246 558.197(0.005)	9.059	76.887	
0	17	6	11	+	0	16	6	10	+		246 565.083(0.005)	9.059	76.887	
0	17	7	11	+	0	16	6	10	+		246 566.652(0.005)	20.412	76.887	
0	18	*	13		0	17	6	12			246 584.840(0.006)	35.392	81.490	
0	18	*	13		0	17	−5	12			246 584.865(0.006)	35.392	81.490	
0	13	9	5		0	12	−8	4			246 730.464(0.004)	6.941	50.113	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	16	7	9	−	0	15	7	8	−		246 825.478(0.005)	8.031	71.702	
1	18	9	9		1	17	10	7			246 906.143(0.020)	1.467	169.654	
0	16	8	9	−	0	15	7	8	−		246 966.198(0.005)	15.442	71.702	
0	18	5	13	−	0	17	6	12	−		246 972.008(0.006)	25.106	81.345	
0	18	6	13	−	0	17	6	12	−		246 972.017(0.006)	10.211	81.345	
0	18	5	13	−	0	17	5	12	−		246 972.066(0.006)	10.211	81.345	
0	18	6	13	−	0	17	5	12	−		246 972.076(0.006)	25.106	81.345	
1	17	10	7		1	16	−11	6			246 972.344(0.018)	1.129	161.416	
1	29	*	28	−	1	29	*	29	+		246 974.968(0.086)	5.897	238.052	
0	15	11	5	+	0	14	11	4	+		247 045.397(0.004)	5.400	70.040	
0	11	11	1	+	0	10	10	0	+		247 054.986(0.002)	21.977	40.702	
0	11	11	0	−	0	10	10	1	−		247 056.770(0.002)	21.977	40.702	
1	15	10	5	+	1	14	11	4	+		247 136.421(0.013)	7.140	145.337	
0	19	*	15		0	18	*	14			247 195.399(0.006)	82.449	85.279	
0	12	−9	3		0	11	−8	3			247 201.067(0.003)	9.090	43.243	
1	11	10	1		1	10	9	1			247 312.684(0.003)	15.004	113.770	
0	19	12	8		0	18	13	6			247 321.712(0.008)	0.850	111.037	
0	12	9	4		0	11	8	4			247 461.709(0.002)	8.652	42.862	
0	11	7	4	−	0	10	6	5	−		247 514.636(0.002)	3.517	33.599	
0	19	*	15	+	0	18	*	14	+		247 519.411(0.006)	82.331	85.120	
1	22	*	21	−	1	21	*	20	−		247 655.330(0.039)	118.455	170.255	
1	12	−7	6		1	11	−6	6			247 700.737(0.004)	1.286	112.869	
0	15	10	6	−	0	14	10	5	−		247 755.395(0.004)	6.393	67.902	
1	24	*	23		1	24	*	24			247 779.922(0.029)	6.566	183.808	
1	29	*	27	+	1	29	*	28	−		247 815.109(0.050)	11.845	246.290	
0	20	*	17		0	19	*	16			247 855.191(0.007)	94.213	88.410	
1	30	*	26	+	1	30	*	27	−		247 918.398(0.041)	23.448	274.422	
1	15	−10	6		1	14	−10	5			247 919.688(0.010)	5.150	141.876	
0	10	8	3		0	9	6	4			247 971.321(0.003)	0.336	28.496	
1	18	−12	7		1	18	−9	10			248 017.176(0.006)	0.179	175.128	
0	20	*	17	−	0	19	*	16	−		248 118.775(0.007)	94.121	88.227	
1	15	10	6	−	1	14	10	5	−		248 203.205(0.010)	1.310	143.935	
0	21	*	19		0	20	*	18			248 539.570(0.008)	106.099	90.888	
1	29	*	24		1	29	*	25			248 551.682(0.027)	30.374	270.072	
0	21	15	7	+	0	21	12	10	−		248 572.102(0.005)	0.307	141.562	
0	9	−3	6		0	8	2	7			248 579.657(0.002)	0.444	16.959	
1	12	−8	5		1	11	−7	5			248 646.155(0.005)	9.034	114.519	
0	9	4	6		0	8	−1	7			248 646.615(0.002)	0.444	16.959	
0	21	*	19	+	0	20	*	18	+		248 738.377(0.007)	106.032	90.671	
0	15	−11	4		0	14	−11	3			248 927.527(0.004)	5.310	70.276	
0	10	7	4		0	9	5	5			248 932.698(0.002)	0.411	27.026	
0	11	−7	4		0	10	6	5			248 933.607(0.002)	3.162	33.835	
0	15	11	5		0	14	11	4			249 145.432(0.004)	5.291	69.883	
1	16	7	9		1	15	−8	8			249 150.764(0.013)	13.345	145.719	
1	14	10	4	+	1	13	10	3	+		249 186.392(0.008)	2.626	136.492	
0	15	11	4	−	0	14	11	3	−		249 237.237(0.004)	5.413	70.059	
0	22	*	21		0	21	*	20			249 239.702(0.009)	118.107	92.719	
1	18	5	13		1	17	−6	12			249 245.546(0.020)	25.676	155.463	
1	18	−6	13		1	17	−6	12			249 245.721(0.020)	8.901	155.463	
1	18	5	13		1	17	5	12			249 246.351(0.020)	8.901	155.463	
1	18	−6	13		1	17	5	12			249 246.526(0.020)	25.676	155.463	
1	15	13	3	+	1	14	13	2	+		249 318.288(0.010)	2.628	148.785	
1	11	9	3	+	1	10	7	4	+		249 346.122(0.005)	0.264	112.419	
0	20	14	6	+	0	19	15	5	+		249 358.196(0.008)	1.700	127.270	
0	22	*	21	−	0	21	*	20	−		249 363.452(0.009)	118.067	92.454	
1	15	−9	7		1	14	−9	6			249 366.450(0.010)	6.291	139.707	
1	17	6	11		1	16	−7	10			249 386.035(0.016)	19.810	150.986	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	19	*	15		1	18	−5	14			249 396.495(0.024)	40.597	159.189	
1	19	*	15		1	18	4	14			249 396.502(0.024)	40.597	159.189	
1	17	−7	11		1	16	−7	10			249 401.724(0.016)	8.630	150.986	
1	17	6	11		1	16	6	10			249 450.269(0.016)	8.625	150.984	
1	17	−7	11		1	16	6	10			249 465.958(0.016)	19.819	150.984	
1	23	*	23	+	1	22	*	22	+		249 587.288(0.047)	130.220	172.309	
1	18	13	6	+	1	17	14	3	+		249 635.612(0.020)	1.490	177.664	
1	15	13	2	−	1	14	13	1	−		249 644.202(0.010)	2.632	148.786	
1	20	*	17		1	19	*	16			249 654.099(0.029)	93.235	162.184	
0	20	14	7		0	19	15	5			249 789.411(0.008)	1.539	126.950	
0	9	3	6	−	0	8	2	7	−		249 817.108(0.002)	0.443	16.638	
1	24	12	12		1	23	14	9			249 832.196(0.056)	0.190	247.968	
1	16	8	8	+	1	15	9	7	+		249 834.444(0.012)	20.150	150.273	
1	16	9	8	+	1	15	9	7	+		249 896.688(0.012)	1.572	150.273	
1	21	*	19		1	20	*	18			249 918.483(0.034)	105.356	164.449	
0	9	4	6	−	0	8	1	7	−		249 918.693(0.002)	0.443	16.638	
0	23	*	23		0	22	*	22			249 953.021(0.011)	130.231	93.904	
0	15	10	6		0	14	10	5			249 963.221(0.004)	5.883	67.904	
1	16	−8	9		1	15	−8	8			249 974.986(0.013)	8.171	145.719	
0	23	*	23	+	0	22	*	22	+		249 985.323(0.011)	130.222	93.577	
1	21	13	9	+	1	20	14	6	+		250 046.344(0.033)	0.446	210.980	
0	10	7	4		0	9	−4	5			250 050.113(0.003)	1.441	26.989	
1	16	8	8	+	1	15	8	7	+		250 062.024(0.012)	1.571	150.265	
0	20	13	8		0	19	−14	5			250 078.605(0.009)	0.863	124.474	
1	16	9	8	+	1	15	8	7	+		250 124.267(0.012)	20.190	150.265	
1	22	*	21		1	21	*	20			250 127.492(0.041)	117.596	165.978	
1	23	*	23		1	22	*	22			250 237.885(0.048)	129.972	166.758	
1	12	8	4		1	11	7	4			250 283.714(0.004)	5.790	115.658	
0	23	13	11		0	22	−14	8			250 384.520(0.010)	0.697	160.510	
0	15	−8	7		0	14	−8	6			250 513.886(0.004)	7.188	65.718	
1	15	9	6	−	1	14	9	5	−		250 694.848(0.010)	1.315	143.795	
1	11	9	3	+	1	10	6	4	+		250 719.781(0.007)	2.721	112.373	
1	23	10	13		1	22	11	11			250 922.171(0.048)	0.171	227.800	
1	28	*	24		1	28	*	25			250 993.317(0.028)	24.751	249.858	
1	17	7	10	−	1	16	8	9	−		251 047.607(0.015)	24.865	156.016	
1	17	8	10	−	1	16	8	9	−		251 049.215(0.015)	2.591	156.016	
1	17	7	10	−	1	16	7	9	−		251 053.614(0.015)	2.591	156.016	
1	17	8	10	−	1	16	7	9	−		251 055.222(0.015)	24.866	156.016	
0	18	−12	6		0	17	13	5			251 126.993(0.009)	0.664	101.043	
1	10	−7	4		1	9	4	5			251 177.141(0.007)	1.222	99.999	
0	20	−14	6		0	19	−15	4			251 292.151(0.008)	1.573	127.287	
0	14	9	6		0	13	−8	5			251 319.415(0.004)	8.698	57.673	
0	11	−8	3		0	10	−6	4			251 454.745(0.003)	0.793	34.855	
0	11	7	4	−	0	10	5	5	−		251 516.680(0.002)	0.877	33.466	
0	11	8	3	+	0	10	6	4	+		251 615.683(0.002)	0.930	34.561	
1	16	7	9		1	15	7	8			251 679.029(0.013)	8.010	145.634	
0	10	7	4	+	0	9	5	5	+		251 830.971(0.002)	0.434	26.762	
0	11	−7	4		0	10	−5	5			251 907.439(0.002)	0.804	33.736	
0	15	8	7	+	0	14	8	6	+		251 908.326(0.004)	7.449	65.491	
1	15	9	6		1	14	9	5			252 096.097(0.010)	8.339	140.793	
0	13	9	5	+	0	12	8	4	+		252 121.717(0.003)	9.611	49.847	
1	18	10	8		1	17	11	6			252 146.186(0.020)	2.377	171.536	
1	10	4	6	+	1	9	3	7	+		252 159.316(0.004)	0.874	101.046	
1	10	7	3		1	9	5	4			252 167.657(0.008)	0.333	101.219	
1	10	5	6	+	1	9	2	7	+		252 170.340(0.004)	0.874	101.046	
1	18	6	12	+	1	17	7	11	+		252 180.432(0.019)	30.303	161.156	
1	18	7	12	+	1	17	7	11	+		252 180.455(0.019)	2.799	161.156	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	18	6	12	+	1	17	6	11	+		252 180.534(0.019)	2.799	161.156	
1	18	7	12	+	1	17	6	11	+		252 180.557(0.019)	30.303	161.156	
1	11	−11	1		1	10	−10	1			252 270.628(0.004)	18.409	116.195	
1	15	10	6	−	1	14	9	5	−		252 383.622(0.011)	14.523	143.795	
1	16	−8	9		1	15	7	8			252 503.251(0.013)	13.764	145.634	
0	16	9	7	−	0	15	10	6	−		252 648.333(0.005)	6.927	76.166	
1	23	12	11		1	22	14	8			252 652.459(0.049)	0.201	234.876	
0	30	*	25		0	30	*	26			252 717.493(0.027)	29.845	207.640	
1	24	−13	12		1	23	14	9			252 806.759(0.059)	1.025	247.968	
0	20	13	8	+	0	19	14	5	+		252 821.025(0.007)	2.102	124.390	
1	12	12	1	−	1	11	11	0	−		252 826.668(0.005)	25.893	123.469	
1	12	12	0	+	1	11	11	1	+		252 846.365(0.005)	25.897	123.469	
0	12	9	3	−	0	11	8	4	−		252 930.936(0.002)	11.006	42.774	
0	29	*	25		0	29	*	26			252 939.544(0.026)	24.185	187.055	
1	11	−10	2		1	10	−9	2			252 987.852(0.004)	22.313	112.433	
1	10	10	1	−	1	9	7	2	−		253 008.558(0.013)	0.215	107.376	
1	11	7	4	−	1	10	6	5	−		253 089.214(0.005)	2.826	111.086	
0	23	12	11	+	0	22	14	8	+		253 103.577(0.010)	0.189	160.386	
0	28	*	25		0	28	*	26			253 126.926(0.027)	18.390	167.150	
0	27	*	25		0	27	*	26			253 282.700(0.028)	12.442	147.927	
1	19	*	14	−	1	18	*	13	−		253 301.069(0.023)	77.575	165.710	
0	10	7	4	+	0	9	4	5	+		253 379.091(0.002)	1.441	26.711	
0	26	*	25		0	26	*	26			253 410.114(0.029)	6.320	129.385	
1	30	*	27	−	1	30	*	28	+		253 429.087(0.048)	17.704	265.969	
0	17	−10	7		0	16	−11	5			253 500.650(0.006)	0.729	87.616	
1	27	*	24		1	27	*	25			253 533.550(0.029)	18.927	230.245	
0	21	12	9	+	0	20	14	6	+		253 555.360(0.009)	0.303	135.587	
1	12	9	3	−	1	11	8	4	−		253 591.808(0.006)	5.793	119.621	
1	20	13	7		1	19	−14	6			253 843.140(0.030)	1.001	199.517	
0	30	*	25	−	0	30	*	26	+		253 902.672(0.026)	29.933	207.597	
1	16	8	8		1	15	−9	7			254 140.071(0.013)	7.411	148.025	
0	21	−12	9		0	20	−14	6			254 142.772(0.009)	0.230	135.669	
1	15	12	4	−	1	14	12	3	−		254 162.391(0.010)	3.162	146.860	
1	16	14	2		1	15	14	1			254 170.162(0.013)	1.490	162.764	
0	15	9	7		0	14	−8	6			254 229.051(0.004)	10.334	65.718	
0	12	10	3		0	11	9	3			254 295.682(0.002)	15.848	44.489	
0	10	−5	5		0	9	4	6			254 310.108(0.002)	1.312	25.253	
0	23	13	11	+	0	22	14	8	+		254 353.269(0.010)	0.837	160.386	
0	10	−5	5		0	9	−3	6			254 376.807(0.002)	0.310	25.251	
0	29	*	25	+	0	29	*	26	−		254 393.449(0.026)	24.270	186.955	
1	10	5	5		1	9	−4	6			254 395.590(0.005)	1.591	98.311	
1	20	*	16	+	1	19	*	15	+		254 425.499(0.027)	89.077	169.694	
0	10	8	3	−	0	9	6	4	−		254 521.904(0.002)	0.418	28.271	
0	16	8	8	+	0	15	9	7	+		254 578.671(0.005)	11.978	74.064	
0	10	5	5	−	0	9	4	6	−		254 580.529(0.002)	1.318	24.974	
1	15	8	7		1	14	8	6			254 668.342(0.010)	7.049	139.112	
0	10	5	5	−	0	9	3	6	−		254 681.670(0.002)	0.323	24.971	
0	12	−10	2		0	11	−9	2			254 760.863(0.003)	15.893	44.871	
0	16	−8	8		0	15	9	7			254 762.989(0.005)	12.458	74.198	
1	14	−9	6		1	13	8	5			254 772.154(0.011)	3.791	131.209	
1	9	3	6		1	8	−2	7			254 848.241(0.003)	0.550	89.801	
0	23	14	9	+	0	23	11	12	−		254 851.563(0.005)	0.354	165.339	
0	28	*	25	−	0	28	*	26	+		254 868.614(0.027)	18.465	166.984	
1	15	11	5	+	1	14	11	4	+		254 871.818(0.010)	1.947	145.337	
1	21	−12	10		1	20	−13	8			255 000.706(0.034)	0.381	207.657	
1	9	−4	6		1	8	1	7			255 113.767(0.003)	0.549	89.801	
0	14	9	6	+	0	13	8	5	+		255 150.304(0.004)	9.042	57.417	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	27	*	25	+	0	27	*	26	−		255 328.710(0.028)	12.499	147.686	
1	21	*	18	−	1	20	*	17	−		255 589.915(0.032)	100.708	173.130	
1	30	*	29	−	1	30	*	30	+		255 640.354(0.103)	5.891	248.865	
0	12	10	3	−	0	11	9	2	−		255 737.218(0.002)	16.059	44.574	
0	26	*	25	−	0	26	*	26	+		255 773.964(0.029)	6.353	129.062	
0	19	−13	6		0	18	14	5			255 801.264(0.010)	0.348	113.614	
0	16	9	8		0	15	9	7			255 832.618(0.005)	7.527	74.198	
1	16	−15	2		1	15	−15	1			255 871.798(0.015)	2.571	164.988	
0	16	−9	7		0	15	10	6			255 894.028(0.005)	7.249	76.242	
1	16	13	3		1	15	13	2			255 934.667(0.013)	2.887	159.036	
1	26	*	24		1	26	*	25			256 002.324(0.031)	12.873	211.243	
1	11	8	4	−	1	10	5	5	−		256 035.387(0.004)	2.649	111.080	
1	22	−13	10		1	21	14	7			256 085.447(0.042)	1.039	222.602	
0	10	8	3		0	9	−5	4			256 088.997(0.004)	0.461	28.226	
0	16	11	6		0	15	−11	4			256 098.513(0.006)	0.455	78.579	
0	16	9	8	+	0	15	9	7	+		256 156.104(0.005)	7.721	74.064	
1	16	−14	3		1	15	−14	2			256 195.524(0.014)	3.873	161.894	
0	17	−7	10		0	16	8	9			256 352.025(0.005)	18.181	80.071	
0	17	8	10		0	16	8	9			256 369.175(0.005)	8.376	80.071	
0	17	−7	10		0	16	−7	9			256 437.818(0.005)	8.376	80.068	
0	17	8	10		0	16	−7	9			256 454.968(0.005)	18.184	80.068	
0	12	10	2	+	0	11	9	3	+		256 500.449(0.002)	16.026	44.556	
1	11	11	0		1	10	10	0			256 605.934(0.005)	22.029	118.802	
0	18	−6	12		0	17	7	11			256 675.841(0.006)	23.216	85.238	
0	18	7	12		0	17	7	11			256 675.965(0.006)	9.229	85.238	
0	18	−6	12		0	17	−6	11			256 676.618(0.006)	9.229	85.238	
0	18	7	12		0	17	−6	11			256 676.742(0.006)	23.217	85.238	
1	13	11	3	+	1	12	10	2	+		256 769.542(0.007)	16.699	128.834	
0	16	15	2	+	0	15	15	1	+		256 798.144(0.005)	1.509	89.451	
0	16	15	1	−	0	15	15	0	−		256 798.266(0.005)	1.509	89.451	
1	22	*	20	+	1	21	*	19	+		256 853.687(0.039)	112.447	176.053	
0	17	7	10	−	0	16	8	9	−		256 868.324(0.005)	17.744	79.940	
1	16	−13	4		1	15	−13	3			256 895.549(0.014)	5.154	158.922	
0	17	8	10	−	0	16	8	9	−		256 898.601(0.005)	8.682	79.940	
1	22	10	12		1	21	11	10			256 925.584(0.041)	0.247	215.800	
0	9	8	2	−	0	8	5	3	−		256 929.124(0.004)	0.174	22.761	
1	13	7	6		1	12	−7	6			256 990.871(0.008)	0.310	121.132	
0	17	7	10	−	0	16	7	9	−		257 009.044(0.005)	8.684	79.935	
0	15	9	7	+	0	14	8	6	+		257 031.321(0.004)	10.119	65.491	
0	16	15	2		0	15	15	1			257 032.887(0.006)	1.514	89.069	
0	17	8	10	−	0	16	7	9	−		257 039.321(0.005)	17.749	79.935	
1	12	−8	5		1	11	6	5			257 048.556(0.008)	0.441	114.238	
0	18	6	12	+	0	17	7	11	+		257 119.922(0.006)	22.596	85.111	
0	18	7	12	+	0	17	7	11	+		257 120.199(0.006)	9.757	85.111	
0	18	6	12	+	0	17	6	11	+		257 121.491(0.006)	9.757	85.111	
0	18	7	12	+	0	17	6	11	+		257 121.767(0.006)	22.596	85.111	
1	30	*	28	+	1	30	*	29	−		257 123.406(0.061)	11.851	257.392	
1	9	8	1		1	8	6	2			257 138.444(0.005)	0.304	97.661	
0	16	−15	1		0	15	−15	0			257 206.148(0.006)	1.504	89.391	
0	19	*	14		0	18	*	13			257 207.619(0.006)	76.524	89.715	
1	22	12	10		1	21	−14	8			257 249.039(0.040)	0.387	221.924	
0	20	12	9		0	19	13	7			257 279.433(0.008)	0.224	121.662	
0	10	6	5		0	9	4	6			257 283.940(0.002)	0.304	25.253	
0	10	6	5		0	9	−3	6			257 350.639(0.002)	1.282	25.251	
1	12	9	3		1	11	8	3			257 410.900(0.004)	10.169	117.478	
0	15	−10	5		0	14	−10	4			257 445.872(0.004)	6.181	68.311	
0	14	−9	5		0	13	9	5			257 511.467(0.004)	0.254	58.343	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	19	*	14	−	0	18	6	13	−		257 582.973(0.006)	38.191	89.583	
0	19	*	14	−	0	18	5	13	−		257 582.981(0.006)	38.191	89.583	
1	21	−14	8		1	20	−15	6			257 689.867(0.035)	3.226	213.328	
0	13	−8	5		0	12	−7	5			257 815.513(0.003)	0.205	49.073	
0	20	*	16		0	19	*	15			257 831.343(0.007)	88.204	93.525	
0	15	10	5	+	0	14	10	4	+		257 870.523(0.004)	6.676	68.083	
1	15	12	3	+	1	14	12	2	+		257 975.415(0.010)	3.375	146.891	
0	20	*	16	+	0	19	*	15	+		258 148.403(0.007)	88.090	93.376	
1	16	12	4		1	15	12	3			258 222.583(0.013)	6.392	156.101	
1	23	−14	10		1	22	15	7			258 274.114(0.050)	0.514	238.123	
1	25	*	24		1	25	*	25			258 296.613(0.035)	6.570	192.865	
1	23	*	22	−	1	22	*	21	−		258 310.465(0.046)	124.251	178.516	
1	30	*	25		1	30	*	26			258 399.829(0.034)	30.404	282.266	
0	16	14	3	−	0	15	14	2	−		258 409.736(0.005)	2.923	86.228	
0	16	14	2	+	0	15	14	1	+		258 414.186(0.005)	2.923	86.228	
1	16	−12	5		1	15	−12	4			258 459.379(0.013)	4.176	155.654	
0	16	−8	8		0	15	−8	7			258 478.153(0.005)	7.596	74.074	
0	21	*	18		0	20	*	17			258 495.896(0.007)	99.988	96.677	
0	10	6	5	−	0	9	4	6	−		258 582.573(0.002)	0.314	24.974	
0	12	−9	3		0	11	8	4			258 627.383(0.004)	1.927	42.862	
0	10	6	5	−	0	9	3	6	−		258 683.713(0.002)	1.272	24.971	
0	13	10	4		0	12	−9	3			258 735.102(0.006)	0.702	51.489	
1	12	−9	4		1	11	−8	4			258 746.455(0.005)	16.572	116.166	
0	23	−14	9		0	23	−11	12			258 752.541(0.005)	0.325	165.330	
0	21	*	18	−	0	20	*	17	−		258 755.665(0.007)	99.898	96.503	
0	16	14	3		0	15	14	2			258 828.967(0.005)	2.926	85.883	
0	16	−14	2		0	15	−14	1			258 905.583(0.005)	2.909	86.244	
1	16	9	7	−	1	15	10	6	−		258 932.653(0.012)	16.410	152.214	
1	21	12	9		1	21	9	12			259 099.744(0.005)	0.294	209.325	
1	16	11	5	−	1	15	12	4	−		259 166.139(0.016)	4.759	155.338	
0	22	*	20		0	21	*	19			259 182.528(0.008)	111.889	99.179	
1	19	14	6	−	1	18	15	3	−		259 341.556(0.024)	1.420	189.979	
0	22	*	20	+	0	21	*	19	+		259 379.582(0.008)	111.823	98.968	
0	9	−2	7		0	8	*	8			259 388.252(0.002)	0.181	14.476	
0	9	3	7		0	8	*	8			259 390.309(0.002)	0.181	14.476	
1	16	10	7	−	1	15	10	6	−		259 515.413(0.012)	1.990	152.214	
0	16	9	8		0	15	−8	7			259 547.783(0.005)	12.730	74.074	
0	16	8	8	+	0	15	8	7	+		259 701.665(0.005)	7.823	73.894	
1	10	−6	5		1	9	3	6			259 714.228(0.004)	1.484	98.302	
1	10	3	7	−	1	9	*	8	−		259 727.836(0.004)	0.462	98.872	
1	19	5	14		1	18	−6	13			259 728.424(0.024)	28.060	163.777	
1	10	4	7	−	1	9	*	8	−		259 728.453(0.004)	0.462	98.872	
1	19	−6	14		1	18	−6	13			259 728.461(0.024)	9.438	163.777	
1	19	5	14		1	18	5	13			259 728.599(0.024)	9.438	163.777	
1	19	−6	14		1	18	5	13			259 728.636(0.024)	28.060	163.777	
1	18	6	12		1	17	−7	11			259 737.248(0.020)	22.302	159.305	
1	18	−7	12		1	17	−7	11			259 740.895(0.020)	9.124	159.305	
1	18	6	12		1	17	6	11			259 752.937(0.020)	9.123	159.305	
1	18	−7	12		1	17	6	11			259 756.585(0.020)	22.304	159.305	
0	23	*	22		0	22	*	21			259 884.396(0.009)	123.906	101.032	
1	20	*	16		1	19	*	15			259 951.434(0.029)	87.005	167.508	
1	17	7	10		1	16	−8	9			259 984.874(0.016)	16.251	154.057	
0	23	*	22	−	0	22	*	21	−		260 007.494(0.009)	123.867	100.772	
1	11	10	2	−	1	10	7	3	−		260 026.129(0.011)	1.149	113.258	
0	21	14	8		0	21	11	11			260 068.468(0.004)	0.238	138.361	
0	22	15	8		0	22	12	11			260 081.625(0.006)	0.288	153.286	
1	17	−8	10		1	16	−8	9			260 221.387(0.016)	8.721	154.057	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	24	*	24	+	1	23	*	23	+		260 245.404(0.054)	136.016	180.635	
1	21	*	18		1	20	*	17			260 251.192(0.034)	99.038	170.511	
1	16	15	2	+	1	15	15	1	+		260 278.366(0.013)	1.454	161.974	
1	16	15	1	−	1	15	15	0	−		260 281.382(0.013)	1.454	161.974	
0	10	9	2		0	9	7	3			260 406.609(0.003)	0.279	29.805	
0	22	−12	10		0	21	−14	7			260 411.233(0.009)	0.245	147.678	
1	16	−9	8		1	15	−9	7			260 490.502(0.013)	7.752	148.025	
0	16	13	4	+	0	15	13	3	+		260 498.994(0.005)	4.240	83.280	
1	22	*	20		1	21	*	19			260 542.196(0.040)	111.159	172.785	
0	16	13	3	−	0	15	13	2	−		260 589.344(0.005)	4.240	83.281	
0	24	*	24		0	23	*	23			260 599.693(0.013)	136.034	102.242	
1	11	7	4		1	10	−6	5			260 621.325(0.009)	1.910	106.965	
1	16	9	7	−	1	15	9	6	−		260 621.427(0.012)	1.995	152.158	
0	24	*	24	+	0	23	*	23	+		260 631.393(0.013)	136.026	101.915	
1	16	11	5		1	15	11	4			260 698.137(0.013)	7.603	153.475	
0	20	13	8		0	19	14	6			260 717.519(0.008)	1.200	124.119	
1	23	*	22		1	22	*	21			260 766.572(0.048)	123.400	174.321	
1	17	8	9	+	1	16	9	8	+		260 798.253(0.015)	22.921	158.608	
1	17	7	10		1	16	7	9			260 809.096(0.016)	8.673	154.029	
1	17	9	9	+	1	16	9	8	+		260 815.875(0.015)	1.650	158.608	
1	17	8	9	+	1	16	8	8	+		260 860.497(0.015)	1.650	158.606	
0	9	2	7	+	0	8	*	8	+		260 877.380(0.002)	0.182	14.131	
1	17	9	9	+	1	16	8	8	+		260 878.119(0.015)	22.931	158.606	
0	9	3	7	+	0	8	*	8	+		260 880.816(0.002)	0.182	14.131	
1	24	*	24		1	23	*	23			260 882.841(0.056)	135.777	175.105	
1	23	−13	11		1	22	14	8			260 923.685(0.049)	1.241	234.876	
1	29	*	25		1	29	*	26			260 972.227(0.034)	24.775	261.367	
1	17	−8	10		1	16	7	9			261 045.608(0.016)	16.367	154.029	
0	22	13	9	−	0	21	15	6	−		261 109.737(0.010)	0.251	149.939	
0	16	−13	3		0	15	−13	2			261 113.098(0.005)	4.216	83.374	
0	13	−9	4		0	12	−8	4			261 171.528(0.003)	2.546	50.113	
1	16	10	7	−	1	15	9	6	−		261 204.186(0.012)	16.727	152.158	
0	16	13	4		0	15	13	3			261 213.359(0.005)	4.235	82.988	
0	16	9	8	+	0	15	8	7	+		261 279.098(0.005)	12.339	73.894	
0	12	11	2		0	11	10	2			261 346.421(0.003)	20.197	46.448	
1	9	6	3		1	8	3	5			261 383.669(0.008)	0.194	93.821	
0	12	−11	1		0	11	−10	1			261 411.288(0.003)	20.175	46.856	
0	15	−9	6		0	14	−9	5			261 502.629(0.004)	7.521	66.933	
0	20	13	8		0	20	10	11			261 598.073(0.003)	0.179	124.090	
0	12	8	4	+	0	11	7	5	+		261 651.244(0.003)	5.284	41.120	
1	20	13	8	+	1	19	14	5	+		261 750.067(0.027)	0.875	199.099	
0	21	14	8		0	20	−15	5			261 853.731(0.011)	0.648	138.301	
1	18	7	11	−	1	17	8	10	−		261 899.684(0.019)	27.033	164.390	
1	18	8	11	−	1	17	8	10	−		261 900.083(0.019)	3.226	164.390	
1	18	7	11	−	1	17	7	10	−		261 901.292(0.019)	3.226	164.390	
1	18	8	11	−	1	17	7	10	−		261 901.690(0.019)	27.033	164.390	
0	22	12	10	+	0	21	14	7	+		261 905.309(0.009)	0.302	147.583	
0	15	9	6	−	0	14	9	5	−		261 925.429(0.004)	7.748	66.694	
1	26	−14	13		1	25	15	10			261 961.884(0.074)	0.852	278.487	
1	21	−13	9		1	20	−14	7			262 172.723(0.034)	2.281	210.404	
1	19	13	7	+	1	18	14	4	+		262 270.830(0.023)	1.473	187.963	
0	10	−9	1		0	9	−7	2			262 280.308(0.003)	0.290	30.139	
1	16	−11	6		1	15	−11	5			262 389.703(0.013)	5.294	152.663	
0	21	14	8	−	0	21	11	11	+		262 548.056(0.004)	0.243	138.336	
1	22	14	8		1	21	15	6			262 672.804(0.041)	1.775	226.114	
0	21	13	9		0	20	−14	6			262 720.363(0.009)	1.337	135.669	
1	13	7	6		1	12	6	6			262 723.021(0.006)	0.368	120.941	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	30	*	26		0	30	*	27			262 881.792(0.033)	24.231	198.871	
0	17	10	7	+	0	16	11	6	+		262 888.854(0.006)	5.279	87.115	
1	13	11	2	−	1	12	10	3	−		262 912.161(0.006)	16.752	128.698	
0	25	14	12		0	24	−15	9			262 950.011(0.013)	0.624	189.772	
0	12	11	2	+	0	11	10	1	+		262 976.672(0.002)	20.207	46.608	
1	19	*	13	+	1	18	7	12	+		262 986.328(0.023)	35.921	169.568	
1	19	*	13	+	1	18	6	12	+		262 986.351(0.023)	35.921	169.568	
0	12	11	1	−	0	11	10	2	−		263 010.087(0.002)	20.206	46.607	
0	16	10	7	−	0	15	10	6	−		263 019.604(0.005)	7.304	76.166	
0	16	12	5	−	0	15	12	4	−		263 041.415(0.005)	5.458	80.628	
0	29	*	26		0	29	*	27			263 061.513(0.033)	18.418	178.280	
1	15	10	5	+	1	14	10	4	+		263 109.714(0.010)	1.804	144.804	
0	20	13	8	+	0	20	10	11	−		263 167.916(0.003)	0.182	124.044	
0	28	*	26		0	28	*	27			263 209.965(0.034)	12.454	158.371	
0	22	−13	9		0	21	−15	6			263 238.169(0.011)	0.182	149.983	
0	18	−10	8		0	17	−11	6			263 239.485(0.006)	0.193	97.461	
1	12	10	2		1	11	9	2			263 269.683(0.004)	13.650	119.627	
0	22	13	10		0	21	−14	7			263 320.336(0.009)	1.191	147.678	
0	27	*	26		0	27	*	27			263 330.379(0.036)	6.323	139.143	
1	19	11	8		1	18	12	6			263 333.041(0.025)	1.925	183.793	
1	22	−12	11		1	21	−13	9			263 518.145(0.041)	0.260	219.149	
0	10	9	1	−	0	9	7	2	−		263 519.646(0.003)	0.282	29.803	
0	12	−8	4		0	11	7	5			263 627.882(0.003)	4.351	41.320	
1	28	*	25		1	28	*	26			263 687.270(0.035)	18.945	241.062	
0	16	10	7		0	15	10	6			263 738.542(0.005)	7.087	76.242	
0	22	15	8	+	0	22	12	11	−		263 855.870(0.005)	0.305	153.279	
1	20	*	15	−	1	19	*	14	−		264 064.137(0.027)	83.259	174.159	
0	16	12	4	+	0	15	12	3	+		264 119.648(0.005)	5.462	80.636	
1	11	6	5	+	1	10	5	6	+		264 177.296(0.004)	1.966	109.457	
0	16	−12	4		0	15	−12	3			264 261.625(0.005)	5.413	80.803	
0	30	*	26	+	0	30	*	27	−		264 363.771(0.033)	24.315	198.778	
1	16	14	3	−	1	15	14	2	−		264 393.247(0.012)	2.716	159.318	
1	16	14	2	+	1	15	14	1	+		264 510.758(0.012)	2.717	159.318	
0	16	12	5		0	15	12	4			264 600.700(0.005)	5.414	80.411	
1	11	7	5	+	1	10	4	6	+		264 619.530(0.004)	1.953	109.457	
0	21	14	8	−	0	20	15	5	−		264 631.614(0.008)	2.143	138.267	
0	16	11	6	+	0	15	11	5	+		264 846.642(0.005)	6.532	78.280	
0	29	*	26	−	0	29	*	27	+		264 849.689(0.033)	18.491	178.120	
0	21	13	9	+	0	20	14	6	+		264 878.315(0.008)	2.065	135.587	
0	10	8	3	−	0	9	5	4	−		264 893.952(0.003)	0.604	27.925	
1	23	14	10	−	1	22	15	7	−		264 896.300(0.045)	0.429	237.739	
1	13	8	5		1	12	7	5			265 124.435(0.006)	2.747	122.365	
1	21	*	17	+	1	20	*	16	+		265 151.726(0.032)	94.803	178.180	
1	14	11	4	+	1	13	10	3	+		265 159.685(0.010)	13.318	136.492	
1	16	10	6	+	1	15	11	5	+		265 180.281(0.014)	12.312	153.839	
0	18	−11	7		0	17	−12	5			265 304.204(0.007)	1.137	99.119	
0	28	*	26	+	0	28	*	27	−		265 323.513(0.034)	12.512	158.134	
1	21	13	8		1	20	14	6			265 325.047(0.036)	1.285	211.067	
0	13	9	5		0	12	8	5			265 522.242(0.003)	1.995	49.486	
1	21	10	11		1	20	11	9			265 629.260(0.035)	0.429	204.018	
0	27	*	26	−	0	27	*	27	+		265 785.226(0.036)	6.356	138.821	
0	22	13	10	+	0	21	14	7	+		266 008.874(0.009)	1.480	147.583	
0	10	9	2	+	0	9	7	3	+		266 089.271(0.003)	0.278	29.715	
1	22	*	19	−	1	21	*	18	−		266 285.415(0.038)	106.468	181.656	
1	27	*	25		1	27	*	26			266 340.609(0.038)	12.884	221.361	
1	16	10	6		1	15	10	5			266 376.293(0.013)	8.699	151.119	
0	17	−8	9		0	16	9	8			266 467.029(0.005)	15.187	82.732	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	16	−10	7		1	15	−10	6			266 542.734(0.013)	6.159	150.146	
1	16	8	8		1	15	8	7			266 674.143(0.013)	7.567	147.607	
1	15	11	4	−	1	14	11	3	−		266 708.404(0.010)	3.424	145.616	
0	17	9	9		0	16	9	8			266 729.629(0.005)	8.129	82.732	
1	17	9	8		1	16	−10	7			266 759.673(0.017)	5.109	159.037	
0	17	8	9	+	0	16	9	8	+		266 829.533(0.005)	14.746	82.609	
0	10	−8	2		0	9	−5	4			266 847.543(0.003)	0.255	28.226	
0	18	−7	11		0	17	8	10			266 884.664(0.006)	20.499	88.622	
0	18	8	11		0	17	8	10			266 887.829(0.006)	8.969	88.622	
0	18	−7	11		0	17	−7	10			266 901.814(0.006)	8.969	88.622	
0	18	8	11		0	17	−7	10			266 904.979(0.006)	20.500	88.622	
1	15	−9	7		1	14	8	6			267 202.415(0.011)	8.067	139.112	
0	17	9	9	+	0	16	9	8	+		267 243.177(0.005)	8.368	82.609	
0	19	−6	13		0	18	7	12			267 272.597(0.006)	25.547	93.799	
0	19	7	13		0	18	7	12			267 272.616(0.006)	9.769	93.799	
0	19	−6	13		0	18	−6	12			267 272.721(0.006)	9.769	93.799	
0	19	7	13		0	18	−6	12			267 272.740(0.006)	25.547	93.799	
1	17	12	5	+	1	16	13	4	+		267 316.324(0.019)	3.047	166.095	
1	25	13	12		1	24	15	9			267 337.344(0.065)	0.221	264.251	
0	25	14	12	−	0	24	15	9	−		267 374.240(0.013)	0.736	189.660	
0	18	7	11	−	0	17	8	10	−		267 389.188(0.006)	19.998	88.509	
0	18	8	11	−	0	17	8	10	−		267 395.252(0.006)	9.354	88.509	
0	18	7	11	−	0	17	7	10	−		267 419.465(0.006)	9.354	88.508	
0	18	8	11	−	0	17	7	10	−		267 425.529(0.006)	19.999	88.508	
1	23	*	21	+	1	22	*	20	+		267 525.177(0.045)	118.230	184.620	
0	17	−8	9		0	16	−8	8			267 536.658(0.005)	8.142	82.696	
0	16	11	6		0	15	11	5			267 641.728(0.005)	6.011	78.194	
1	13	−8	6		1	12	−7	6			267 673.287(0.006)	3.641	121.132	
0	19	6	13	+	0	18	7	12	+		267 698.386(0.006)	24.764	93.688	
0	19	7	13	+	0	18	7	12	+		267 698.433(0.006)	10.466	93.688	
0	19	6	13	+	0	18	6	12	+		267 698.663(0.006)	10.466	93.688	
0	19	7	13	+	0	18	6	12	+		267 698.710(0.006)	24.764	93.688	
0	17	9	9		0	16	−8	8			267 799.259(0.005)	15.242	82.696	
1	9	2	7		1	8	−1	8			267 830.910(0.003)	0.181	87.186	
0	20	*	15		0	19	*	14			267 833.797(0.007)	82.266	98.294	
1	23	−12	12		1	22	−13	10			267 836.415(0.048)	0.203	231.144	
1	9	−3	7		1	8	0	8			267 844.507(0.003)	0.181	87.186	
0	12	−12	0		0	11	−11	0			267 957.529(0.003)	24.214	49.127	
1	13	12	2	−	1	12	11	1	−		267 963.520(0.006)	23.289	130.111	
0	10	−4	6		0	9	3	7			268 016.657(0.002)	0.796	23.128	
0	17	11	7		0	16	−11	5			268 017.623(0.006)	0.276	87.616	
0	10	−4	6		0	9	−2	7			268 018.713(0.002)	0.179	23.128	
1	25	15	10		1	25	12	13			268 117.902(0.009)	0.577	269.544	
0	20	*	15	−	0	19	*	14	−		268 198.062(0.007)	82.129	98.175	
0	12	12	1		0	11	11	1			268 243.780(0.003)	24.225	48.715	
0	10	5	6		0	9	3	7			268 271.473(0.002)	0.179	23.128	
0	10	5	6		0	9	−2	7			268 273.529(0.002)	0.795	23.128	
1	13	12	1	+	1	12	11	2	+		268 329.046(0.006)	23.343	130.102	
0	17	−10	7		0	16	11	6			268 329.946(0.007)	5.144	87.121	
0	22	13	9	−	0	22	10	12	+		268 345.293(0.005)	0.227	149.697	
1	12	11	1		1	11	10	1			268 356.863(0.004)	17.033	122.020	
0	17	8	9	+	0	16	8	8	+		268 406.966(0.005)	8.389	82.556	
1	17	8	9		1	16	−9	8			268 426.917(0.016)	11.752	156.714	
0	21	*	17		0	20	*	16			268 467.596(0.007)	93.964	102.125	
1	12	−10	3		1	11	−9	3			268 490.901(0.005)	20.777	118.312	
1	16	11	6	+	1	15	11	5	+		268 570.877(0.012)	1.466	153.839	
1	10	−8	3		1	9	5	4			268 628.263(0.011)	0.200	101.219	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	21	*	17	+	0	20	*	16	+		268 777.984(0.007)	93.853	101.987	
1	26	*	25		1	26	*	26			268 807.474(0.043)	6.573	202.277	
0	17	9	9	+	0	16	8	8	+		268 820.609(0.005)	14.821	82.556	
1	24	*	23	−	1	23	*	22	−		268 963.619(0.053)	130.048	187.132	
0	10	4	6	+	0	9	3	7	+		269 118.168(0.002)	0.794	22.833	
0	10	4	6	+	0	9	2	7	+		269 121.604(0.002)	0.187	22.833	
0	22	*	19		0	21	*	18			269 136.103(0.008)	105.765	105.300	
1	11	6	5		1	10	−5	6			269 142.651(0.005)	2.192	105.261	
0	12	9	4		0	11	−7	4			269 150.432(0.005)	0.200	42.139	
1	13	−7	7		1	12	−6	7			269 202.656(0.006)	0.343	119.107	
0	22	*	19	−	0	21	*	18	−		269 392.192(0.007)	105.677	105.134	
0	10	5	6	+	0	9	3	7	+		269 494.940(0.002)	0.187	22.833	
0	10	5	6	+	0	9	2	7	+		269 498.375(0.002)	0.793	22.833	
1	19	10	9		1	18	11	7			269 520.124(0.024)	1.558	181.681	
1	13	10	3	+	1	12	9	4	+		269 589.201(0.007)	8.186	127.500	
1	16	13	4	+	1	15	13	3	+		269 618.806(0.012)	3.535	157.101	
0	13	10	4	−	0	12	9	3	−		269 622.108(0.003)	13.829	51.211	
0	15	−10	5		0	14	10	5			269 639.311(0.006)	0.480	67.904	
0	12	12	1	−	0	11	11	0	−		269 701.391(0.003)	24.165	48.943	
0	12	12	0	+	0	11	11	1	+		269 701.973(0.003)	24.165	48.943	
0	18	11	7	−	0	17	12	6	−		269 721.408(0.007)	3.990	98.787	
0	23	*	21		0	22	*	20			269 824.828(0.008)	117.680	107.824	
1	17	15	2		1	16	15	1			269 856.700(0.017)	1.489	175.244	
1	23	13	10		1	22	−15	8			269 875.336(0.048)	0.485	236.803	
0	13	10	4		0	12	9	4			269 900.776(0.003)	12.635	51.116	
0	23	*	21	+	0	22	*	20	+		270 020.207(0.008)	117.614	107.620	
1	19	−12	8		1	19	−9	11			270 040.042(0.005)	0.181	184.849	
0	11	6	5	+	0	10	5	6	+		270 106.226(0.002)	1.824	31.823	
1	19	6	13		1	18	−7	12			270 118.755(0.024)	24.778	167.969	
1	19	−7	13		1	18	−7	12			270 119.573(0.024)	9.605	167.969	
1	19	6	13		1	18	6	12			270 122.403(0.024)	9.605	167.969	
1	19	−7	13		1	18	6	12			270 123.220(0.024)	24.778	167.969	
1	20	5	15		1	19	−6	14			270 224.671(0.029)	30.384	172.440	
1	20	−6	15		1	19	−6	14			270 224.679(0.029)	10.030	172.440	
1	20	5	15		1	19	5	14			270 224.709(0.029)	10.030	172.440	
1	20	−6	15		1	19	5	14			270 224.717(0.029)	30.384	172.440	
0	13	−10	3		0	12	−9	3			270 228.753(0.003)	12.858	51.489	
0	12	−8	4		0	11	−6	5			270 231.501(0.002)	1.039	41.099	
0	12	8	4	+	0	11	6	5	+		270 269.275(0.002)	1.127	40.832	
1	18	7	11		1	17	−8	10			270 371.563(0.020)	18.860	162.737	
1	18	−8	11		1	17	−8	10			270 433.906(0.020)	9.278	162.737	
1	17	9	8	−	1	16	10	7	−		270 438.821(0.015)	19.316	160.870	
0	11	6	5	+	0	10	4	6	+		270 482.998(0.002)	0.465	31.810	
0	11	−6	5		0	10	5	6			270 483.457(0.002)	1.796	32.077	
1	20	12	8		1	19	13	6			270 501.159(0.030)	0.172	196.851	
1	21	*	17		1	20	*	16			270 510.125(0.034)	92.813	176.179	
0	24	*	23		0	23	*	22			270 528.465(0.010)	129.706	109.701	
1	10	8	2		1	9	6	3			270 565.172(0.005)	0.459	102.540	
1	18	7	11		1	17	7	10			270 608.075(0.020)	9.265	162.729	
1	17	10	8	−	1	16	10	7	−		270 612.122(0.015)	2.178	160.870	
0	11	8	4		0	10	6	5			270 622.330(0.003)	0.451	33.835	
0	24	*	23	−	0	23	*	22	−		270 650.960(0.010)	129.666	109.444	
1	18	−8	11		1	17	7	10			270 670.419(0.020)	18.890	162.729	
0	11	−6	5		0	10	−4	6			270 738.273(0.002)	0.441	32.069	
1	17	−9	9		1	16	−9	8			270 835.068(0.016)	8.618	156.714	
1	15	11	5	+	1	14	10	4	+		270 845.111(0.012)	12.658	144.804	
1	22	*	19		1	21	*	18			270 849.152(0.040)	104.840	179.192	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	25	*	25	+	1	24	*	24	+		270 902.692(0.063)	141.813	189.316	
1	30	*	26		1	30	*	27			270 915.904(0.041)	24.794	273.229	
0	16	−11	5		0	15	−11	4			270 927.809(0.005)	6.149	78.579	
1	24	−14	11		1	23	15	8			270 992.560(0.057)	0.816	250.810	
1	12	8	4	+	1	11	7	5	+		270 994.015(0.006)	3.434	118.284	
1	9	−9	1		1	8	7	1			271 014.145(0.006)	0.195	99.440	
1	17	9	8	−	1	16	9	7	−		271 021.580(0.015)	2.177	160.851	
1	23	*	21		1	22	*	20			271 165.975(0.047)	116.961	181.476	
1	17	10	8	−	1	16	9	7	−		271 194.881(0.015)	19.418	160.851	
0	25	*	25		0	24	*	24			271 245.833(0.015)	141.838	110.934	
0	25	*	25	+	0	24	*	24	+		271 276.942(0.015)	141.829	110.609	
1	24	*	23		1	23	*	22			271 405.464(0.055)	129.204	183.020	
1	17	14	3		1	16	14	2			271 489.169(0.016)	2.895	171.242	
1	25	*	25		1	24	*	24			271 527.412(0.065)	141.582	183.808	
1	16	13	3	−	1	15	13	2	−		271 546.752(0.013)	3.603	157.113	
0	16	11	5	−	0	15	11	4	−		271 553.839(0.005)	6.649	78.373	
0	22	−13	9		0	22	−10	12			271 578.681(0.005)	0.214	149.704	
1	18	8	10	+	1	17	9	9	+		271 690.141(0.019)	24.966	167.308	
1	18	9	10	+	1	17	9	9	+		271 695.230(0.019)	2.422	167.308	
1	18	8	10	+	1	17	8	9	+		271 707.763(0.019)	2.422	167.308	
1	18	9	10	+	1	17	8	9	+		271 712.852(0.019)	24.968	167.308	
1	18	13	5	−	1	17	14	4	−		271 865.338(0.022)	2.052	177.632	
0	21	14	8		0	20	15	6			271 891.346(0.009)	1.481	137.967	
0	14	10	5		0	13	−9	4			272 179.971(0.005)	5.020	58.825	
1	20	−13	8		1	20	−10	11			272 243.105(0.005)	0.196	198.576	
1	20	10	10		1	19	11	8			272 304.795(0.029)	0.828	192.577	
0	17	9	8	−	0	16	10	7	−		272 567.745(0.005)	10.672	84.939	
0	19	−12	7		0	18	−13	5			272 592.827(0.008)	1.382	111.410	
0	17	12	6		0	16	−12	4			272 607.242(0.008)	0.254	89.618	
1	17	−15	3		1	16	−15	2			272 621.927(0.018)	3.823	173.523	
1	16	12	5	−	1	15	12	4	−		272 729.663(0.012)	2.947	155.338	
1	13	9	4		1	12	8	4			272 734.072(0.006)	8.151	124.007	
1	19	7	12	−	1	18	8	11	−		272 737.004(0.023)	29.645	173.126	
1	19	8	12	−	1	18	8	11	−		272 737.098(0.023)	3.419	173.126	
1	19	7	12	−	1	18	7	11	−		272 737.402(0.023)	3.419	173.126	
1	19	8	12	−	1	18	7	11	−		272 737.496(0.023)	29.646	173.126	
0	11	−9	2		0	10	−7	3			272 743.842(0.003)	0.422	35.774	
0	11	9	2	−	0	10	7	3	−		272 745.084(0.003)	0.482	35.476	
1	12	−12	1		1	11	−11	1			272 784.653(0.005)	20.535	124.610	
1	11	8	3		1	10	−7	4			272 820.722(0.014)	0.175	108.377	
1	16	10	6	+	1	15	10	5	+		272 915.679(0.012)	1.444	153.581	
1	16	9	7		1	15	9	6			272 973.175(0.013)	8.254	149.202	
1	25	−14	12		1	24	15	9			272 984.055(0.065)	0.953	264.251	
0	30	*	27		0	30	*	28			272 993.191(0.041)	18.443	189.765	
1	16	−9	8		1	15	8	7			273 024.575(0.013)	10.379	147.607	
1	10	4	6		1	9	−3	7			273 106.073(0.003)	0.992	96.121	
1	11	5	6	−	1	10	4	7	−		273 134.074(0.004)	1.296	107.536	
0	29	*	27		0	29	*	28			273 134.309(0.042)	12.466	169.169	
1	13	−9	5		1	12	−8	5			273 142.996(0.006)	13.445	122.813	
1	20	11	9		1	20	8	12			273 160.236(0.005)	0.181	194.906	
1	17	−14	4		1	16	−14	3			273 164.755(0.017)	5.113	170.440	
1	11	6	6	−	1	10	3	7	−		273 171.078(0.004)	1.295	107.536	
0	28	*	27		0	28	*	28			273 247.567(0.044)	6.325	149.256	
1	13	−8	6		1	12	6	6			273 405.436(0.008)	0.219	120.941	
0	16	−9	7		0	15	−9	6			273 464.187(0.005)	7.833	75.656	
0	17	−9	8		0	16	10	7			273 582.592(0.006)	11.232	85.039	
0	11	8	4		0	10	−5	5			273 596.162(0.003)	1.272	33.736	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	13	10	3	+	0	12	9	4	+		273 724.375(0.003)	13.620	51.118	
1	17	13	4		1	16	13	3			273 767.635(0.016)	4.201	167.573	
1	20	*	14	+	1	19	*	13	+		273 780.244(0.027)	77.491	178.340	
1	18	10	8		1	17	−11	7			273 782.579(0.021)	3.400	170.814	
1	19	14	5	+	1	18	15	4	+		273 784.470(0.025)	1.537	189.966	
1	29	*	26		1	29	*	27			273 814.400(0.042)	18.959	252.233	
0	19	12	7	+	0	18	13	6	+		273 995.493(0.008)	3.136	111.195	
1	10	−5	6		1	9	2	7			274 019.802(0.003)	0.991	96.120	
1	17	−13	5		1	16	−13	4			274 244.309(0.017)	6.364	167.491	
0	17	15	3	+	0	16	15	2	+		274 329.706(0.006)	2.932	98.017	
0	17	15	2	−	0	16	15	1	−		274 331.337(0.006)	2.932	98.017	
0	21	13	9		0	20	14	7			274 334.130(0.009)	0.579	135.282	
1	20	12	8		1	19	−13	7			274 356.415(0.030)	3.434	196.723	
0	11	9	3		0	10	7	4			274 573.611(0.003)	0.374	35.330	
0	17	15	3		0	16	15	2			274 684.959(0.006)	2.939	97.643	
0	16	9	7	−	0	15	9	6	−		274 696.062(0.005)	8.131	75.431	
1	17	8	9		1	16	8	8			274 777.348(0.016)	8.376	156.502	
1	21	*	16	−	1	20	*	15	−		274 817.983(0.032)	88.954	182.967	
0	30	*	27	−	0	30	*	28	+		274 826.149(0.041)	18.516	189.611	
0	17	−15	2		0	16	−15	1			274 832.686(0.006)	2.921	97.971	
1	12	10	3	−	1	11	7	4	−		274 924.701(0.009)	2.655	119.528	
0	11	8	4	−	0	10	6	5	−		275 045.300(0.002)	0.514	33.599	
1	19	11	8		1	18	−12	7			275 081.334(0.025)	2.537	183.401	
0	29	*	27	+	0	29	*	28	−		275 314.510(0.042)	12.523	168.937	
0	28	*	27	−	0	28	*	28	+		275 793.550(0.044)	6.358	148.935	
1	22	*	18	+	1	21	*	17	+		275 871.338(0.038)	100.536	187.025	
0	17	10	8		0	16	10	7			276 219.530(0.005)	7.876	85.039	
1	18	−11	8		1	17	11	6			276 237.430(0.021)	0.299	171.536	
1	17	12	5		1	16	12	4			276 280.465(0.016)	7.588	164.714	
1	12	9	4	+	1	11	7	5	+		276 296.804(0.006)	0.239	118.284	
0	17	10	8	−	0	16	10	7	−		276 299.838(0.005)	8.061	84.939	
1	16	11	6	+	1	15	10	5	+		276 306.274(0.014)	14.207	153.581	
0	17	14	4	−	0	16	14	3	−		276 342.088(0.005)	4.264	94.847	
0	17	14	3	+	0	16	14	2	+		276 378.669(0.005)	4.264	94.848	
1	22	−13	10		1	21	−14	8			276 410.049(0.040)	1.934	221.924	
1	24	14	10		1	24	11	13			276 460.371(0.006)	0.412	252.545	
1	13	13	1	+	1	12	12	0	+		276 514.343(0.006)	28.052	131.903	
1	13	13	0	−	1	12	12	1	−		276 520.559(0.006)	28.053	131.903	
1	12	12	0		1	11	11	0			276 628.227(0.006)	24.285	127.361	
1	28	*	26		1	28	*	27			276 663.314(0.046)	12.892	231.834	
1	12	9	4	+	1	11	6	5	+		276 728.133(0.006)	3.040	118.269	
1	23	12	11		1	22	−14	9			276 879.698(0.047)	0.231	234.068	
0	20	13	7	−	0	19	14	6	−		276 943.307(0.008)	2.630	124.346	
0	17	14	4		0	16	14	3			276 947.320(0.006)	4.265	94.516	
0	17	−14	3		0	16	−14	2			276 954.598(0.006)	4.243	94.880	
1	23	*	20	−	1	22	*	19	−		276 976.326(0.045)	112.232	190.538	
1	24	11	13		1	23	12	11			277 065.160(0.056)	0.188	243.303	
0	11	7	5		0	10	5	6			277 087.076(0.002)	0.416	32.077	
1	17	−12	6		1	16	−12	5			277 126.172(0.016)	5.380	164.276	
0	13	9	4	−	0	12	8	5	−		277 131.947(0.003)	7.678	49.335	
0	13	11	3		0	12	10	3			277 135.193(0.003)	18.182	52.971	
1	17	−9	9		1	16	8	8			277 185.499(0.016)	12.763	156.502	
0	18	−8	10		0	17	9	9			277 219.282(0.006)	17.657	91.629	
0	20	−13	7		0	19	−14	5			277 228.830(0.009)	1.499	124.474	
0	18	9	10		0	17	9	9			277 276.835(0.006)	8.718	91.629	
0	13	−11	2		0	12	−10	2			277 306.692(0.003)	18.180	53.369	
0	11	7	5		0	10	−4	6			277 341.892(0.002)	1.664	32.069	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	19	−7	12		0	18	8	11			277 430.683(0.006)	22.810	97.525	
0	19	8	12		0	18	8	11			277 431.229(0.006)	9.547	97.525	
0	19	−7	12		0	18	−7	11			277 433.848(0.006)	9.547	97.524	
0	19	8	12		0	18	−7	11			277 434.394(0.006)	22.810	97.524	
0	18	−8	10		0	17	−8	9			277 481.883(0.006)	8.721	91.620	
1	12	−11	2		1	11	−10	2			277 513.359(0.005)	24.477	120.872	
0	18	−11	7		0	17	12	6			277 534.879(0.008)	3.267	98.711	
0	18	9	10		0	17	−8	9			277 539.435(0.006)	17.667	91.620	
0	14	−9	5		0	13	−8	5			277 609.604(0.003)	0.467	57.673	
0	18	8	10	+	0	17	9	9	+		277 736.874(0.006)	17.205	91.523	
0	18	9	10	+	0	17	9	9	+		277 834.022(0.006)	9.011	91.523	
0	20	*	14		0	19	7	13			277 879.218(0.007)	38.184	102.715	
0	20	*	14		0	19	−6	13			277 879.236(0.007)	38.184	102.715	
0	19	7	12	−	0	18	8	11	−		277 911.073(0.006)	22.212	97.428	
0	19	8	12	−	0	18	8	11	−		277 912.220(0.006)	10.040	97.428	
0	19	7	12	−	0	18	7	11	−		277 917.137(0.006)	10.040	97.428	
0	19	8	12	−	0	18	7	11	−		277 918.284(0.006)	22.213	97.428	
0	18	8	10	+	0	17	8	9	+		278 150.518(0.006)	9.016	91.509	
1	24	*	22	+	1	23	*	21	+		278 193.809(0.052)	124.015	193.544	
0	18	9	10	+	0	17	8	9	+		278 247.665(0.006)	17.221	91.509	
0	20	6	14	+	0	19	7	13	+		278 288.124(0.007)	26.920	102.617	
0	20	7	14	+	0	19	7	13	+		278 288.132(0.007)	11.183	102.617	
0	20	6	14	+	0	19	6	13	+		278 288.171(0.007)	11.183	102.617	
0	20	7	14	+	0	19	6	13	+		278 288.179(0.007)	26.920	102.617	
1	20	14	7	−	1	19	15	4	−		278 406.608(0.028)	1.808	200.714	
1	11	−7	5		1	10	4	6			278 445.211(0.006)	1.739	105.231	
0	21	*	16		0	20	*	15			278 462.120(0.007)	88.011	107.228	
0	13	11	3	+	0	12	10	2	+		278 685.565(0.003)	18.305	53.112	
0	11	7	5	+	0	10	5	6	+		278 724.256(0.002)	0.428	31.823	
0	21	*	16	−	0	20	*	15	−		278 815.865(0.007)	87.879	107.121	
0	17	13	5	+	0	16	13	4	+		278 888.431(0.005)	5.505	91.969	
1	17	10	7	+	1	16	11	6	+		278 904.319(0.016)	15.707	162.797	
0	13	11	2	−	0	12	10	3	−		278 998.320(0.003)	18.293	53.105	
0	24	−13	11		0	23	−15	8			279 010.805(0.011)	0.231	175.714	
0	11	8	4	−	0	10	5	5	−		279 047.343(0.003)	1.356	33.466	
0	22	14	9		0	21	−15	6			279 049.278(0.010)	1.263	149.983	
0	15	10	6		0	14	−9	5			279 072.788(0.005)	8.635	66.933	
1	13	10	3		1	12	9	3			279 095.493(0.006)	12.159	126.064	
0	11	7	5	+	0	10	4	6	+		279 101.028(0.002)	1.638	31.810	
0	22	*	18		0	21	*	17			279 103.836(0.008)	99.726	111.080	
0	10	−3	7		0	9	2	8			279 305.347(0.002)	0.401	20.655	
1	22	−14	9		1	21	−15	7			279 308.411(0.041)	3.445	224.751	
1	27	*	26		1	27	*	27			279 312.585(0.051)	6.577	212.044	
0	10	4	7		0	9	−1	8			279 316.825(0.002)	0.401	20.655	
0	17	13	4	−	0	16	13	3	−		279 388.143(0.005)	5.506	91.973	
0	22	*	18	+	0	21	*	17	+		279 407.792(0.007)	99.618	110.953	
1	17	15	3	+	1	16	15	2	+		279 466.487(0.015)	2.778	170.656	
0	14	10	5	−	0	13	9	4	−		279 501.271(0.004)	11.459	58.579	
1	17	15	2	−	1	16	15	1	−		279 505.720(0.015)	2.778	170.656	
0	16	−10	6		0	15	−10	5			279 544.731(0.005)	7.785	76.898	
0	16	10	6	+	0	15	10	5	+		279 561.686(0.005)	8.003	76.684	
1	25	*	24	−	1	24	*	23	−		279 614.814(0.061)	135.847	196.104	
0	23	*	20		0	22	*	19		279 775.700(0.050)	279 775.721(0.008)	111.544	114.277	
0	17	−13	4		0	16	−13	3			279 824.816(0.005)	5.472	92.084	
0	21	14	7	+	0	20	15	6	+		279 892.291(0.009)	2.350	138.247	
0	13	−9	4		0	12	8	5			279 963.305(0.003)	5.122	49.486	
0	23	*	20	−	0	22	*	19	−	280 028.240(0.050)	280 028.251(0.008)	111.458	114.120	8

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	17	13	5		0	16	13	4			280 061.190(0.005)	5.485	91.701	
1	17	−10	8		1	16	−10	7			280 139.549(0.016)	7.626	159.037	
1	17	11	7	+	1	16	11	6	+		280 246.596(0.015)	2.043	162.797	
1	22	14	9	−	1	21	15	6	−		280 266.719(0.039)	0.792	224.662	
0	12	−9	3		0	11	−7	4			280 316.106(0.004)	0.660	42.139	
1	15	−10	6		1	14	9	5			280 385.113(0.014)	1.664	140.793	
1	18	8	10		1	17	−9	9			280 435.778(0.020)	15.142	165.748	
0	12	9	3	−	0	11	7	4	−		280 461.599(0.003)	0.816	41.856	
0	24	*	22		0	23	*	21		280 466.450(0.050)	280 466.435(0.009)	123.472	116.824	8
1	20	6	14		1	19	−7	13			280 528.630(0.029)	27.246	176.980	
1	20	−7	14		1	19	−7	13			280 528.808(0.029)	10.077	176.980	
1	20	6	14		1	19	6	13			280 529.447(0.029)	10.077	176.980	
1	20	−7	14		1	19	6	13			280 529.626(0.029)	27.246	176.980	
0	23	13	10	−	0	22	15	7	−		280 584.032(0.010)	0.356	162.368	
1	19	7	12		1	18	−8	11			280 651.640(0.024)	21.355	171.758	
0	24	*	22	+	0	23	*	21	+	280 660.250(0.050)	280 660.214(0.009)	123.407	116.627	8
1	19	−8	12		1	18	−8	11			280 667.079(0.024)	9.834	171.758	
1	19	7	12		1	18	7	11			280 713.984(0.024)	9.830	171.755	
1	19	−8	12		1	18	7	11			280 729.422(0.024)	21.362	171.755	
1	21	*	16		1	20	−6	15			280 730.285(0.034)	43.325	181.454	
1	21	*	16		1	20	5	15			280 730.293(0.034)	43.325	181.454	
0	10	3	7	−	0	9	2	8	−		280 739.676(0.002)	0.399	20.339	
1	17	11	6		1	16	11	5			280 756.598(0.016)	8.746	162.171	
0	10	4	7	−	0	9	1	8	−		280 758.362(0.002)	0.399	20.339	
0	23	−13	10		0	22	−15	7			280 783.872(0.010)	0.293	162.418	
1	11	−8	4		1	10	5	5			280 898.589(0.009)	0.776	106.796	
0	24	14	11		0	23	−15	8			281 001.647(0.011)	1.086	175.714	
0	22	14	9	−	0	21	15	6	−		281 024.686(0.008)	2.375	149.939	
1	22	*	18		1	21	*	17			281 071.280(0.040)	98.620	185.202	
0	21	−14	7		0	20	−15	5			281 112.371(0.009)	1.619	138.301	
1	11	4	7	+	1	10	3	8	+		281 161.143(0.004)	0.812	105.333	
1	11	5	7	+	1	10	2	8	+		281 163.682(0.004)	0.812	105.333	
0	25	*	24		0	24	*	23		281 171.900(0.050)	281 171.887(0.012)	135.506	118.725	8
1	18	−9	10		1	17	−9	9			281 202.959(0.020)	9.225	165.748	
0	14	11	4		0	13	−10	3			281 220.690(0.007)	0.176	60.503	
0	25	*	24	−	0	24	*	23	−	281 293.930(0.050)	281 293.824(0.011)	135.467	118.472	8
0	16	10	7		0	15	−9	6			281 308.702(0.005)	9.919	75.656	
0	17	11	7	+	0	16	11	6	+		281 325.516(0.005)	7.534	87.115	
0	17	12	6	−	0	16	12	5	−		281 361.387(0.005)	6.634	89.402	
0	13	−10	3		0	12	9	4			281 394.428(0.005)	0.647	51.116	
0	24	13	11	−	0	23	15	8	−		281 398.957(0.011)	0.284	175.628	
0	17	−9	8		0	16	−9	7			281 427.107(0.005)	8.069	84.778	
1	23	*	20		1	22	*	19			281 447.519(0.047)	110.643	188.227	
1	18	9	9	−	1	17	10	8	−		281 525.177(0.019)	22.405	169.897	
1	26	*	26	+	1	25	*	25	+		281 559.147(0.072)	147.609	198.352	
1	14	12	3	−	1	13	11	2	−		281 564.674(0.008)	19.755	137.468	
1	18	10	9	−	1	17	10	8	−		281 574.664(0.019)	2.010	169.897	
0	11	9	3	+	0	10	7	4	+		281 621.148(0.003)	0.434	35.162	
1	18	9	9	−	1	17	9	8	−		281 698.477(0.019)	2.009	169.891	
1	18	10	9	−	1	17	9	8	−		281 747.964(0.019)	22.433	169.891	
1	17	−11	7		1	16	−11	6			281 752.537(0.016)	6.261	161.416	
1	24	*	22		1	23	*	21			281 789.649(0.055)	122.764	190.521	
0	26	*	26		0	25	*	25		281 891.420(0.050)	281 891.420(0.018)	147.641	119.982	8
0	26	*	26	+	0	25	*	25	+	281 922.010(0.050)	281 921.949(0.018)	147.632	119.658	8
1	17	11	6	−	1	16	12	5	−		281 964.847(0.018)	10.074	164.435	
1	25	*	24		1	24	*	23			282 044.102(0.064)	135.007	192.073	
1	14	8	6		1	13	7	6			282 050.552(0.008)	0.942	129.704	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	11	8	3		1	10	6	4			282 119.822(0.006)	0.581	108.067	
1	26	*	26		1	25	*	25			282 171.571(0.075)	147.386	192.865	
1	16	12	4	+	1	15	12	3	+		282 186.744(0.013)	3.984	155.496	
1	17	10	7	+	1	16	10	6	+		282 294.915(0.015)	2.058	162.684	
0	16	−11	5		0	15	11	5			282 471.024(0.007)	0.484	78.194	
1	19	8	11	+	1	18	9	10	+		282 555.626(0.023)	26.816	176.371	
1	19	9	11	+	1	18	9	10	+		282 557.019(0.023)	3.380	176.371	
1	19	8	11	+	1	18	8	10	+		282 560.715(0.023)	3.380	176.371	
1	19	9	11	+	1	18	8	10	+		282 562.108(0.023)	26.817	176.371	
1	18	8	10		1	17	8	9			282 843.930(0.020)	9.129	165.668	
0	17	11	7		0	16	11	6			282 846.919(0.005)	7.152	87.121	
0	17	9	8	−	0	16	9	7	−		282 939.016(0.005)	8.332	84.594	
0	30	*	28		0	30	*	29			283 055.629(0.051)	12.476	180.323	
0	29	*	28		0	29	*	29			283 161.555(0.053)	6.327	159.724	
1	20	7	13	−	1	19	8	12	−		283 560.662(0.027)	32.381	182.224	
1	20	8	13	−	1	19	8	12	−		283 560.684(0.027)	3.495	182.224	
1	20	7	13	−	1	19	7	12	−		283 560.756(0.027)	3.495	182.224	
1	20	8	13	−	1	19	7	12	−		283 560.778(0.027)	32.381	182.224	
1	18	−9	10		1	17	8	9			283 611.110(0.020)	15.429	165.668	
1	17	11	7	+	1	16	10	6	+		283 637.191(0.016)	16.349	162.684	
1	13	−10	4		1	12	−9	4			283 701.687(0.006)	19.058	124.797	
0	19	−12	7		0	18	13	6			283 776.859(0.010)	1.993	111.037	
0	12	7	5	−	0	11	6	6	−		283 883.674(0.003)	2.482	39.339	
1	16	11	5	−	1	15	11	4	−		283 908.951(0.013)	2.846	154.513	
1	30	*	27		1	30	*	28			283 914.350(0.051)	18.971	263.759	
0	13	−12	1		0	12	−11	1			283 930.623(0.003)	22.383	55.576	
1	18	−12	7		1	17	12	5			283 937.277(0.022)	0.222	173.930	
0	15	10	6	−	0	14	9	5	−		283 973.159(0.005)	9.884	66.694	
0	17	12	6		0	16	12	5			284 036.182(0.005)	6.329	89.237	
0	17	10	8		0	16	−9	7			284 064.044(0.006)	11.965	84.778	
1	12	7	5	−	1	11	6	6	−		284 102.750(0.005)	2.584	116.648	
0	13	12	2		0	12	11	2			284 149.262(0.003)	22.410	55.166	
0	24	14	11	−	0	23	15	8	−		284 251.097(0.011)	1.312	175.628	
0	14	−10	4		0	13	−9	4			284 373.410(0.004)	6.151	58.825	
1	13	11	2		1	12	10	2			284 386.856(0.006)	15.622	128.408	
0	19	−11	8		0	18	−12	6			284 395.802(0.007)	0.417	109.420	
1	12	8	4		1	11	−7	5			284 453.747(0.012)	1.140	114.519	
1	14	12	2	+	1	13	11	3	+		284 556.957(0.008)	19.981	137.399	
1	21	*	15	+	1	20	*	14	+		284 562.772(0.032)	83.152	187.472	
1	17	14	4	−	1	16	14	3	−		284 634.276(0.015)	3.776	168.137	
1	12	7	5		1	11	−6	6			284 681.536(0.007)	2.749	112.869	
0	23	15	9		0	23	12	12			284 752.803(0.005)	0.262	165.333	
0	17	−12	5		0	16	−12	4			284 837.918(0.006)	6.384	89.618	
0	14	9	6		0	13	8	6			284 875.833(0.003)	0.196	56.554	
0	25	15	10	−	0	25	12	13	+		284 942.044(0.006)	0.333	194.746	
0	12	−7	5		0	11	6	6			284 947.918(0.003)	2.388	39.568	
0	11	−8	3		0	10	−5	5			285 022.479(0.003)	0.244	33.736	
0	12	7	5	−	0	11	5	6	−		285 044.318(0.003)	0.658	39.301	
1	18	9	9		1	17	−10	8			285 061.500(0.020)	9.757	168.381	
0	16	10	7	−	0	15	9	6	−		285 067.334(0.005)	9.947	75.431	
1	23	−13	11		1	22	−14	9			285 150.924(0.047)	1.103	234.068	
1	12	8	5	−	1	11	5	6	−		285 156.300(0.005)	2.540	116.647	
1	21	13	8		1	20	−14	7			285 213.413(0.035)	1.597	210.404	
0	17	12	5	+	0	16	12	4	+		285 290.130(0.005)	6.673	89.446	
0	30	*	28	+	0	30	*	29	−		285 301.614(0.051)	12.534	180.094	
1	17	14	3	+	1	16	14	2	+		285 469.255(0.015)	3.795	168.141	
1	22	*	17	−	1	21	*	16	−		285 563.051(0.038)	94.657	192.134	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	23	11	12		1	22	12	10			285 620.228(0.048)	0.268	230.505	
0	13	12	2	−	0	12	11	1	−		285 640.671(0.003)	22.403	55.380	
0	13	12	1	+	0	12	11	2	+		285 652.650(0.003)	22.403	55.380	
0	12	−7	5		0	11	−5	6			285 755.600(0.003)	0.612	39.541	
1	10	9	1		1	9	7	2			285 766.977(0.005)	0.320	104.238	
0	29	*	28	−	0	29	*	29	+		285 798.845(0.053)	6.361	159.404	
1	11	10	1	+	1	10	7	4	+		285 832.564(0.008)	0.226	112.419	
1	21	14	8	−	1	20	15	5	−		286 122.559(0.033)	1.448	212.271	
0	23	15	9	+	0	23	12	12	−		286 218.887(0.005)	0.262	165.344	
1	14	11	3	−	1	13	10	4	−		286 313.524(0.008)	11.399	136.066	
1	23	*	19	+	1	22	*	18	+		286 584.637(0.045)	106.276	196.227	
0	14	10	5		0	13	9	5			286 621.035(0.004)	5.609	58.343	
0	17	10	8	−	0	16	9	7	−		286 671.109(0.006)	11.616	84.594	
0	18	−9	9		0	17	10	8			286 832.272(0.006)	14.374	94.253	
0	11	−5	6		0	10	4	7			286 869.589(0.002)	1.199	29.972	
0	11	−5	6		0	10	−3	7			286 881.036(0.002)	0.276	29.972	
0	18	9	9	−	0	17	10	8	−		286 891.966(0.006)	13.873	94.156	
1	29	*	27		1	29	*	28			286 970.212(0.055)	12.900	242.661	
0	23	14	10		0	22	−15	7			287 012.352(0.010)	1.562	162.418	
1	18	15	3		1	17	15	2			287 085.620(0.020)	2.898	184.246	
1	10	3	7		1	9	−2	8			287 239.003(0.003)	0.498	93.534	
1	10	−4	7		1	9	1	8			287 305.248(0.003)	0.498	93.534	
1	14	9	5		1	13	8	5			287 321.641(0.008)	4.928	131.209	
0	22	14	9		0	22	11	12			287 364.736(0.004)	0.196	149.705	
1	13	9	4	−	1	12	8	5	−		287 482.950(0.008)	4.165	126.158	
0	18	10	9		0	17	10	8			287 558.900(0.006)	8.496	94.253	
1	20	11	9		1	19	12	7			287 572.550(0.029)	0.976	194.426	
1	24	*	21	−	1	23	*	20	−		287 662.792(0.052)	118.000	199.777	
0	11	6	6		0	10	4	7			287 677.270(0.002)	0.275	29.972	
0	11	6	6		0	10	−3	7			287 688.717(0.002)	1.195	29.972	
0	11	5	6	−	0	10	4	7	−		287 708.258(0.002)	1.196	29.704	
0	11	5	6	−	0	10	3	7	−		287 726.885(0.002)	0.288	29.703	
0	19	−8	11		0	18	9	10		287 740.090(0.050)	287 740.083(0.006)	20.029	100.878	8
0	19	9	11		0	18	9	10		287 751.600(0.050)	287 751.622(0.006)	9.303	100.878	8
0	19	−8	11		0	18	−8	10			287 797.636(0.006)	9.304	100.876	
0	19	9	11		0	18	−8	10		287 809.200(0.050)	287 809.174(0.006)	20.031	100.876	8
0	20	−13	7		0	19	14	6			287 867.745(0.011)	1.246	124.119	
0	18	10	8	+	0	17	11	7	+		287 981.790(0.006)	8.987	96.499	
0	18	10	9	−	0	17	10	8	−		287 990.234(0.006)	8.723	94.156	
0	20	−7	13		0	19	8	12			287 997.818(0.007)	25.138	106.779	
0	20	8	13		0	19	8	12			287 997.907(0.007)	10.097	106.779	
0	20	−7	13		0	19	−7	12			287 998.364(0.007)	10.097	106.779	
0	20	8	13		0	19	−7	12			287 998.453(0.007)	25.138	106.779	
0	22	14	9	−	0	22	11	12	+		288 215.805(0.004)	0.197	149.699	
0	19	8	11	+	0	18	9	10	+	288 272.670(0.050)	288 272.620(0.006)	19.531	100.791	8
0	19	9	11	+	0	18	9	10	+	288 293.590(0.050)	288 293.630(0.006)	9.667	100.791	8
1	17	12	6	−	1	16	12	5	−		288 351.009(0.015)	2.071	164.435	
0	19	8	11	+	0	18	8	10	+		288 369.767(0.006)	9.668	100.787	
0	19	9	11	+	0	18	8	10	+	288 390.740(0.050)	288 390.777(0.006)	19.534	100.787	8
1	11	3	8	−	1	10	*	9	−		288 429.939(0.005)	0.420	102.863	
1	11	4	8	−	1	10	*	9	−		288 430.059(0.005)	0.420	102.863	
0	20	7	13	−	0	19	8	12	−		288 453.584(0.007)	24.402	106.698	
0	20	8	13	−	0	19	8	12	−		288 453.791(0.007)	10.736	106.698	
0	20	7	13	−	0	19	7	12	−		288 454.731(0.007)	10.737	106.698	
0	20	8	13	−	0	19	7	12	−		288 454.938(0.007)	24.402	106.698	
0	21	*	15		0	20	*	14			288 492.442(0.007)	82.106	111.984	
1	13	9	4	−	1	12	7	5	−		288 500.113(0.007)	0.177	126.125	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	17	9	8		1	16	9	7			288 618.247(0.016)	8.235	158.307	
1	10	7	3		1	9	4	5			288 758.102(0.010)	0.248	99.999	
0	11	9	3		0	10	−6	4			288 792.750(0.005)	0.263	34.855	
1	14	−8	7		1	13	−7	7			288 842.666(0.008)	0.898	128.087	
1	23	13	10		1	23	10	13			288 852.555(0.006)	0.269	236.170	
1	25	*	23	+	1	24	*	22	+		288 859.676(0.061)	129.802	202.823	
0	11	6	6	−	0	10	4	7	−		288 868.901(0.002)	0.286	29.704	
0	21	*	15	+	0	20	7	14	+		288 885.649(0.007)	40.976	111.900	
0	21	*	15	+	0	20	6	14	+		288 885.657(0.007)	40.976	111.900	
0	11	6	6	−	0	10	3	7	−		288 887.529(0.002)	1.189	29.703	
0	25	−15	10		0	25	−12	13			288 913.540(0.006)	0.316	194.705	
1	13	12	1		1	12	11	1			288 945.669(0.006)	19.069	130.971	
0	23	14	10	−	0	22	15	7	−		288 961.625(0.009)	2.052	162.368	
0	18	12	7		0	17	−12	5			289 007.743(0.007)	0.524	99.119	
0	22	*	17		0	21	*	16		289 091.760(0.050)	289 091.729(0.008)	93.759	116.517	8
1	18	14	4		1	17	14	3			289 160.189(0.020)	4.225	180.298	
1	14	−9	6		1	13	−8	6			289 204.102(0.008)	7.915	130.060	
0	22	14	9		0	21	15	7			289 237.240(0.010)	1.020	149.643	
1	17	10	7		1	16	10	6			289 285.928(0.016)	9.321	160.004	
1	17	13	5	+	1	16	13	4	+		289 418.911(0.015)	3.815	166.095	
0	22	*	17	−	0	21	*	16	−	289 435.480(0.050)	289 435.419(0.008)	93.632	116.421	8
0	18	−9	9		0	17	−9	8			289 469.210(0.006)	8.534	94.165	
1	18	−15	4		1	17	−15	3			289 570.961(0.021)	5.066	182.617	
1	24	−13	12		1	23	−14	10			289 657.784(0.058)	0.473	246.738	
0	23	*	19		0	22	*	18		289 739.830(0.050)	289 739.829(0.008)	105.492	120.390	8
1	28	*	27		1	28	*	28			289 812.006(0.062)	6.580	222.167	
1	11	5	6		1	10	−4	7			289 835.077(0.004)	1.485	103.117	
0	23	*	19	+	0	22	*	18	+	290 037.560(0.050)	290 037.562(0.008)	105.387	120.273	8
1	22	−14	9		1	22	−11	12			290 177.136(0.007)	0.171	224.388	
0	18	10	9		0	17	−9	8			290 195.838(0.006)	14.530	94.165	
0	11	10	2		0	10	8	3			290 217.872(0.003)	0.281	36.768	
1	26	*	25	−	1	25	*	24	−		290 264.068(0.071)	141.646	205.431	
0	18	−10	8		0	17	11	7			290 363.325(0.007)	9.545	96.556	
0	24	*	21		0	23	*	20		290 414.670(0.050)	290 414.674(0.008)	117.326	123.610	8
1	18	−14	5		1	17	−14	4			290 430.847(0.020)	6.339	179.552	
0	13	−13	0		0	12	−12	0			290 490.319(0.003)	26.411	58.065	
0	18	9	9	−	0	17	9	8	−		290 624.059(0.006)	8.783	94.031	
0	24	*	21	−	0	23	*	20	−	290 663.780(0.050)	290 663.758(0.008)	117.240	123.461	8
1	20	7	13		1	19	−8	12			290 942.070(0.029)	23.806	181.120	
1	20	−8	13		1	19	−8	12			290 945.715(0.029)	10.379	181.120	
1	20	7	13		1	19	7	12			290 957.509(0.029)	10.379	181.119	
1	21	6	15		1	20	−7	14			290 960.210(0.034)	29.704	186.337	
1	21	−7	15		1	20	−7	14			290 960.248(0.034)	10.548	186.337	
1	21	6	15		1	20	6	14			290 960.389(0.034)	10.548	186.337	
1	21	−7	15		1	20	6	14			290 960.427(0.034)	29.704	186.337	
1	20	−8	13		1	19	7	12			290 961.153(0.029)	23.808	181.119	
1	18	10	8	+	1	17	11	7	+		290 972.844(0.019)	18.448	172.145	
0	13	13	1		0	12	12	1			291 047.294(0.003)	26.413	57.662	
1	18	−10	9		1	17	−10	8			291 088.209(0.020)	8.920	168.381	
0	25	*	23		0	24	*	22		291 107.350(0.050)	291 107.316(0.009)	129.265	126.180	8
0	21	−14	7		0	20	15	6			291 149.986(0.012)	0.776	137.967	
1	19	8	11		1	18	−9	10			291 200.407(0.024)	17.945	175.128	
1	22	*	17		1	21	*	16			291 242.450(0.040)	92.469	190.818	
0	25	*	23	+	0	24	*	22	+	291 299.550(0.050)	291 299.567(0.009)	129.201	125.988	8
1	19	−9	11		1	18	−9	10			291 420.058(0.024)	9.812	175.128	
1	18	11	8	+	1	17	11	7	+		291 425.163(0.019)	2.657	172.145	
1	15	12	4	−	1	14	11	3	−		291 451.216(0.011)	15.636	145.616	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	$\mu^2 S$ (D^2)	E_1 (cm^{-1})	Ref.
1	25	−13	13		1	24	−14	11			291 595.540(0.064)	0.246	259.849	
1	23	*	19		1	22	*	18			291 633.934(0.047)	104.426	194.578	
0	11	−10	1		0	10	−8	2			291 691.301(0.003)	0.291	37.127	
0	18	10	9	−	0	17	9	8	−		291 722.327(0.006)	14.086	94.031	
1	14	13	2	+	1	13	12	1	+		291 761.635(0.007)	25.704	139.053	
0	26	*	25		0	25	*	24		291 814.660(0.050)	291 814.640(0.013)	141.307	128.104	8
1	14	13	1	−	1	13	12	2	−		291 892.780(0.007)	25.725	139.050	
0	26	*	25	−	0	25	*	24	−	291 936.100(0.050)	291 936.064(0.013)	141.267	127.855	8
1	19	8	11		1	18	8	10			291 967.587(0.024)	9.783	175.103	
1	18	−13	6		1	17	−13	5			292 017.879(0.020)	7.440	176.639	
1	24	*	21		1	23	*	20			292 045.923(0.054)	116.447	197.615	
1	18	13	5		1	17	13	4			292 184.597(0.019)	5.364	176.705	
1	19	−9	11		1	18	8	10			292 187.238(0.024)	18.024	175.103	
0	18	15	4	+	0	17	15	3	+		292 196.348(0.006)	4.285	107.168	
0	18	15	3	−	0	17	15	2	−		292 210.799(0.006)	4.285	107.168	
1	27	*	27	+	1	26	*	26	+		292 214.764(0.083)	153.406	207.744	
1	18	10	8	+	1	17	10	7	+		292 315.120(0.019)	2.661	172.101	
0	13	13	1	+	0	12	12	0	+		292 319.792(0.003)	26.354	57.939	
0	13	13	0	−	0	12	12	1	−		292 319.980(0.003)	26.354	57.939	
0	13	−9	4		0	12	−7	5			292 354.714(0.003)	1.113	49.073	
1	25	*	23		1	24	*	22			292 413.072(0.063)	128.567	199.921	
1	11	−6	6		1	10	3	7			292 427.620(0.004)	1.474	103.115	
1	19	9	10	−	1	18	10	9	−		292 450.932(0.023)	24.968	179.289	
1	19	10	10	−	1	18	10	9	−		292 465.616(0.023)	2.299	179.289	
1	19	9	10	−	1	18	9	9	−		292 500.419(0.023)	2.299	179.288	
1	19	10	10	−	1	18	9	9	−		292 515.103(0.023)	24.975	179.288	
0	27	*	27		0	26	*	26		292 536.450(0.050)	292 536.435(0.022)	153.444	129.385	8
0	27	*	27	+	0	26	*	26	+	292 566.460(0.050)	292 566.395(0.022)	153.436	129.062	8
1	12	11	2	+	1	11	8	3	+		292 590.262(0.013)	0.732	120.343	
1	26	*	25		1	25	*	24			292 682.432(0.074)	140.810	201.481	
0	18	15	4		0	17	15	3			292 709.582(0.006)	4.290	106.805	
0	14	11	4		0	13	10	4			292 714.342(0.004)	15.663	60.119	
1	18	11	8	+	1	17	10	7	+		292 767.440(0.019)	18.680	172.101	
0	18	−15	3		0	17	−15	2			292 812.114(0.006)	4.267	107.138	
1	27	*	27		1	26	*	26			292 815.291(0.086)	153.190	202.277	
1	12	8	4		1	11	6	5			292 856.148(0.008)	0.459	114.238	
1	13	−13	1		1	12	−12	1			292 882.228(0.006)	22.678	133.709	
0	13	9	4	−	0	12	7	5	−		292 899.412(0.003)	1.215	48.809	
0	14	−11	3		0	13	−10	3			292 981.811(0.004)	15.745	60.503	
1	13	−11	3		1	12	−10	3			293 069.529(0.006)	22.986	127.268	
0	30	*	29		0	30	*	30			293 072.218(0.064)	6.329	170.547	
1	20	8	12	+	1	19	9	11	+		293 404.971(0.027)	29.041	185.796	
1	20	9	12	+	1	19	9	11	+		293 405.326(0.027)	3.961	185.796	
1	20	8	12	+	1	19	8	11	+		293 406.364(0.027)	3.961	185.796	
1	20	9	12	+	1	19	8	11	+		293 406.719(0.027)	29.041	185.796	
0	14	11	4	+	0	13	10	3	+		293 538.546(0.004)	16.164	60.248	
0	12	9	4		0	11	7	5			293 699.772(0.003)	0.458	41.320	
1	12	6	6	+	1	11	5	7	+		293 937.176(0.005)	1.763	114.711	
1	12	6	6	+	1	11	4	7	+		293 939.695(0.005)	0.178	114.711	
0	11	10	1	+	0	10	8	2	+		293 974.395(0.003)	0.278	36.802	
1	12	7	6	+	1	11	5	7	+		294 048.513(0.005)	0.179	114.711	
1	12	7	6	+	1	11	4	7	+		294 051.031(0.005)	1.760	114.711	
1	21	−13	9		1	21	−10	12			294 306.468(0.005)	0.178	209.332	
1	21	7	14	−	1	20	8	13	−		294 371.156(0.032)	34.775	191.682	
1	21	8	14	−	1	20	8	13	−		294 371.162(0.032)	3.917	191.682	
1	21	7	14	−	1	20	7	13	−		294 371.178(0.032)	3.917	191.682	
1	21	8	14	−	1	20	7	13	−		294 371.184(0.032)	34.775	191.682	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	14	10	4	+	0	13	9	5	+		294 555.285(0.003)	10.461	58.257	
1	14	10	4		1	13	9	4			294 648.330(0.008)	10.340	133.104	
0	18	14	5	−	0	17	14	4	−		294 674.266(0.006)	5.544	104.065	
1	11	*	9	+	1	10	*	10	+		294 743.791(0.006)	0.278	100.146	
1	22	11	11		1	21	12	9			294 763.358(0.041)	0.409	217.968	
1	16	−10	7		1	15	9	6			294 831.750(0.014)	6.429	149.202	
0	18	14	4	+	0	17	14	3	+		294 895.797(0.006)	5.544	104.067	
0	17	11	6	−	0	16	11	5	−		295 002.978(0.006)	8.025	87.431	
1	23	14	9		1	22	15	7			295 125.140(0.049)	1.961	238.123	
0	17	−11	6		0	16	−11	5			295 141.464(0.006)	7.679	87.616	
0	11	10	2	−	0	10	8	3	−		295 186.346(0.003)	0.276	36.761	
0	17	−10	7		0	16	−10	6			295 268.574(0.005)	8.503	86.223	
1	22	*	16	+	1	21	*	15	+		295 334.441(0.038)	88.825	196.964	
0	14	11	3	−	0	13	10	4	−		295 446.508(0.003)	16.083	60.204	
0	18	−14	4		0	17	−14	3			295 495.553(0.006)	5.516	104.118	
1	17	11	6	−	1	16	11	5	−		295 528.370(0.015)	1.985	163.983	
1	18	12	6	+	1	17	13	5	+		295 538.228(0.022)	7.233	175.749	
0	18	14	5		0	17	14	4			295 595.283(0.006)	5.536	103.754	
1	18	12	6		1	17	12	5			295 685.569(0.020)	8.635	173.930	
1	24	13	11		1	23	−15	9			295 759.267(0.055)	0.540	249.517	
0	30	*	29	−	0	30	*	30	+		295 801.020(0.064)	6.363	170.228	
0	18	11	8	+	0	17	11	7	+		295 855.753(0.006)	8.374	96.499	
1	17	13	4	−	1	16	13	3	−		295 885.340(0.016)	4.340	166.171	
0	17	10	7	+	0	16	10	6	+		296 019.980(0.005)	8.780	86.009	
0	18	11	8		0	17	11	7			296 178.910(0.006)	8.184	96.556	
1	18	−12	7		1	17	−12	6			296 242.351(0.020)	6.357	173.520	
0	17	−12	5		0	16	12	5			296 266.858(0.008)	0.263	89.237	
0	15	11	5		0	14	−10	4			296 287.502(0.006)	2.425	68.311	
1	23	*	18	−	1	22	*	17	−		296 299.685(0.045)	100.369	201.659	
1	13	13	0		1	12	12	0			296 318.685(0.008)	26.572	136.589	
0	13	8	5	+	0	12	7	6	+		296 542.179(0.003)	3.447	47.525	
1	13	10	4	−	1	12	8	5	−		297 019.292(0.007)	0.333	126.158	
1	30	*	28		1	30	*	29			297 261.033(0.066)	12.907	253.843	
1	24	*	20	+	1	23	*	19	+		297 291.877(0.052)	112.021	205.786	
0	12	8	5		0	11	6	6			297 339.327(0.003)	0.522	39.568	
1	19	10	9		1	18	−11	8			297 438.008(0.024)	7.660	180.750	
0	18	13	6	+	0	17	13	5	+		297 472.372(0.006)	6.710	101.272	
1	16	12	5	−	1	15	11	4	−		297 472.475(0.014)	13.414	154.513	
1	21	11	10		1	20	12	8			297 556.615(0.034)	0.582	205.874	
1	23	−14	10		1	22	−15	8			297 849.107(0.047)	3.042	236.803	
1	18	−11	8		1	17	−11	7			297 873.823(0.020)	7.414	170.814	
1	13	10	4	−	1	12	7	5	−		298 036.454(0.008)	3.310	126.125	
0	19	−9	10		0	18	10	9			298 061.439(0.006)	17.031	103.845	
0	12	8	5		0	11	−5	6			298 147.008(0.003)	1.921	39.541	
0	13	−8	5		0	12	7	6			298 192.230(0.003)	3.204	47.726	
1	18	11	7	−	1	17	12	6	−		298 200.996(0.020)	14.672	174.054	
0	19	10	10		0	18	10	9			298 236.523(0.006)	9.079	103.845	
0	20	−8	12		0	19	9	11			298 242.747(0.007)	22.369	110.476	
0	20	9	12		0	19	9	11			298 244.895(0.007)	9.879	110.476	
0	20	−8	12		0	19	−8	11			298 254.286(0.007)	9.879	110.476	
0	20	9	12		0	19	−8	11			298 256.434(0.007)	22.369	110.476	
1	25	*	22	−	1	24	*	21	−		298 344.930(0.060)	123.771	209.372	
1	14	−10	5		1	13	−9	5			298 362.835(0.008)	16.799	131.924	
0	24	14	10	+	0	24	11	13	−		298 401.824(0.005)	0.227	177.751	
1	18	9	9		1	17	9	8			298 441.376(0.020)	8.766	167.935	
1	10	−10	1		1	9	8	1			298 484.469(0.006)	0.210	106.239	
0	19	9	10	−	0	18	10	9	−		298 506.834(0.006)	16.555	103.762	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	21	−7	14		0	20	8	13			298 581.392(0.007)	27.511	116.385	
0	21	8	14		0	20	8	13			298 581.405(0.007)	10.596	116.385	
0	21	−7	14		0	20	−7	13			298 581.480(0.007)	10.596	116.385	
0	21	8	14		0	20	−7	13			298 581.494(0.007)	27.511	116.385	
0	15	−10	5		0	14	−9	5			298 748.879(0.004)	1.197	66.933	
0	20	8	12	+	0	19	9	11	+		298 751.405(0.007)	21.791	110.407	
0	20	9	12	+	0	19	9	11	+		298 755.664(0.007)	10.338	110.407	
0	20	8	12	+	0	19	8	11	+		298 772.416(0.007)	10.338	110.406	
0	20	9	12	+	0	19	8	11	+		298 776.674(0.007)	21.791	110.406	
0	19	−9	10		0	18	−9	9			298 788.067(0.006)	9.086	103.821	
0	19	10	10	−	0	18	10	9	−		298 789.492(0.006)	9.358	103.762	
0	14	−10	4		0	13	9	5			298 814.474(0.005)	4.271	58.343	
0	18	12	7	−	0	17	12	6	−		298 852.866(0.006)	7.712	98.787	
0	19	10	10		0	18	−9	9			298 963.151(0.006)	17.063	103.821	
0	11	−4	7		0	10	3	8			298 971.571(0.003)	0.727	27.513	
0	21	7	14	−	0	20	8	13	−		299 014.295(0.007)	26.573	116.320	
0	21	8	14	−	0	20	8	13	−		299 014.331(0.007)	11.444	116.320	
0	21	7	14	−	0	20	7	13	−		299 014.502(0.007)	11.444	116.320	
0	21	8	14	−	0	20	7	13	−		299 014.538(0.007)	26.573	116.320	
0	11	5	7		0	10	−2	8			299 021.857(0.003)	0.727	27.513	
0	22	*	16		0	21	*	15			299 110.052(0.008)	87.844	121.607	
1	22	13	9		1	21	14	7			299 268.126(0.042)	1.404	222.602	
1	18	15	4	+	1	17	15	3	+		299 460.005(0.019)	3.936	179.978	
0	22	*	16	+	0	21	*	15	+		299 488.493(0.008)	87.698	121.536	
1	26	*	24	+	1	25	*	23	+		299 522.861(0.070)	135.591	212.459	
0	18	−13	5		0	17	−13	4			299 541.950(0.006)	6.601	101.418	
0	18	13	5	−	0	17	13	4	−		299 559.306(0.006)	6.722	101.292	
0	13	8	5	+	0	12	6	6	+		299 575.481(0.003)	0.923	47.424	
0	18	13	6		0	17	13	5			299 603.627(0.006)	6.585	101.043	
0	19	9	10	−	0	18	9	9	−		299 605.102(0.006)	9.370	103.726	
0	11	9	3	+	0	10	6	4	+		299 650.410(0.004)	0.393	34.561	
0	12	8	5	−	0	11	6	6	−		299 651.139(0.003)	0.540	39.339	
1	11	9	2		1	10	7	3			299 670.937(0.005)	0.475	109.631	
1	19	9	10		1	18	−10	9			299 694.292(0.024)	13.819	178.091	
0	23	*	18		0	22	*	17			299 722.024(0.008)	99.510	126.160	
0	12	9	4	+	0	11	7	5	+		299 736.622(0.003)	0.567	41.120	
1	18	15	3	−	1	17	15	2	−		299 781.112(0.019)	3.941	179.979	
0	14	−12	2		0	13	−11	2			299 843.636(0.004)	20.428	62.619	
1	10	2	8		1	9	*	9			299 876.250(0.004)	0.171	90.562	
1	10	−3	8		1	9	*	9			299 879.104(0.004)	0.171	90.562	
1	14	−9	6		1	13	7	6			299 886.517(0.010)	0.183	129.704	
0	19	10	10	−	0	18	9	9	−		299 887.760(0.006)	16.600	103.726	
0	19	11	8	−	0	18	12	7	−		299 925.486(0.007)	7.129	108.756	
0	14	12	3		0	13	11	3			299 966.262(0.004)	20.459	62.215	
0	20	−12	8		0	19	−13	6			300 022.365(0.008)	0.792	122.147	
0	23	*	18	−	0	22	*	17	−	300 056.125(0.050)	300 056.046(0.008)	99.388	126.076	6
0	11	−9	2		0	10	−6	4			300 267.921(0.004)	0.203	34.855	
0	12	9	4		0	11	−6	5			300 303.391(0.004)	0.893	41.099	
1	29	*	28		1	29	*	29			300 305.779(0.073)	6.582	232.644	
0	11	4	7	+	0	10	3	8	+		300 308.122(0.003)	0.723	27.225	
1	14	11	3		1	13	10	3			300 309.924(0.008)	14.113	135.373	
0	13	−8	5		0	12	−6	6			300 373.212(0.003)	0.846	47.654	
0	24	*	20		0	23	*	19		300 375.420(0.050)	300 375.397(0.008)	111.260	130.055	6
0	11	5	7	+	0	10	2	8	+	300 387.835(0.050)	300 387.748(0.003)	0.723	27.225	6
1	14	14	1	−	1	13	13	0	−		300 435.004(0.008)	30.194	141.126	
1	14	14	0	+	1	13	13	1	+		300 436.855(0.008)	30.195	141.126	
1	12	−8	5		1	11	5	6			300 613.885(0.007)	1.616	112.785	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	24	*	20	+	0	23	*	19	+		300 667.092(0.008)	111.158	129.948	
0	23	14	10		0	22	15	8			300 700.080(0.010)	0.285	161.962	
0	12	8	5	−	0	11	5	6	−		300 811.783(0.003)	1.878	39.301	
1	27	*	26	−	1	26	*	25	−		300 911.395(0.081)	147.446	215.113	
1	18	12	7	−	1	17	12	6	−		300 992.144(0.019)	2.042	174.054	
0	25	*	22		0	24	*	21			301 052.901(0.008)	123.109	133.297	
0	18	12	7		0	17	12	6			301 238.419(0.006)	7.101	98.711	
1	21	7	14		1	20	−8	13			301 267.477(0.034)	26.244	190.825	
1	21	−8	14		1	20	−8	13			301 268.305(0.034)	10.909	190.825	
1	21	7	14		1	20	7	13			301 271.121(0.034)	10.909	190.824	
1	21	−8	14		1	20	7	13			301 271.949(0.034)	26.244	190.824	
0	25	*	22	−	0	24	*	21	−	301 298.549(0.050)	301 298.644(0.008)	123.025	133.157	6
1	22	6	16		1	21	−7	15			301 407.695(0.040)	32.142	196.042	
1	22	−7	16		1	21	−7	15			301 407.703(0.040)	11.032	196.042	
1	22	6	16		1	21	6	15			301 407.733(0.040)	11.032	196.042	
1	22	−7	16		1	21	6	15			301 407.742(0.040)	32.142	196.042	
0	14	12	3	−	0	13	11	2	−	301 460.233(0.050)	301 460.310(0.004)	20.533	62.411	6
0	24	−14	10		0	24	−11	13			301 496.068(0.005)	0.221	177.723	
1	20	8	12		1	19	−9	11			301 514.490(0.029)	20.508	184.849	
1	20	−9	12		1	19	−9	11			301 572.854(0.029)	10.406	184.849	
0	14	12	2	+	0	13	11	3	+	301 583.969(0.050)	301 583.944(0.004)	20.529	62.408	6
1	19	−12	8		1	18	12	6			301 694.631(0.025)	0.711	183.793	
1	20	8	12		1	19	8	11			301 734.141(0.029)	10.399	184.842	
0	26	*	24		0	25	*	23		301 747.298(0.050)	301 747.441(0.010)	135.059	135.890	6
1	23	*	18		1	22	*	17			301 759.162(0.047)	98.284	200.533	
1	20	−9	12		1	19	8	11			301 792.506(0.029)	20.528	184.842	
1	19	−10	10		1	18	−10	9			301 855.183(0.024)	9.653	178.091	
1	17	12	6	−	1	16	11	5	−		301 914.533(0.017)	13.939	163.983	
1	13	−12	2		1	12	−11	2			301 920.514(0.006)	26.639	130.129	
0	26	*	24	+	0	25	*	23	+	301 938.101(0.050)	301 938.233(0.010)	134.995	135.705	6
1	17	−10	8		1	16	9	7			301 998.124(0.016)	9.922	158.307	
1	13	11	3	+	1	12	8	4	+		302 067.839(0.011)	2.221	127.323	
1	13	8	5		1	12	−7	6			302 105.235(0.009)	2.830	121.132	
1	24	*	20		1	23	*	19			302 197.346(0.054)	110.233	204.305	
1	22	12	10		1	22	9	13			302 243.455(0.005)	0.175	220.423	
1	19	10	9	+	1	18	11	8	+		302 310.500(0.023)	21.493	181.866	
1	19	11	9	+	1	18	11	8	+		302 446.500(0.023)	2.667	181.866	
0	27	*	26		0	26	*	25		302 456.577(0.050)	302 456.699(0.016)	147.107	137.838	6
1	12	5	7	−	1	11	4	8	−		302 479.356(0.005)	1.240	112.484	
1	15	9	6		1	14	8	6			302 481.550(0.010)	1.751	139.112	
1	12	6	7	−	1	11	3	8	−		302 488.174(0.005)	1.240	112.484	
0	27	*	26	−	0	26	*	25	−	302 577.544(0.050)	302 577.658(0.016)	147.068	137.593	6
1	15	8	7		1	14	7	7			302 579.514(0.010)	0.257	137.514	
1	25	*	22		1	24	*	21			302 644.058(0.063)	122.250	207.356	
1	14	10	4	+	1	13	9	5	+		302 648.069(0.009)	5.296	134.709	
1	19	10	9	+	1	18	10	8	+		302 762.819(0.023)	2.666	181.851	
1	28	*	28	+	1	27	*	27	+		302 869.537(0.095)	159.202	217.491	
1	17	12	5	+	1	16	12	4	+		302 879.934(0.016)	3.909	164.909	
1	19	11	9	+	1	18	10	8	+		302 898.820(0.023)	21.566	181.851	
1	26	*	24		1	25	*	23			303 036.121(0.073)	134.370	209.675	
0	12	10	3		0	11	8	4			303 060.003(0.003)	0.413	42.862	
0	28	*	28		0	27	*	27		303 180.768(0.050)	303 180.857(0.027)	159.247	139.143	6
0	28	*	28	+	0	27	*	27	+	303 210.217(0.050)	303 210.258(0.027)	159.239	138.821	6
1	27	*	26		1	26	*	25			303 320.402(0.084)	146.613	211.243	
1	13	8	5	+	1	12	7	6	+		303 323.861(0.006)	3.212	124.520	
1	20	9	11	−	1	19	10	10	−		303 325.037(0.027)	26.858	189.045	
1	20	10	11	−	1	19	10	10	−		303 329.386(0.027)	3.233	189.045	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	20	9	11	−	1	19	9	10	−		303 339.721(0.027)	3.233	189.045	
1	20	10	11	−	1	19	9	10	−		303 344.069(0.027)	26.860	189.045	
1	28	*	28		1	27	*	27			303 458.549(0.099)	158.993	212.044	
1	22	14	8		1	21	−15	7			303 535.650(0.041)	0.382	224.751	
0	12	−10	2		0	11	−8	3			303 574.038(0.004)	0.442	43.243	
1	18	11	7		1	17	11	6			304 155.314(0.020)	9.707	171.536	
0	19	−11	8		0	18	12	7			304 192.362(0.008)	7.452	108.759	
1	21	8	13	+	1	20	9	12	+		304 240.299(0.032)	31.672	195.583	
1	21	9	13	+	1	20	9	12	+		304 240.385(0.032)	4.138	195.583	
1	21	8	13	+	1	20	8	12	+		304 240.654(0.032)	4.138	195.583	
1	21	9	13	+	1	20	8	12	+		304 240.740(0.032)	31.672	195.583	
1	18	−10	9		1	17	9	8			304 468.086(0.020)	11.912	167.935	
0	12	10	2	+	0	11	8	3	+		304 535.176(0.003)	0.454	42.954	
1	12	6	6		1	11	−5	7			304 547.258(0.006)	2.000	110.782	
1	15	12	3	+	1	14	11	4	+		304 548.536(0.010)	15.155	145.337	
1	18	11	7	−	1	17	11	6	−		304 587.159(0.019)	2.057	173.841	
1	19	15	4		1	18	15	3			304 623.120(0.024)	4.238	193.822	
1	25	12	13		1	24	13	11			304 634.198(0.065)	0.178	259.382	
1	20	11	9		1	19	−12	8			304 634.684(0.029)	6.172	193.857	
0	12	−6	6		0	11	5	7			304 773.725(0.003)	1.635	37.487	
0	12	−6	6		0	11	−4	7			304 823.725(0.003)	0.387	37.486	
1	19	13	6	−	1	18	14	5	−		304 876.392(0.026)	4.741	187.809	
0	18	−10	8		0	17	−10	7			304 880.298(0.006)	8.666	96.072	
1	14	12	2		1	13	11	2			305 059.178(0.008)	17.588	137.895	
1	18	14	5	−	1	17	14	4	−		305 105.139(0.019)	4.426	177.632	
0	12	6	6	+	0	11	5	7	+		305 151.652(0.003)	1.633	37.245	
1	22	*	15	−	1	21	*	14	−		305 168.678(0.038)	83.028	201.501	
0	12	6	6	+	0	11	4	7	+		305 230.758(0.003)	0.405	37.243	
0	15	10	6		0	14	9	6			305 362.978(0.004)	0.791	66.056	
1	13	9	5	+	1	12	6	6	+		305 581.152(0.006)	3.093	124.516	
0	15	11	5	+	0	14	10	4	+		305 716.693(0.004)	13.709	68.083	
1	19	9	10		1	18	9	9			305 721.002(0.024)	9.502	177.890	
0	19	10	9	+	0	18	11	8	+		305 806.276(0.007)	12.695	106.367	
1	11	4	7		1	10	−3	8			306 037.260(0.004)	0.915	100.565	
1	23	*	17	+	1	22	*	16	+		306 095.690(0.045)	94.507	206.816	
1	15	13	3	+	1	14	12	2	+		306 106.963(0.010)	22.704	146.891	
1	11	−5	7		1	10	2	8			306 299.494(0.004)	0.914	100.565	
0	19	−10	9		0	18	11	8			306 374.718(0.007)	13.280	106.436	
0	18	10	8	+	0	17	10	7	+		306 418.453(0.006)	8.978	95.884	
0	14	−13	1		0	13	−12	1			306 460.805(0.004)	24.588	65.047	
0	16	11	6		0	15	−10	5			306 483.358(0.006)	7.910	76.898	
0	14	10	5		0	13	−8	5			306 719.172(0.005)	0.191	57.673	
1	19	−15	5		1	18	−15	4			306 782.323(0.025)	6.302	192.276	
0	14	13	2		0	13	12	2			306 954.520(0.004)	24.616	64.644	
0	12	7	6		0	11	5	7			306 954.708(0.003)	0.383	37.487	
0	12	7	6		0	11	−4	7			307 004.707(0.003)	1.617	37.486	
1	24	*	19	−	1	23	*	18	−		307 028.103(0.052)	106.089	211.543	
1	18	13	6	+	1	17	13	5	+		307 038.926(0.019)	3.136	175.749	
1	19	14	5		1	18	14	4			307 274.606(0.024)	5.486	189.943	
0	19	13	7		0	18	−13	5			307 346.818(0.009)	0.537	111.410	
1	18	12	7	−	1	17	11	6	−		307 378.306(0.019)	15.967	173.841	
1	15	13	2	−	1	14	12	3	−		307 382.537(0.010)	22.856	146.860	
0	15	−11	4		0	14	−10	4			307 830.717(0.004)	10.912	68.311	
1	13	8	5		1	12	6	6			307 837.384(0.009)	0.274	120.941	
1	19	−10	10		1	18	9	9			307 881.893(0.024)	14.452	177.890	
1	19	−13	7		1	18	13	5			307 933.460(0.026)	0.339	186.451	
1	25	*	21	+	1	24	*	20	+		307 993.273(0.060)	117.772	215.703	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	20	12	8	+	0	19	13	7	+		308 106.422(0.008)	5.462	121.725	
1	19	−14	6		1	18	−14	5			308 108.041(0.025)	7.562	189.240	
0	12	7	6	+	0	11	5	7	+		308 184.954(0.003)	0.399	37.245	
0	19	11	9		0	18	11	8			308 201.128(0.006)	8.866	106.436	
0	12	7	6	+	0	11	4	7	+		308 264.060(0.003)	1.604	37.243	
0	14	13	2	+	0	13	12	1	+		308 268.238(0.004)	24.596	64.909	
0	14	13	1	−	0	13	12	2	−		308 272.454(0.004)	24.596	64.908	
0	12	9	4	+	0	11	6	5	+		308 354.652(0.004)	1.062	40.832	
1	14	−11	4		1	13	−10	4			308 422.748(0.008)	21.378	134.260	
0	19	11	9	+	0	18	11	8	+		308 451.131(0.006)	9.079	106.367	
0	15	11	5		0	14	10	5			308 480.941(0.004)	10.577	67.904	
1	13	9	4		1	12	−8	5			308 541.663(0.014)	0.436	122.813	
1	18	10	8		1	17	10	7			308 562.772(0.020)	9.265	169.654	
0	20	−9	11		0	19	10	10			308 654.383(0.007)	19.494	113.793	
1	16	−11	6		1	15	10	5			308 689.877(0.017)	0.649	151.119	
1	26	15	11		1	26	12	14			308 691.500(0.008)	0.372	283.078	
0	20	10	11		0	19	10	10			308 692.540(0.007)	9.655	113.793	
0	21	−8	13		0	20	9	12			308 769.840(0.007)	24.707	120.425	
0	21	9	13		0	20	9	12			308 770.215(0.007)	10.434	120.425	
0	21	−8	13		0	20	−8	12			308 771.988(0.007)	10.434	120.425	
0	21	9	13		0	20	−8	12			308 772.363(0.007)	24.707	120.425	
1	18	14	4	+	1	17	14	3	+		308 773.691(0.019)	4.623	177.664	
1	25	13	12		1	24	−15	10			308 779.416(0.064)	0.267	262.868	
0	18	−12	6		0	17	−12	5			308 804.303(0.006)	7.393	99.119	
0	20	−9	11		0	19	−9	10			308 829.467(0.007)	9.656	113.787	
0	18	12	6	+	0	17	12	5	+		308 843.044(0.006)	7.964	98.962	
0	20	10	11		0	19	−9	10			308 867.624(0.007)	19.500	113.787	
1	15	−9	7		1	14	−8	7			308 900.910(0.010)	2.448	137.721	
1	26	*	23	−	1	25	*	22	−		309 022.821(0.069)	129.546	219.324	
0	14	9	5	−	0	13	8	6	−		309 055.163(0.004)	4.911	56.385	
1	24	−15	10		1	24	−12	13			309 058.166(0.008)	0.189	252.559	
1	21	12	9		1	20	−13	8			309 115.324(0.034)	5.398	207.657	
1	14	−13	2		1	13	12	1			309 126.360(0.008)	21.112	140.609	
0	22	*	15		0	21	8	14			309 176.402(0.008)	40.977	126.345	
0	22	*	15		0	21	−7	14			309 176.416(0.008)	40.977	126.345	
0	20	9	11	−	0	19	10	10	−		309 189.669(0.007)	18.993	113.729	
0	21	8	13	+	0	20	9	12	+		309 247.822(0.007)	24.011	120.373	
0	21	9	13	+	0	20	9	12	+		309 248.641(0.007)	11.023	120.373	
0	21	8	13	+	0	20	8	12	+		309 252.081(0.007)	11.023	120.372	
0	21	9	13	+	0	20	8	12	+		309 252.900(0.007)	24.011	120.372	
0	20	10	11	−	0	19	10	10	−		309 255.772(0.007)	9.998	113.729	
0	20	9	11	−	0	19	9	10	−		309 472.327(0.007)	10.001	113.719	
0	20	10	11	−	0	19	9	10	−		309 538.430(0.007)	19.002	113.719	
1	15	10	5		1	14	9	5			309 560.532(0.010)	7.494	140.793	
0	22	7	15	−	0	21	8	14	−		309 588.220(0.008)	28.732	126.294	
0	22	8	15	−	0	21	8	14	−		309 588.226(0.008)	12.161	126.294	
0	22	7	15	−	0	21	7	14	−		309 588.256(0.008)	12.161	126.294	
0	22	8	15	−	0	21	7	14	−		309 588.262(0.008)	28.732	126.294	
0	12	10	3	−	0	11	8	4	−		309 712.470(0.003)	0.437	42.774	
0	23	*	17		0	22	*	16			309 730.547(0.008)	93.584	131.584	
1	24	−14	11		1	23	−15	9			309 767.119(0.055)	2.214	249.517	
0	17	11	7		0	16	−10	6			309 785.547(0.006)	9.836	86.223	
1	20	14	6	+	1	19	15	5	+		309 868.184(0.030)	3.116	200.644	
0	11	−3	8		0	10	*	9			309 965.223(0.003)	0.444	24.707	
0	21	−13	8		0	20	−14	6			309 966.630(0.009)	1.210	135.669	
0	11	4	8		0	10	*	9			309 967.019(0.003)	0.444	24.707	
0	17	−11	6		0	16	11	6			309 970.760(0.007)	0.323	87.121	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	15	−8	8		1	14	−7	8			310 016.546(0.010)	0.238	135.377	
1	19	−13	7		1	18	−13	6			310 075.221(0.024)	8.114	186.380	
0	23	*	17	+	0	22	*	16	+		310 094.966(0.008)	93.445	131.526	
1	27	*	25	+	1	26	*	24	+		310 183.442(0.080)	141.382	222.450	
1	19	−11	9		1	18	−11	8			310 231.353(0.024)	9.070	180.750	
1	12	4	8	+	1	11	*	9	+		310 247.826(0.005)	0.775	109.977	
1	12	5	8	+	1	11	*	9	+		310 248.389(0.005)	0.775	109.977	
0	24	*	19		0	23	*	18			310 352.571(0.008)	105.265	136.158	
0	19	15	5	+	0	18	15	4	+		310 447.515(0.007)	5.578	116.914	
1	12	−7	6		1	11	4	7			310 538.788(0.005)	1.908	110.773	
0	19	15	4	−	0	18	15	3	−		310 542.378(0.007)	5.578	116.915	
0	24	*	19	−	0	23	*	18	−		310 677.254(0.008)	105.147	136.084	
0	18	11	8		0	17	−10	7			310 695.883(0.007)	11.299	96.072	
1	30	*	29		1	30	*	30			310 793.933(0.087)	6.585	243.476	
0	25	*	21		0	24	*	20			311 010.401(0.008)	117.031	140.074	
0	14	−9	5		0	13	8	6			311 166.022(0.004)	4.345	56.554	
0	19	15	5		0	18	15	4			311 196.179(0.007)	5.578	116.569	
0	19	−15	4		0	18	−15	3			311 223.935(0.007)	5.553	116.906	
1	19	11	8	−	1	18	12	7	−		311 258.553(0.023)	17.641	184.094	
0	25	*	21	+	0	24	*	20	+		311 296.224(0.008)	116.931	139.977	
0	13	−10	3		0	12	−8	4			311 466.317(0.004)	0.586	50.113	
0	12	−9	3		0	11	−6	5			311 469.065(0.004)	0.348	41.099	
1	28	*	27	−	1	27	*	26	−		311 556.806(0.093)	153.247	225.150	
0	11	3	8	−	0	10	2	9	−		311 577.091(0.003)	0.362	24.395	
0	11	4	8	−	0	10	1	9	−		311 580.257(0.003)	0.362	24.395	
1	20	9	11		1	19	−10	10			311 608.027(0.029)	16.984	188.159	
1	22	7	15		1	21	−8	14			311 625.691(0.040)	28.683	200.874	
1	22	−8	15		1	21	−8	14			311 625.874(0.040)	11.419	200.874	
1	22	7	15		1	21	7	14			311 626.520(0.040)	11.419	200.874	
1	22	−8	15		1	21	7	14			311 626.703(0.040)	28.683	200.874	
0	26	*	23		0	25	*	22			311 690.349(0.009)	128.894	143.339	
1	21	8	13		1	20	−9	12			311 734.447(0.034)	22.969	194.908	
1	21	−9	13		1	20	−9	12			311 749.103(0.034)	11.003	194.908	
1	19	13	6		1	18	13	5			311 788.716(0.024)	6.327	186.451	
1	21	8	13		1	20	8	12			311 792.812(0.034)	11.001	194.906	
1	21	−9	13		1	20	8	12			311 807.468(0.034)	22.974	194.906	
0	13	10	3	+	0	12	8	4	+		311 809.753(0.004)	0.713	49.847	
1	23	*	17		1	22	−7	16			311 866.847(0.047)	46.091	206.096	
1	23	*	17		1	22	6	16			311 866.855(0.047)	46.091	206.096	
0	26	*	23	−	0	25	*	22	−		311 932.850(0.009)	128.811	143.207	
1	12	9	3		1	11	7	4			311 948.247(0.006)	0.664	115.658	
0	19	−10	9		0	18	−10	8			312 190.302(0.007)	8.976	106.242	
1	24	*	19		1	23	*	18			312 278.964(0.054)	104.098	210.599	
1	20	−10	11		1	19	−10	10			312 282.725(0.029)	10.264	188.159	
1	19	12	8	−	1	18	12	7	−		312 334.671(0.023)	2.844	184.094	
0	27	*	25		0	26	*	24			312 386.781(0.012)	140.854	145.955	
0	21	−12	9		0	20	−13	7			312 529.343(0.008)	0.216	133.721	
0	27	*	25	+	0	26	*	24	+		312 576.182(0.012)	140.791	145.777	
1	11	7	4		1	10	4	6			312 615.244(0.008)	0.222	105.231	
1	14	−14	1		1	13	−13	1			312 647.649(0.009)	24.844	143.478	
0	16	11	6	+	0	15	10	5	+		312 692.812(0.005)	11.399	76.684	
1	25	*	21		1	24	*	20			312 760.924(0.063)	116.039	214.386	
1	15	−10	6		1	14	−9	6			312 934.600(0.010)	12.684	139.707	
0	21	13	8	−	0	20	14	7	−		313 025.237(0.009)	4.228	135.421	
0	14	−14	0		0	13	−13	0			313 038.621(0.004)	28.607	67.755	
0	28	*	27	0	27		*	26			313 098.045(0.020)	152.908	147.927	
0	28	*	27	−	0	27	*	26	−		313 218.581(0.020)	152.869	147.686	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	26	*	23		1	25	*	22			313 241.664(0.072)	128.055	217.452	
1	20	10	10	+	1	19	11	9	+		313 317.070(0.027)	24.531	191.955	
0	19	14	6	−	0	18	14	5	−		313 340.831(0.007)	6.770	113.894	
1	20	11	10	+	1	19	11	9	+		313 357.493(0.027)	2.545	191.955	
1	11	10	1		1	10	8	2			313 430.503(0.006)	0.339	111.565	
1	19	−12	8		1	18	−12	7			313 442.924(0.024)	7.291	183.401	
1	20	10	10	+	1	19	10	9	+		313 453.070(0.027)	2.544	191.950	
1	20	11	10	+	1	19	10	9	+		313 493.494(0.027)	24.552	191.950	
1	29	*	29	+	1	28	*	28	+		313 523.460(0.109)	164.999	227.594	
0	24	15	10		0	24	12	13			313 567.757(0.004)	0.211	177.724	
1	27	*	25		1	26	*	24			313 658.688(0.083)	140.173	219.783	
0	19	10	9	+	0	18	10	8	+		313 680.239(0.007)	9.243	106.105	
1	20	9	11		1	19	9	10			313 768.918(0.029)	10.207	188.087	
0	29	*	29		0	28	*	28			313 824.666(0.033)	165.050	149.256	
0	14	14	1		0	13	13	1			313 852.036(0.004)	28.598	67.371	
0	29	*	29	+	0	28	*	28	+		313 853.519(0.033)	165.042	148.935	
0	24	15	10	+	0	24	12	13	−		313 860.360(0.004)	0.210	177.752	
0	15	11	4	−	0	14	10	5	−		313 917.179(0.004)	13.272	67.902	
1	19	13	6		1	18	−13	6			313 930.477(0.025)	0.653	186.380	
1	28	*	27		1	27	*	26			313 957.970(0.096)	152.415	221.361	
0	19	11	9		0	18	−10	8			314 016.712(0.007)	13.706	106.242	
1	19	11	8	−	1	18	11	7	−		314 049.701(0.023)	2.860	184.001	
1	29	*	29		1	28	*	28			314 101.321(0.112)	164.796	222.167	
1	21	9	12	−	1	20	10	11	−		314 180.427(0.032)	28.719	199.163	
1	21	10	12	−	1	20	10	11	−		314 181.641(0.032)	4.184	199.163	
1	21	9	12	−	1	20	9	11	−		314 184.775(0.032)	4.184	199.163	
1	21	10	12	−	1	20	9	11	−		314 185.989(0.032)	28.720	199.163	
0	18	11	8	+	0	17	10	7	+		314 292.416(0.007)	11.106	95.884	
0	19	14	5	+	0	18	14	4	+		314 373.160(0.007)	6.774	113.903	
1	25	−14	12		1	24	−15	10			314 426.127(0.064)	1.135	262.868	
1	20	−10	11		1	19	9	10			314 443.617(0.029)	17.156	188.087	
1	13	7	6	−	1	12	6	7	−		314 444.854(0.006)	2.307	122.573	
1	13	7	6	−	1	12	5	7	−		314 453.552(0.006)	0.201	122.573	
0	17	11	7	+	0	16	10	6	+		314 456.643(0.006)	10.355	86.009	
1	12	11	1	−	1	11	8	4	−		314 498.026(0.010)	0.282	119.621	
0	20	−12	8		0	19	13	7			314 564.598(0.009)	5.257	121.662	
1	24	12	12		1	23	13	10			314 656.993(0.056)	0.204	245.805	
0	19	12	8	−	0	18	12	7	−		314 676.393(0.006)	8.645	108.756	
1	13	8	6	−	1	12	6	7	−		314 753.566(0.006)	0.203	122.573	
0	19	−14	5		0	18	−14	4			314 754.745(0.007)	6.719	113.975	
1	13	8	6	−	1	12	5	7	−		314 762.263(0.006)	2.298	122.573	
1	27	−14	14		1	26	−15	12			314 902.174(0.085)	0.226	290.930	
0	14	14	1	−	0	13	13	0	−		314 910.850(0.004)	28.542	67.690	
0	14	14	0	+	0	13	13	1	+		314 910.910(0.004)	28.542	67.690	
0	19	14	6		0	18	14	5			314 929.654(0.007)	6.724	113.614	
0	18	−11	7		0	17	−11	6			315 018.171(0.006)	8.998	97.461	
1	22	8	14	+	1	21	9	13	+		315 062.005(0.038)	34.381	205.732	
1	22	9	14	+	1	21	9	13	+		315 062.026(0.038)	4.240	205.732	
1	22	8	14	+	1	21	8	13	+		315 062.092(0.038)	4.240	205.732	
1	22	9	14	+	1	21	8	13	+		315 062.113(0.038)	34.381	205.732	
1	19	12	8	−	1	18	11	7	−		315 125.819(0.023)	18.120	184.001	
0	18	11	7	−	0	17	11	6	−		315 158.615(0.006)	9.215	97.271	
1	26	−14	13		1	25	−15	11			315 233.215(0.074)	0.461	276.710	
0	19	12	8		0	18	12	7			315 594.907(0.007)	8.390	108.759	
0	15	12	4		0	14	11	4			315 604.331(0.004)	18.217	69.883	
0	15	−12	3		0	14	−11	3			315 611.225(0.004)	18.218	70.276	
0	22	−14	8		0	21	−15	6			315 615.047(0.010)	1.492	149.983	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	19	13	7	+	0	18	13	6	+		315 694.316(0.007)	7.843	111.195	
1	15	14	2	−	1	14	13	1	−		315 735.751(0.010)	28.027	148.786	
0	22	14	8	+	0	21	15	7	+		315 765.654(0.010)	3.436	149.854	
1	15	14	1	+	1	14	13	2	+		315 779.306(0.010)	28.034	148.785	
1	14	14	0		1	13	13	0			315 799.289(0.011)	28.891	146.473	
0	14	9	5	−	0	13	7	6	−		315 846.068(0.003)	1.227	56.158	
1	23	*	16	−	1	22	*	15	−		315 952.276(0.045)	88.682	211.681	
1	15	11	4		1	14	10	4			316 035.017(0.010)	12.384	142.933	
1	19	12	7	+	1	18	13	6	+		316 043.955(0.025)	12.793	185.991	
0	14	−9	5		0	13	−7	6			316 230.486(0.003)	1.128	56.385	
0	19	11	9	+	0	18	10	8	+		316 325.094(0.007)	13.266	106.105	
1	12	−9	4		1	11	6	5			316 541.046(0.011)	0.367	114.238	
1	20	10	10		1	19	−11	9			316 640.675(0.029)	12.217	191.098	
1	23	−14	10		1	23	−11	13			316 669.246(0.006)	0.174	236.175	
0	16	−10	6		0	15	−9	6			316 790.981(0.005)	0.256	75.656	
0	15	12	4	−	0	14	11	3	−		316 828.458(0.004)	18.471	70.059	
1	24	*	18	+	1	23	*	17	+		316 846.843(0.052)	100.200	217.026	
1	15	11	4	−	1	14	10	5	−		317 120.884(0.011)	7.156	143.935	
1	12	3	9	−	1	11	*	10	−		317 206.264(0.006)	0.386	107.209	
1	12	4	9	−	1	11	*	10	−		317 206.286(0.006)	0.386	107.209	
1	14	−12	3		1	13	−11	3			317 515.953(0.008)	25.178	137.043	
1	18	12	6	+	1	17	12	5	+		317 640.816(0.019)	3.015	175.012	
0	15	12	3	+	0	14	11	4	+		317 668.057(0.004)	18.440	70.040	
1	13	7	6		1	12	−6	7			317 693.265(0.007)	2.594	119.107	
1	25	*	20	−	1	24	*	19	−		317 748.345(0.060)	111.816	221.784	
1	16	13	4	+	1	15	12	3	+		317 750.354(0.013)	18.675	155.496	
0	13	9	5		0	12	7	6			318 290.367(0.003)	0.595	47.726	
0	12	−5	7		0	11	4	8			318 296.614(0.003)	1.106	35.046	
0	12	−5	7		0	11	−3	8			318 298.410(0.003)	0.248	35.046	
0	12	6	7		0	11	4	8			318 478.186(0.003)	0.248	35.046	
0	12	6	7		0	11	−3	8			318 479.982(0.003)	1.105	35.046	
0	19	13	7		0	18	13	6			318 530.851(0.007)	7.239	111.037	
1	14	11	4	+	1	13	9	5	+		318 621.362(0.009)	0.320	134.709	
1	26	*	22	+	1	25	*	21	+		318 688.996(0.069)	123.527	225.977	
0	20	−10	10		0	19	11	9			318 707.134(0.007)	16.259	116.716	
1	19	12	7		1	18	12	6			318 756.765(0.024)	9.422	183.793	
0	13	10	4		0	12	8	5			318 764.443(0.004)	0.476	49.486	
0	14	−10	4		0	13	−8	5			318 912.611(0.004)	0.987	57.673	
0	20	10	10	+	0	19	11	9	+		318 937.337(0.007)	15.741	116.656	
0	21	−9	12		0	20	10	11			319 121.465(0.007)	21.881	124.090	
0	21	10	12		0	20	10	11			319 129.131(0.007)	10.225	124.090	
0	21	−9	12		0	20	−9	11			319 159.622(0.007)	10.225	124.089	
0	21	10	12		0	20	−9	11			319 167.288(0.007)	21.882	124.089	
0	20	11	10		0	19	11	9			319 193.866(0.007)	9.454	116.716	
0	22	−8	14		0	21	9	13			319 321.552(0.008)	27.073	130.724	
0	22	9	14		0	21	9	13			319 321.613(0.008)	10.950	130.724	
0	22	−8	14		0	21	−8	13			319 321.926(0.008)	10.950	130.724	
0	22	9	14		0	21	−8	13			319 321.988(0.008)	27.073	130.724	
1	11	3	8		1	10	−2	9			319 339.682(0.004)	0.454	97.620	
1	11	−4	8		1	10	1	9			319 354.990(0.004)	0.454	97.620	
0	12	5	7	−	0	11	4	8	−		319 471.851(0.003)	1.100	34.788	
0	12	5	7	−	0	11	3	8	−		319 475.009(0.003)	0.262	34.788	
0	16	12	5		0	15	−11	4			319 516.383(0.008)	0.809	78.579	
1	18	13	5	−	1	17	13	4	−		319 552.319(0.019)	4.741	176.041	
1	22	13	9		1	21	−14	8			319 592.728(0.041)	2.765	221.924	
0	21	9	12	−	0	20	10	11	−		319 647.891(0.007)	21.318	124.044	
0	21	10	12	−	0	20	10	11	−		319 662.251(0.007)	10.653	124.044	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	20	11	10	+	0	19	11	9	+		319 688.989(0.007)	9.718	116.656	
1	27	*	24	−	1	26	*	23	−		319 696.519(0.079)	135.323	229.632	
0	21	9	12	−	0	20	9	11	−		319 713.994(0.007)	10.654	124.042	
0	21	10	12	−	0	20	9	11	−		319 728.354(0.007)	21.320	124.042	
0	12	6	7	−	0	11	4	8	−		319 750.603(0.003)	0.262	34.788	
0	12	6	7	−	0	11	3	8	−		319 753.762(0.003)	1.099	34.788	
0	14	10	4	+	0	13	85	+			319 757.754(0.004)	1.132	57.417	
0	22	8	14	+	0	21	9	13	+		319 769.988(0.008)	26.205	130.688	
0	22	9	14	+	0	21	9	13	+		319 770.139(0.008)	11.719	130.688	
0	22	8	14	+	0	21	8	13	+		319 770.807(0.008)	11.719	130.688	
0	22	9	14	+	0	21	8	13	+		319 770.958(0.008)	26.205	130.688	
0	23	*	16		0	22	*	15			319 779.219(0.008)	87.689	136.658	
0	20	13	8		0	19	−13	6			319 845.909(0.008)	0.341	122.147	
0	15	−11	4		0	14	10	5			320 024.156(0.006)	2.211	67.904	
1	19	15	5	+	1	18	15	4	+		320 097.780(0.023)	4.822	189.966	
0	12	11	2		0	11	9	3			320 102.144(0.004)	0.278	44.489	
0	23	*	16	−	0	22	8	15	−		320 171.399(0.008)	43.766	136.621	
0	23	*	16	−	0	22	7	15	−		320 171.407(0.008)	43.766	136.621	
1	11	8	3		1	10	5	5			320 213.778(0.011)	0.227	106.796	
1	25	14	11		1	25	11	14			320 297.751(0.006)	0.253	265.371	
0	24	*	18		0	23	*	17			320 352.883(0.009)	99.326	141.916	
0	13	9	5		0	12	−6	6			320 471.349(0.004)	1.896	47.654	
0	20	−10	10		0	19	−10	9			320 533.544(0.007)	9.476	116.655	
0	24	*	18	+	0	23	*	17	+		320 703.889(0.009)	99.194	141.870	
1	14	11	4	+	1	13	8	5	+		320 767.316(0.010)	3.417	134.638	
1	16	9	7		1	15	8	7			320 786.382(0.013)	0.551	147.607	
1	28	*	26	+	1	27	*	25	+		320 841.485(0.091)	147.174	232.796	
0	13	7	6	−	0	12	6	7	−		320 915.209(0.003)	2.111	45.454	
0	12	−11	1		0	11	−9	2			320 923.816(0.004)	0.289	44.871	
0	25	*	20		0	24	*	19			320 983.051(0.009)	111.023	146.510	
0	20	11	10		0	19	−10	9			321 020.276(0.007)	16.349	116.655	
0	18	−12	6		0	17	12	6			321 034.979(0.008)	0.569	98.711	
1	15	12	3		1	14	11	3			321 085.207(0.010)	16.041	145.391	
0	13	7	6	−	0	12	5	7	−		321 193.961(0.003)	0.542	45.444	
0	13	−7	6		0	12	6	7			321 225.297(0.003)	2.099	45.670	
0	25	*	20	−	0	24	*	19	−		321 298.680(0.009)	110.909	146.448	
0	16	−11	5		0	15	−10	5			321 312.654(0.005)	3.232	76.898	
0	13	−7	6		0	12	−5	7			321 406.869(0.003)	0.515	45.664	
1	19	13	7	+	1	18	13	6	+		321 408.909(0.023)	2.376	185.991	
1	14	9	5	−	1	13	8	6	−		321 462.821(0.009)	3.819	133.072	
1	19	10	9		1	18	10	8			321 529.252(0.024)	9.389	179.946	
0	21	−13	8		0	20	14	7			321 580.397(0.011)	3.398	135.282	
0	20	10	10	+	0	19	10	9	+		321 582.192(0.007)	9.753	116.568	
0	26	*	22		0	25	*	21			321 644.733(0.009)	122.805	150.448	
0	13	9	5	+	0	12	7	6	+		321 744.648(0.003)	0.638	47.525	
1	14	9	5		1	13	−8	6			321 753.589(0.012)	2.132	130.060	
1	19	15	4	−	1	18	15	3	−		321 840.502(0.023)	4.881	189.979	
1	20	−11	10		1	19	−11	9			321 884.610(0.029)	10.023	191.098	
0	19	−13	6		0	18	−13	5			321 889.052(0.007)	7.369	111.410	
0	26	*	22	+	0	25	*	21	+		321 924.834(0.009)	122.706	150.360	
1	13	9	4		1	12	7	5			321 947.334(0.008)	0.772	122.365	
1	22	8	14		1	21	−9	13			321 973.583(0.040)	25.384	205.307	
1	22	−9	14		1	21	−9	13			321 977.103(0.040)	11.594	205.307	
1	22	8	14		1	21	8	13			321 988.239(0.040)	11.593	205.307	
1	22	−9	14		1	21	8	13			321 991.759(0.040)	25.385	205.307	
1	23	7	16		1	22	−8	15			322 009.887(0.047)	31.135	211.268	
1	23	−8	16		1	22	−8	15			322 009.926(0.047)	11.904	211.268	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	23	7	16		1	22	7	15			322 010.070(0.047)	11.904	211.268	
1	23	−8	16		1	22	7	15			322 010.109(0.047)	31.135	211.268	
0	19	13	6	−	0	18	13	5	−		322 118.254(0.007)	7.942	111.284	
1	29	*	28	−	1	28	*	27	−		322 200.309(0.105)	159.049	235.542	
1	21	9	12		1	20	−10	11			322 258.686(0.034)	19.703	198.576	
0	27	*	24		0	26	*	23			322 326.973(0.011)	134.680	153.736	
0	20	11	10	+	0	19	10	9	+		322 333.844(0.007)	15.866	116.568	
1	24	*	18		1	23	*	17			322 334.668(0.055)	98.011	216.499	
0	15	−13	2		0	14	−12	2			322 383.139(0.004)	22.662	72.621	
1	21	−10	12		1	20	−10	11			322 451.255(0.034)	10.873	198.576	
0	15	10	5	+	0	14	9	6	+		322 477.974(0.004)	7.020	65.928	
1	20	15	5		1	19	15	4			322 537.806(0.029)	5.514	203.983	
0	27	*	24	−	0	26	*	23	−		322 566.322(0.011)	134.598	153.612	
0	20	11	9	−	0	19	12	8	−		322 666.344(0.007)	11.126	119.252	
0	15	13	3		0	14	12	3			322 790.018(0.004)	22.709	72.221	
1	25	*	20		1	24	*	19			322 800.754(0.063)	109.910	221.015	
1	21	9	12		1	20	9	11			322 933.385(0.034)	10.857	198.554	
0	28	*	26		0	27	*	25			323 025.309(0.015)	146.650	156.375	
1	20	11	9	−	1	19	12	8	−		323 058.182(0.027)	20.462	194.512	
1	12	*	10	+	1	11	*	11	+		323 070.608(0.007)	0.255	104.203	
1	21	−10	12		1	20	9	11			323 125.954(0.034)	19.750	198.554	
0	28	*	26	+	0	27	*	25	+		323 213.384(0.015)	146.587	156.203	
1	26	*	22		1	25	*	21			323 324.178(0.072)	121.847	224.818	
1	15	−11	5		1	14	−10	5			323 395.282(0.010)	19.492	141.876	
1	20	12	9	−	1	19	12	8	−		323 415.936(0.027)	3.300	194.512	
1	13	6	7	+	1	12	5	8	+		323 625.085(0.006)	1.689	120.326	
1	13	7	7	+	1	12	4	8	+		323 652.956(0.006)	1.688	120.326	
0	29	*	28		0	28	*	27			323 738.654(0.025)	158.710	158.371	
1	27	*	24		1	26	*	23			323 838.512(0.083)	133.859	227.900	
1	16	10	6		1	15	9	6			323 840.728(0.013)	3.146	149.202	
0	29	*	28	−	0	28	*	27	−		323 858.813(0.025)	158.670	158.134	
1	12	5	7		1	11	−4	8			323 919.131(0.005)	1.394	108.273	
1	20	−13	8		1	19	13	6			323 945.373(0.030)	0.216	196.851	
0	12	11	1	−	0	11	9	2	−		323 961.664(0.003)	0.275	44.574	
0	20	14	7		0	19	−14	5			324 001.635(0.011)	0.305	124.474	
1	17	−11	7		1	16	10	6			324 066.121(0.018)	4.431	160.004	
1	20	11	9	−	1	19	11	8	−		324 134.300(0.027)	3.302	194.476	
0	15	13	3	+	0	14	12	2	+		324 141.052(0.004)	22.749	72.468	
1	30	*	30	+	1	29	*	29	+		324 176.524(0.124)	170.796	238.052	
0	15	13	2	−	0	14	12	3	−		324 188.565(0.004)	22.748	72.467	
1	21	10	11	+	1	20	11	10	+		324 205.499(0.032)	26.895	202.407	
1	21	11	11	+	1	20	11	10	+		324 217.901(0.032)	3.039	202.407	
1	21	10	11	+	1	20	10	10	+		324 245.922(0.032)	3.039	202.406	
1	21	11	11	+	1	20	10	10	+		324 258.325(0.032)	26.901	202.406	
1	28	*	26		1	27	*	25			324 280.675(0.095)	145.976	230.245	
0	20	−11	9		0	19	12	8			324 321.502(0.007)	11.780	119.287	
1	20	−15	6		1	19	−15	5			324 353.475(0.029)	7.537	202.509	
1	19	14	6	−	1	18	14	5	−		324 392.775(0.023)	4.277	187.809	
0	30	*	30		0	29	*	29			324 467.843(0.040)	170.853	159.724	
1	20	12	9	−	1	19	11	8	−		324 492.055(0.027)	20.635	194.476	
0	12	11	2	+	0	11	9	3	+		324 492.435(0.003)	0.275	44.556	
0	30	*	30	+	0	29	*	29	+		324 496.156(0.040)	170.845	159.404	
1	15	15	1	+	1	14	14	0	+		324 551.743(0.010)	32.327	151.148	
1	15	15	0	−	1	14	14	1	−		324 552.268(0.010)	32.328	151.148	
1	29	*	28		1	28	*	27			324 595.094(0.109)	158.218	231.834	
1	30	*	30		1	29	*	29			324 743.583(0.128)	170.599	232.644	
1	16	13	3	−	1	15	12	4	−		324 766.898(0.012)	18.889	155.338	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	13	9	5	+	0	12	6	6	+		324 777.950(0.003)	1.884	47.424	
1	12	−6	7		1	11	3	8			324 811.467(0.005)	1.393	108.272	
1	11	−11	1		1	10	9	1			324 957.428(0.007)	0.227	113.770	
1	17	13	5	+	1	16	12	4	+		324 982.521(0.016)	15.071	164.909	
1	22	9	13	−	1	21	10	12	−		325 018.403(0.038)	30.989	209.643	
1	22	10	13	−	1	21	10	12	−		325 018.720(0.038)	4.727	209.643	
1	22	9	13	−	1	21	9	12	−		325 019.617(0.038)	4.727	209.643	
1	22	10	13	−	1	21	9	12	−		325 019.934(0.038)	30.989	209.643	
0	15	−10	5		0	14	9	6			325 039.068(0.004)	5.663	66.056	
1	15	−13	3		1	14	12	2			325 335.321(0.010)	19.549	148.070	
1	14	10	5	−	1	13	8	6	−		325 643.238(0.008)	0.183	133.072	
0	22	−14	8		0	21	15	7			325 803.009(0.012)	2.148	149.643	
0	13	10	4	−	0	12	8	5	−		325 866.653(0.003)	0.595	49.335	
1	23	*	15	+	1	22	9	14	+		325 869.905(0.045)	41.438	216.241	
1	23	*	15	+	1	22	8	14	+		325 869.926(0.045)	41.438	216.241	
1	14	10	5	−	1	13	7	6	−		325 951.949(0.008)	3.545	133.062	
1	20	14	6		1	19	14	5			326 001.416(0.029)	6.670	200.193	
0	16	11	6		0	15	10	6			326 159.448(0.005)	2.734	76.242	
1	14	13	1		1	13	−12	2			326 182.157(0.008)	28.802	140.200	
0	13	8	6		0	12	6	7			326 289.761(0.003)	0.501	45.670	
1	20	−14	7		1	19	−14	6			326 376.422(0.029)	8.795	199.517	
0	13	8	6		0	12	−5	7			326 471.332(0.003)	2.025	45.664	
1	19	11	8		1	18	11	7			326 649.348(0.024)	10.333	181.681	
1	24	*	17	−	1	23	*	16	−		326 698.889(0.052)	94.248	222.220	
1	19	12	7	+	1	18	12	6	+		327 544.652(0.023)	2.355	185.607	
1	25	*	19	+	1	24	*	18	+		327 588.067(0.060)	105.901	227.595	
1	23	13	10		1	22	14	8			327 659.022(0.048)	0.786	234.876	
1	12	10	2		1	11	8	3			327 700.859(0.006)	0.493	117.478	
0	13	8	6	−	0	12	6	7	−		327 706.114(0.003)	0.519	45.454	
1	20	−12	9		1	19	−12	8			327 721.453(0.029)	9.265	193.857	
1	20	−13	8		1	19	−13	7			327 800.629(0.029)	9.048	196.723	
0	19	−11	8		0	18	−11	7			327 895.902(0.007)	9.373	107.969	
0	13	8	6	−	0	12	5	7	−		327 984.866(0.003)	1.995	45.444	
0	20	12	9	−	0	19	12	8	−		328 434.227(0.007)	9.420	119.252	
0	26	15	11	−	0	26	12	14	+		328 436.590(0.005)	0.231	208.201	
1	26	*	21	−	1	25	*	20	−		328 460.137(0.069)	117.550	232.383	
1	24	14	10		1	23	15	8			328 480.196(0.056)	1.882	250.810	
0	20	12	9		0	19	12	8			328 488.571(0.007)	9.220	119.287	
1	13	12	2	−	1	12	9	3	−		328 869.738(0.014)	0.460	128.080	
1	15	−14	2		1	14	−13	2			328 980.437(0.011)	23.167	150.921	
0	15	−14	1		0	14	−13	1			329 004.829(0.004)	26.791	75.270	
0	19	11	8	−	0	18	11	7	−		329 056.945(0.007)	9.697	107.784	
0	20	15	6	+	0	19	15	5	+		329 089.047(0.007)	6.821	127.270	
1	18	13	6	+	1	17	12	5	+		329 141.513(0.020)	14.075	175.012	
1	13	−8	6		1	12	5	7			329 252.779(0.007)	2.144	119.078	
1	13	−9	5		1	12	6	6			329 261.615(0.010)	1.108	120.941	
1	27	*	23	+	1	26	*	22	+		329 379.179(0.079)	129.287	236.607	
1	20	10	10		1	19	10	9			329 434.019(0.029)	9.891	190.671	
0	20	15	5	−	0	19	15	4	−		329 573.771(0.007)	6.822	127.273	
0	21	−10	11		0	20	11	10			329 588.691(0.007)	18.869	127.363	
0	22	−9	13		0	21	10	12			329 599.022(0.008)	24.244	134.735	
0	22	10	13		0	21	10	12			329 600.458(0.008)	10.780	134.735	
0	22	−9	13		0	21	−9	12			329 606.687(0.008)	10.780	134.735	
0	22	10	13		0	21	−9	12			329 608.124(0.008)	24.244	134.735	
1	23	−13	11		1	22	13	9			329 620.813(0.048)	0.220	232.584	
1	16	−9	8		1	15	−8	8			329 643.345(0.013)	0.533	145.719	
0	21	11	11		0	20	11	10			329 704.223(0.007)	10.022	127.363	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	12	−4	8		0	11	3	9			329 749.849(0.003)	0.669	32.253	
0	12	5	8		0	11	−2	9			329 758.702(0.003)	0.669	32.253	
0	15	14	2		0	14	13	2			329 759.655(0.004)	26.817	74.883	
0	23	−8	15		0	22	9	14			329 891.525(0.008)	29.497	141.376	
0	23	9	15		0	22	9	14			329 891.535(0.008)	11.400	141.376	
0	23	−8	15		0	22	−8	14			329 891.587(0.008)	11.400	141.376	
0	23	9	15		0	22	−8	14			329 891.597(0.008)	29.497	141.376	
0	21	10	11	+	0	20	11	10	+		330 074.565(0.007)	18.358	127.320	
0	21	−10	11		0	20	−10	10			330 075.423(0.007)	10.026	127.347	
0	22	9	13	−	0	21	10	12	−		330 091.869(0.008)	23.582	134.707	
0	22	10	13	−	0	21	10	12	−		330 094.810(0.008)	11.324	134.707	
0	22	9	13	−	0	21	9	12	−		330 106.229(0.008)	11.324	134.707	
0	22	10	13	−	0	21	9	12	−		330 109.169(0.008)	23.583	134.707	
1	16	−10	7		1	15	−9	7			330 110.884(0.013)	5.650	148.025	
1	21	11	10		1	20	−12	9			330 121.977(0.034)	10.499	204.788	
0	21	11	11		0	20	−10	10			330 190.955(0.007)	18.888	127.347	
0	20	−15	5		0	19	−15	4			330 210.479(0.007)	6.787	127.287	
0	21	11	11	+	0	20	11	10	+		330 265.204(0.007)	10.346	127.320	
0	20	15	6		0	19	15	5			330 283.890(0.007)	6.804	126.950	
0	23	8	15	+	0	22	9	14	+		330 312.770(0.008)	28.380	141.354	
0	23	9	15	+	0	22	9	14	+		330 312.797(0.008)	12.426	141.354	
0	23	8	15	+	0	22	8	14	+		330 312.921(0.008)	12.426	141.354	
0	23	9	15	+	0	22	8	14	+		330 312.948(0.008)	28.380	141.354	
1	28	*	25	−	1	27	*	24	−		330 366.042(0.091)	141.104	240.296	
0	24	*	17		0	23	*	16			330 387.359(0.009)	93.425	147.325	
1	16	14	3	−	1	15	13	2	−		330 484.797(0.012)	25.421	157.113	
1	19	12	7		1	18	−12	7			330 505.058(0.025)	0.329	183.401	
1	14	8	6		1	13	−7	7			330 541.161(0.009)	3.291	128.087	
0	16	12	5	−	0	15	11	4	−		330 632.636(0.005)	16.102	78.373	
0	24	*	17	−	0	23	*	16	−		330 761.052(0.009)	93.277	147.301	
0	21	10	11	+	0	20	10	10	+		330 826.216(0.007)	10.353	127.295	
0	15	14	2	−	0	14	13	1	−		330 864.606(0.004)	26.788	75.191	
0	15	14	1	+	0	14	13	2	+		330 866.067(0.004)	26.788	75.191	
0	16	−12	4		0	15	−11	4			330 945.323(0.005)	14.926	78.579	
1	16	14	2	+	1	15	13	3	+		330 971.776(0.012)	25.490	157.101	
0	25	*	19		0	24	*	18			330 976.315(0.009)	105.072	152.601	
1	20	12	8	+	1	19	13	7	+		331 005.631(0.028)	16.720	196.712	
0	21	11	11	+	0	20	10	10	+		331 016.855(0.007)	18.386	127.295	
0	16	12	5		0	15	11	5			331 059.599(0.005)	14.796	78.194	
1	21	10	11		1	20	−11	10			331 076.805(0.034)	15.877	201.835	
1	20	13	7	−	1	19	14	6	−		331 088.359(0.030)	9.914	198.629	
0	13	10	4		0	12	−7	5			331 155.851(0.006)	0.544	49.073	
0	26	−15	11		0	26	−12	14			331 258.021(0.005)	0.230	208.144	
0	12	4	8	+	0	11	3	9	+		331 268.634(0.003)	0.663	31.972	
0	12	5	8	+	0	11	2	9	+		331 283.716(0.003)	0.663	31.972	
0	25	*	19	+	0	24	*	18	+		331 314.419(0.009)	104.945	152.567	
1	16	11	5		1	15	10	5			331 322.208(0.013)	9.948	151.119	
1	29	*	27	+	1	28	*	26	+		331 497.055(0.104)	152.968	243.499	
0	26	*	21		0	25	*	20			331 613.221(0.010)	116.784	157.217	
1	16	12	4	+	1	15	11	5	+		331 863.462(0.013)	9.943	153.839	
0	19	12	7	+	0	18	12	6	+		331 870.097(0.007)	9.365	109.264	
1	13	5	8	−	1	12	4	9	−		331 897.317(0.006)	1.151	117.790	
1	13	6	8	−	1	12	3	9	−		331 899.507(0.006)	1.151	117.790	
0	26	*	21	−	0	25	*	20	−		331 920.046(0.010)	116.673	157.165	
0	20	14	7	−	0	19	14	6	−		332 005.108(0.007)	7.941	124.346	
1	15	−15	1		1	14	−14	1			332 197.929(0.012)	27.037	153.907	
0	19	−12	7		0	18	−12	6			332 253.494(0.007)	9.155	109.420	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	23	8	15		1	22	−9	14			332 254.320(0.047)	27.780	216.047	
1	23	−9	15		1	22	−9	14			332 255.136(0.047)	12.173	216.047	
1	23	8	15		1	22	8	14			332 257.840(0.047)	12.173	216.047	
1	23	−9	15		1	22	8	14			332 258.656(0.047)	27.780	216.047	
0	27	*	23		0	26	*	22			332 278.303(0.011)	128.580	161.177	
0	22	−13	9		0	21	−14	7			332 320.305(0.009)	0.439	147.678	
1	24	13	11		1	24	10	14			332 323.057(0.005)	0.172	248.297	
1	24	7	17		1	23	−8	16			332 414.080(0.055)	33.604	222.010	
1	24	−8	17		1	23	−8	16			332 414.089(0.055)	12.363	222.010	
1	24	7	17		1	23	7	16			332 414.120(0.055)	12.363	222.010	
1	24	−8	17		1	23	7	16			332 414.128(0.055)	33.604	222.010	
1	14	9	5		1	13	7	6			332 436.005(0.010)	0.618	129.704	
1	22	9	13		1	21	−10	12			332 501.964(0.040)	22.232	209.332	
0	27	*	23	+	0	26	*	22	+		332 552.819(0.011)	128.484	161.099	
1	22	−10	13		1	21	−10	12			332 553.461(0.040)	11.491	209.332	
0	17	12	6		0	16	−11	5			332 624.756(0.007)	5.637	87.616	
1	18	−11	8		1	17	10	7			332 654.016(0.020)	9.596	169.654	
1	22	9	13		1	21	9	12			332 694.534(0.041)	11.486	209.325	
0	20	13	8	+	0	19	13	7	+		332 697.106(0.007)	8.863	121.725	
0	13	11	3		0	12	9	4			332 733.487(0.004)	0.431	51.116	
1	22	−10	13		1	21	9	12			332 746.030(0.041)	22.244	209.325	
1	25	*	19		1	24	*	18			332 809.022(0.063)	103.835	227.251	
1	30	*	29	−	1	29	*	28	−		332 841.910(0.120)	164.852	246.290	
1	21	−11	11		1	20	−11	10			332 875.447(0.034)	10.673	201.835	
1	19	13	7	+	1	18	12	6	+		332 909.606(0.024)	15.485	185.607	
1	15	−12	4		1	14	−11	4			332 958.248(0.010)	23.634	144.548	
0	28	*	25		0	27	*	24			332 962.730(0.013)	140.468	164.487	
0	19	−13	6		0	18	13	6			333 073.084(0.009)	0.560	111.037	
1	14	8	6		1	13	6	7			333 093.283(0.009)	0.250	128.002	
1	14	12	3	−	1	13	9	4	−		333 138.690(0.014)	1.570	135.748	
0	28	*	25	−	0	27	*	24	−		333 199.015(0.013)	140.387	164.371	
1	20	13	8	+	1	19	13	7	+		333 319.961(0.027)	2.807	196.712	
1	26	*	21		1	25	*	20			333 323.676(0.072)	115.723	231.783	
0	29	*	27		0	28	*	26			333 662.999(0.020)	152.446	167.150	
0	13	−11	2		0	12	−9	3			333 679.663(0.004)	0.454	51.489	
1	20	13	7		1	19	13	6			333 753.985(0.029)	7.892	196.851	
1	19	14	5	+	1	18	14	4	+		333 840.724(0.023)	5.264	187.963	
0	29	*	27	+	0	28	*	26	+		333 849.811(0.020)	152.383	166.984	
1	27	*	23		1	26	*	22			333 886.691(0.082)	127.655	235.603	
1	21	11	10	−	1	20	12	9	−		334 253.387(0.032)	23.601	205.300	
1	19	−11	9		1	18	10	8			334 322.596(0.024)	11.456	179.946	
1	21	12	10	−	1	20	12	9	−		334 362.849(0.032)	3.193	205.300	
0	30	*	29		0	29	*	28			334 378.505(0.031)	164.511	169.169	
0	20	13	8		0	19	13	7			334 388.143(0.007)	8.411	121.662	
1	28	*	25		1	27	*	24			334 434.395(0.094)	139.665	238.702	
1	14	8	6	+	1	13	7	7	+		334 483.298(0.008)	2.932	131.122	
0	30	*	29	−	0	29	*	28	−		334 498.332(0.031)	164.472	168.937	
1	21	11	10	−	1	20	11	9	−		334 611.142(0.032)	3.192	205.288	
0	20	14	7		0	19	14	6			334 640.549(0.007)	7.587	124.119	
1	20	−11	10		1	19	10	9			334 677.954(0.029)	13.491	190.671	
1	23	14	9		1	22	−15	8			334 700.132(0.048)	1.250	236.803	
0	14	8	6	+	0	13	7	7	+		334 700.662(0.004)	2.679	54.326	
1	21	12	10	−	1	20	11	9	−		334 720.603(0.032)	23.655	205.288	
0	16	12	4	+	0	15	11	5	+		334 742.307(0.005)	15.924	78.280	
1	29	*	27		1	28	*	26			334 901.992(0.108)	151.779	241.062	
1	22	10	12	+	1	21	11	11	+		335 054.843(0.038)	28.694	213.222	
1	22	11	12	+	1	21	11	11	+		335 058.583(0.038)	4.072	213.222	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	22	10	12	+	1	21	10	11	+		335 067.245(0.038)	4.072	213.222	
1	22	11	12	+	1	21	10	11	+		335 070.985(0.038)	28.696	213.222	
0	15	−10	5		0	14	−8	6			335 168.270(0.004)	1.348	65.718	
1	15	15	0		1	14	14	0			335 214.604(0.014)	31.242	157.007	
1	30	*	29		1	29	*	28			335 231.737(0.124)	164.020	242.661	
1	14	9	6	+	1	13	7	7	+		335 247.586(0.008)	0.173	131.122	
1	14	9	6	+	1	13	6	7	+		335 274.894(0.008)	2.904	131.121	
0	14	8	6	+	0	13	6	7	+		335 542.628(0.004)	0.717	54.298	
0	15	10	5	+	0	14	8	6	+		335 573.720(0.004)	1.441	65.491	
0	15	−15	0		0	14	−14	0			335 604.363(0.005)	30.801	78.197	
0	20	−14	6		0	19	−14	5			335 615.402(0.007)	7.638	124.474	
0	20	14	6	+	0	19	14	5	+		335 702.548(0.007)	7.974	124.390	
0	20	−11	9		0	19	−11	8			335 724.047(0.007)	9.512	118.906	
0	13	11	2	−	0	12	9	3	−		335 779.854(0.004)	0.441	51.211	
0	14	−8	6		0	13	7	7			335 822.185(0.004)	2.623	54.516	
1	23	9	14	−	1	22	10	13	−		335 845.473(0.045)	33.627	220.484	
1	23	10	14	−	1	22	10	13	−		335 845.552(0.045)	4.901	220.484	
1	23	9	14	−	1	22	9	13	−		335 845.790(0.045)	4.901	220.484	
1	23	10	14	−	1	22	9	13	−		335 845.869(0.045)	33.627	220.484	
1	21	10	11		1	20	10	10			336 320.740(0.034)	10.577	201.660	
1	20	12	8	+	1	19	12	7	+		336 370.585(0.027)	2.839	196.533	
0	14	−8	6		0	13	−6	7			336 388.704(0.004)	0.672	54.497	
1	12	8	4		1	11	5	6			336 421.476(0.010)	0.329	112.785	
0	21	12	9	+	0	20	13	8	+		336 436.883(0.008)	9.218	132.823	
0	15	15	1		0	14	14	1			336 654.451(0.005)	30.783	77.840	
1	24	*	16	+	1	23	*	15	+		336 662.909(0.052)	88.518	227.111	
0	17	−11	6		0	16	−10	6			336 909.388(0.005)	0.568	86.223	
1	16	12	4		1	15	11	4			336 960.322(0.013)	14.337	153.475	
0	13	−6	7		0	12	5	8			337 119.756(0.003)	1.522	43.252	
0	13	−6	7		0	12	−4	8			337 128.571(0.003)	0.349	43.252	
0	12	10	3	−	0	11	7	4	−		337 243.134(0.004)	0.262	41.856	
0	20	11	9	−	0	19	11	8	−		337 417.251(0.007)	9.822	118.760	
0	15	15	1	+	0	14	14	0	+		337 475.599(0.005)	30.730	78.194	
0	15	15	0	−	0	14	14	1	−		337 475.618(0.005)	30.730	78.194	
1	25	*	18	−	1	24	*	17	−		337 556.098(0.060)	99.545	233.117	
0	15	11	5		0	14	−9	5			337 590.508(0.006)	0.227	66.933	
1	20	13	7		1	19	−13	7			337 609.241(0.029)	0.709	196.723	
0	13	7	7		0	12	5	8			337 686.275(0.003)	0.349	43.252	
0	13	7	7		0	12	−4	8			337 695.090(0.003)	1.519	43.252	
0	16	11	5	−	0	15	10	6	−		337 715.622(0.005)	9.706	76.166	
1	16	−11	6		1	15	−10	6			337 865.296(0.013)	16.585	150.146	
0	13	6	7	+	0	12	5	8	+		338 028.976(0.003)	1.513	43.023	
0	13	6	7	+	0	12	4	8	+		338 043.983(0.003)	0.368	43.022	
1	15	10	5	+	1	14	9	6	+		338 052.047(0.011)	4.432	142.305	
1	19	13	6	−	1	18	13	5	−		338 116.194(0.023)	4.265	186.700	
1	21	−11	11		1	20	10	10			338 119.382(0.035)	16.211	201.660	
0	16	−13	3		0	15	−12	3			338 197.746(0.005)	20.550	80.803	
1	26	*	20	+	1	25	*	19	+		338 319.312(0.069)	111.611	238.522	
1	12	4	8		1	11	−3	9			338 338.589(0.005)	0.843	105.362	
1	12	−5	8		1	11	2	9			338 405.489(0.005)	0.843	105.362	
0	13	11	3	+	0	12	9	4	+		338 473.611(0.004)	0.436	51.118	
0	16	13	4		0	15	12	4			338 483.678(0.005)	20.597	80.411	
0	21	11	10	−	0	20	12	9	−		338 568.572(0.008)	14.677	130.207	
1	20	13	8	+	1	19	12	7	+		338 684.915(0.028)	17.668	196.533	
0	18	12	7		0	17	−11	6			338 721.711(0.007)	9.827	97.461	
0	21	−11	10		0	20	12	9			338 801.969(0.008)	15.263	130.244	
0	13	7	7	+	0	12	5	8	+		338 870.943(0.003)	0.367	43.023	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	13	7	7	+	0	12	4	8	+		338 885.950(0.003)	1.509	43.022	
1	13	11	2	−	1	12	8	5	−		339 056.966(0.008)	0.249	126.158	
1	27	*	22	−	1	26	*	21	−		339 162.596(0.079)	123.290	243.339	
0	19	12	8		0	18	−11	7			339 298.446(0.007)	10.958	107.969	
1	13	4	9	+	1	12	*	10	+		339 416.512(0.007)	0.717	114.979	
1	13	5	9	+	1	12	*	10	+		339 416.628(0.007)	0.717	114.979	
0	21	−12	9		0	20	13	8			339 679.569(0.009)	9.823	132.816	
0	16	13	4	+	0	15	12	3	+		339 766.622(0.005)	20.745	80.636	
1	25	−15	11		1	25	−12	14			339 810.328(0.007)	0.184	265.375	
1	16	15	2	+	1	15	14	1	+		339 883.466(0.012)	30.292	159.318	
0	20	12	9		0	19	−11	8			339 891.116(0.008)	12.863	118.906	
1	16	15	1	−	1	15	14	2	−		339 897.049(0.012)	30.295	159.318	
0	21	12	10		0	20	12	9			340 043.864(0.007)	9.839	130.244	
1	28	*	24	+	1	27	*	23	+		340 063.915(0.090)	135.051	247.594	
0	22	−10	12		0	21	11	11			340 068.732(0.008)	21.333	138.361	
0	22	11	12		0	21	11	11			340 093.787(0.008)	10.585	138.361	
1	12	11	1		1	11	9	2			340 098.466(0.006)	0.362	119.627	
0	23	−9	14		0	22	10	13			340 108.290(0.009)	26.615	145.729	
0	23	10	14		0	22	10	13			340 108.543(0.009)	11.307	145.729	
0	23	−9	14		0	22	−9	13			340 109.726(0.009)	11.307	145.729	
0	23	10	14		0	22	−9	13			340 109.980(0.009)	26.615	145.729	
0	16	13	3	−	0	15	12	4	−		340 121.001(0.005)	20.733	80.628	
1	17	10	7		1	16	9	7			340 153.481(0.016)	0.751	158.307	
0	22	−10	12		0	21	−10	11			340 184.264(0.008)	10.585	138.357	
0	22	11	12		0	21	−10	11			340 209.319(0.008)	21.337	138.357	
1	17	−12	6		1	16	11	5			340 237.576(0.020)	0.331	162.171	
0	14	10	5		0	13	8	6			340 275.590(0.004)	0.613	56.554	
1	13	6	7		1	12	−5	8			340 321.738(0.006)	1.892	116.650	
0	21	12	10	−	0	20	12	9	−		340 402.515(0.007)	10.085	130.207	
1	22	12	10		1	21	−13	9			340 438.952(0.040)	8.785	219.149	
0	17	12	6	−	0	16	11	5	−		340 440.185(0.006)	13.483	87.431	
0	24	*	16		0	23	9	15			340 474.277(0.009)	43.767	152.380	
0	24	*	16		0	23	−8	15			340 474.286(0.009)	43.767	152.380	
1	20	15	6	+	1	19	15	5	+		340 483.271(0.027)	5.166	200.644	
0	23	9	14	−	0	22	10	13	−		340 564.916(0.009)	25.808	145.718	
0	23	10	14	−	0	22	10	13	−		340 565.489(0.009)	12.009	145.718	
0	23	9	14	−	0	22	9	13	−		340 567.856(0.009)	12.009	145.718	
0	23	10	14	−	0	22	9	13	−		340 568.429(0.009)	25.808	145.718	
0	12	−3	9		0	11	*	10			340 594.642(0.003)	0.407	29.114	
0	22	10	12	+	0	21	11	11	+		340 594.665(0.008)	20.781	138.336	
0	12	4	9		0	11	*	10			340 594.905(0.003)	0.407	29.114	
0	22	11	12	+	0	21	11	11	+		340 639.102(0.008)	10.985	138.336	
1	13	10	3		1	12	8	4			340 760.026(0.007)	0.686	124.007	
0	21	14	8		0	20	−14	6			340 772.058(0.009)	0.617	135.669	
0	22	10	12	+	0	21	10	11	+		340 785.304(0.008)	10.986	138.330	
0	22	11	12	+	0	21	10	11	+		340 829.741(0.008)	20.786	138.330	
0	24	*	16	+	0	23	9	15	+		340 870.444(0.009)	43.684	152.372	
0	24	*	16	+	0	23	8	15	+		340 870.471(0.009)	43.684	152.372	
1	20	14	7	−	1	19	14	6	−		340 905.553(0.027)	3.306	198.629	
1	21	15	6		1	20	15	5			340 938.120(0.034)	6.728	214.741	
0	16	−11	5		0	15	10	6			340 988.744(0.005)	6.292	76.242	
0	25	*	18		0	24	*	17			340 999.108(0.010)	99.162	158.345	
1	21	−12	10		1	20	−12	9			341 010.282(0.034)	10.374	204.788	
1	29	*	26	−	1	28	*	25	−		341 031.369(0.103)	146.887	251.316	
0	25	*	18	−	0	24	*	17	−		341 355.243(0.010)	99.023	158.334	
1	16	−13	4		1	15	12	3			341 476.237(0.013)	17.948	156.101	
0	26	*	20		0	25	*	19			341 600.301(0.011)	110.820	163.642	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	13	10	4	−	0	12	7	5	−		341 634.118(0.005)	0.734	48.809	
1	15	13	2		1	14	−12	3			341 810.200(0.010)	27.361	147.635	
1	15	12	4	−	1	14	10	5	−		341 863.696(0.011)	0.173	143.935	
1	21	14	7	+	1	20	15	6	+		341 879.142(0.036)	6.818	212.001	
0	26	*	20	+	0	25	*	19	+		341 925.938(0.011)	110.699	163.619	
1	15	10	5		1	14	−9	6			342 110.020(0.015)	1.143	139.707	
1	30	*	28	+	1	29	*	27	+		342 150.207(0.118)	158.763	254.556	
0	27	*	22		0	26	*	21			342 242.892(0.012)	122.547	168.278	
0	12	3	9	−	0	11	*	10	−		342 375.392(0.003)	0.409	28.806	
0	12	4	9	−	0	11	*	10	−		342 375.897(0.003)	0.409	28.806	
1	21	−15	7		1	20	−15	6			342 444.074(0.034)	8.785	213.328	
0	16	−12	4		0	15	11	5			342 488.539(0.007)	0.761	78.194	
0	17	13	5		0	16	−12	4			342 515.228(0.009)	0.217	89.618	
0	27	*	22	−	0	26	*	21	−		342 541.136(0.012)	122.440	168.237	
1	24	8	16		1	23	−9	15			342 573.717(0.055)	30.174	227.130	
1	24	−9	16		1	23	−9	15			342 573.901(0.055)	12.736	227.130	
1	24	8	16		1	23	8	15			342 574.533(0.055)	12.736	227.130	
1	24	−9	16		1	23	8	15			342 574.716(0.055)	30.174	227.130	
0	13	−10	3		0	12	−7	5			342 649.503(0.005)	0.333	49.073	
1	23	9	14		1	22	−10	13			342 676.726(0.047)	24.672	220.425	
1	23	−10	14		1	22	−10	13			342 689.821(0.047)	12.111	220.425	
1	22	10	12		1	21	−11	11			342 706.427(0.041)	18.858	212.939	
1	23	9	14		1	22	9	13			342 728.223(0.047)	12.110	220.423	
1	23	−10	14		1	22	9	13			342 741.318(0.047)	24.675	220.423	
1	25	*	18		1	24	−8	17			342 833.847(0.063)	48.890	233.098	
1	25	*	18		1	24	7	17			342 833.856(0.063)	48.890	233.098	
0	28	*	24		0	27	*	23			342 911.037(0.013)	134.358	172.261	
1	13	−7	7		1	12	4	8			342 940.177(0.006)	1.884	116.647	
0	21	−11	10		0	20	−11	9			342 969.038(0.008)	9.901	130.105	
1	20	11	9		1	19	11	8			342 996.274(0.029)	10.313	192.577	
0	28	*	24	+	0	27	*	23	+		343 180.092(0.013)	134.264	172.191	
0	20	12	9	−	0	19	11	8	−		343 185.134(0.008)	12.510	118.760	
1	13	−10	4		1	12	−8	5			343 194.176(0.008)	0.202	122.813	
1	20	12	8		1	19	12	7			343 224.680(0.029)	10.852	194.426	
1	22	−11	12		1	21	−11	11			343 258.454(0.041)	11.287	212.939	
0	14	−11	3		0	13	−9	4			343 276.600(0.005)	0.583	58.825	
1	26	*	20		1	25	*	19			343 288.352(0.072)	109.657	238.352	
1	17	14	4	−	1	16	13	3	−		343 572.321(0.015)	21.939	166.171	
0	29	*	26		0	28	*	25			343 597.585(0.017)	146.257	175.594	
1	21	12	9	+	1	20	13	8	+		343 606.830(0.033)	19.511	207.830	
1	22	−14	9		1	21	14	7			343 738.016(0.043)	0.475	222.602	
0	19	12	8	−	0	18	11	7	−		343 807.852(0.007)	11.077	107.784	
0	29	*	26	−	0	28	*	25	−		343 830.886(0.017)	146.177	175.486	
1	27	*	22		1	26	*	21			343 847.041(0.083)	121.537	242.901	
1	15	9	6		1	14	−8	7			344 180.045(0.012)	3.853	137.721	
0	14	11	3	−	0	13	9	4	−		344 181.214(0.004)	0.651	58.579	
0	21	12	10		0	20	−11	9			344 210.933(0.008)	15.508	130.105	
0	18	12	7	−	0	17	11	6	−		344 290.073(0.007)	11.456	97.271	
0	30	*	28		0	29	*	27			344 299.825(0.025)	158.243	178.280	
0	21	11	10	−	0	20	11	9	−		344 336.454(0.008)	10.181	130.015	
1	28	*	24		1	27	*	23			344 448.090(0.094)	133.465	246.740	
1	21	13	9	+	1	20	13	8	+		344 477.771(0.032)	3.647	207.830	
0	30	*	28	+	0	29	*	27	+		344 485.436(0.025)	158.181	178.120	
1	22	10	12		1	21	10	11			344 505.069(0.041)	11.252	212.879	
1	21	−13	9		1	20	−13	8			344 514.617(0.034)	9.997	207.657	
1	14	7	7	−	1	13	6	8	−		344 525.349(0.008)	2.153	128.861	
1	14	7	7	−	1	13	5	8	−		344 527.517(0.008)	0.188	128.861	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	14	8	7	−	1	13	6	8	−		344 606.627(0.008)	0.189	128.861	
1	14	8	7	−	1	13	5	8	−		344 608.794(0.008)	2.151	128.861	
0	17	−12	5		0	16	−11	5			344 855.432(0.006)	7.423	87.616	
0	16	−14	2		0	15	−13	2			344 931.325(0.005)	24.886	83.374	
1	29	*	26		1	28	*	25			345 029.122(0.107)	145.471	249.858	
1	22	−11	12		1	21	10	11			345 057.096(0.041)	18.946	212.879	
1	22	11	11	−	1	21	12	10	−		345 189.687(0.038)	26.541	216.453	
1	22	12	11	−	1	21	12	10	−		345 223.341(0.038)	3.171	216.453	
0	17	11	7		0	16	10	7			345 267.825(0.005)	0.292	85.039	
0	14	10	5	−	0	13	8	6	−		345 272.926(0.004)	0.711	56.385	
1	16	−14	3		1	15	−13	3			345 295.417(0.013)	21.511	158.922	
1	22	11	11	−	1	21	11	10	−		345 299.149(0.038)	3.170	216.450	
1	22	12	11	−	1	21	11	10	−		345 332.803(0.038)	26.556	216.450	
0	14	10	5		0	13	−7	6			345 340.053(0.005)	1.518	56.385	
1	21	−14	8		1	20	−14	7			345 362.636(0.034)	9.992	210.404	
1	30	*	28		1	29	*	27			345 522.557(0.122)	157.583	252.233	
0	16	14	3		0	15	13	3			345 607.394(0.005)	24.942	82.988	
1	17	11	6		1	16	10	6			345 702.514(0.016)	5.260	160.004	
1	15	11	5	+	1	14	9	6	+		345 787.444(0.010)	0.297	142.305	
1	21	14	7		1	20	14	6			345 798.871(0.034)	7.706	211.067	
1	23	10	13	+	1	22	11	12	+		345 903.664(0.045)	30.571	224.398	
1	23	11	13	+	1	22	11	12	+		345 904.726(0.045)	4.999	224.398	
1	23	10	13	+	1	22	10	12	+		345 907.404(0.045)	4.999	224.398	
1	23	11	13	+	1	22	10	12	+		345 908.467(0.045)	30.572	224.398	
1	21	12	9	+	1	20	12	8	+		345 921.160(0.032)	3.661	207.753	
0	14	9	6		0	13	7	7			345 951.387(0.004)	0.619	54.516	
0	14	11	4		0	13	9	5			345 956.543(0.004)	0.520	58.343	
1	15	12	4	−	1	14	9	5	−		346 044.113(0.013)	3.208	143.795	
0	23	−14	9		0	22	−15	7			346 047.897(0.010)	0.804	162.418	
1	13	*	10	−	1	12	*	11	−		346 051.725(0.007)	0.712	111.912	
0	21	12	10	−	0	20	11	9	−		346 170.397(0.008)	15.014	130.015	
0	20	−14	6		0	19	14	6			346 254.316(0.011)	0.312	124.119	
1	13	12	1	+	1	12	9	4	+		346 349.047(0.012)	0.295	127.500	
0	22	13	9	−	0	21	14	8	−		346 391.901(0.009)	7.264	147.094	
0	20	13	7	−	0	19	13	6	−		346 410.163(0.007)	9.319	122.029	
1	20	15	5	−	1	19	15	4	−		346 464.140(0.028)	5.606	200.714	
0	14	9	6		0	13	−6	7			346 517.906(0.004)	2.352	54.497	
1	15	11	5	+	1	14	8	6	+		346 551.733(0.011)	3.859	142.279	
1	24	9	15	−	1	23	10	14	−		346 658.400(0.052)	36.320	231.687	
1	24	10	15	−	1	23	10	14	−		346 658.420(0.052)	5.023	231.687	
1	24	9	15	−	1	23	9	14	−		346 658.480(0.052)	5.023	231.687	
1	24	10	15	−	1	23	9	14	−		346 658.499(0.052)	36.320	231.687	
0	16	14	3	−	0	15	13	2	−		346 764.719(0.005)	24.957	83.281	
0	16	14	2	+	0	15	13	3	+		346 782.568(0.005)	24.956	83.280	
1	21	13	9	+	1	20	12	8	+		346 792.101(0.032)	19.878	207.753	
0	15	9	6	−	0	14	8	7	−		346 809.489(0.005)	3.464	63.862	
1	17	14	3	+	1	16	13	4	+		346 822.225(0.015)	22.221	166.095	
0	20	−13	7		0	19	−13	6			346 996.135(0.007)	8.940	122.147	
1	25	*	17	+	1	24	*	16	+		347 435.792(0.060)	94.169	238.341	
1	25	−14	12		1	24	14	10			347 441.179(0.065)	0.369	261.767	
0	17	12	6		0	16	11	6			347 454.052(0.005)	7.009	87.121	
0	21	13	9	+	0	20	13	8	+		347 759.838(0.007)	9.726	132.823	
0	14	9	6	+	0	13	7	7	+		347 796.408(0.004)	0.642	54.326	
1	17	13	4	−	1	16	12	5	−		347 922.575(0.015)	13.581	164.435	
0	21	15	7	+	0	20	15	6	+		347 958.681(0.008)	8.016	138.247	
1	16	−12	5		1	15	−11	5			348 133.438(0.013)	21.915	152.663	
1	26	*	19	−	1	25	*	18	−		348 234.778(0.069)	105.697	244.377	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	21	13	9		0	20	13	8			348 257.160(0.008)	9.521	132.816	
1	14	−9	6		1	13	−7	7			348 377.126(0.008)	0.178	128.087	
1	16	−15	2		1	15	−14	2			348 619.674(0.014)	25.241	161.894	
0	14	9	6	+	0	13	6	7	+		348 638.375(0.004)	2.294	54.298	
0	15	−9	6		0	14	8	7			348 665.752(0.005)	3.301	64.026	
1	22	11	11		1	21	−12	10			348 877.976(0.040)	14.563	216.163	
0	15	9	6	−	0	14	7	7	−		349 027.142(0.004)	0.958	63.788	
1	27	*	21	+	1	26	*	20	+		349 040.190(0.079)	117.329	249.807	
0	15	−11	4		0	14	−9	5			349 133.724(0.005)	0.822	66.933	
0	13	−5	8		0	12	4	9			349 291.669(0.003)	1.026	40.475	
0	13	−5	8		0	12	−3	9			349 291.932(0.003)	0.226	40.475	
0	20	−12	8		0	19	−12	7			349 318.590(0.007)	10.037	120.503	
0	13	6	8		0	12	4	9			349 327.599(0.003)	0.226	40.475	
0	13	6	8		0	12	−3	9			349 327.862(0.003)	1.026	40.475	
1	21	13	8	−	1	20	14	7	−		349 622.448(0.034)	15.191	210.001	
1	17	−10	8		1	16	−9	8			349 759.932(0.016)	1.262	156.714	
0	20	12	8	+	0	19	12	7	+		349 805.246(0.007)	10.304	120.334	
1	28	*	23	−	1	27	*	22	−		349 853.376(0.090)	129.037	254.653	
0	21	15	6	−	0	20	15	5	−	349 913.780(0.050)	349 913.778(0.008)	8.027	138.267	11
0	21	14	8	−	0	20	14	7	−		349 950.967(0.008)	9.029	135.421	
0	13	12	2		0	12	10	3			349 955.724(0.004)	0.275	52.971	
0	21	15	7		0	20	15	6		350 044.192(0.050)	350 044.160(0.008)	7.871	137.967	6
0	13	−12	1		0	12	−10	2			350 093.576(0.004)	0.286	53.369	
0	15	11	4	−	0	14	9	5	−		350 134.942(0.005)	0.992	66.694	
0	21	−15	6		0	20	−15	5		350 194.490(0.050)	350 194.507(0.008)	7.883	138.301	11
0	15	−9	6		0	14	−7	7			350 211.896(0.004)	0.882	63.974	
1	15	14	1		1	14	13	1			350 268.194(0.010)	30.966	151.080	
1	15	9	6		1	14	7	7			350 392.721(0.011)	0.455	137.514	
1	12	−12	1		1	11	10	1			350 429.397(0.007)	0.247	122.020	
0	22	−11	11		0	21	12	10		350 430.551(0.050)	350 430.529(0.008)	18.123	141.586	6
0	23	−10	13		0	22	11	12			350 495.481(0.009)	23.738	149.705	
0	23	11	13		0	22	11	12		350 500.537(0.050)	350 500.521(0.009)	11.138	149.705	6
0	23	−10	13		0	22	−10	12		350 520.543(0.050)	350 520.536(0.009)	11.138	149.704	6
0	23	11	13		0	22	−10	12		350 525.618(0.050)	350 525.575(0.009)	23.739	149.704	6
1	20	13	7	−	1	19	13	6	−		350 604.742(0.027)	3.227	197.978	
0	24	−9	15		0	23	10	14			350 644.600(0.009)	29.023	157.074	
0	24	10	15		0	23	10	14			350 644.643(0.009)	11.783	157.074	
0	24	−9	15		0	23	−9	14			350 644.854(0.009)	11.783	157.074	
0	24	10	15		0	23	−9	14			350 644.896(0.009)	29.023	157.074	
0	13	5	8	−	0	12	4	9	−	350 679.345(0.050)	350 679.284(0.003)	1.017	40.227	6
0	13	5	8	−	0	12	3	9	−		350 679.787(0.003)	0.241	40.227	
0	13	6	8	−	0	12	4	9	−		350 738.419(0.003)	0.241	40.227	
0	13	6	8	−	0	12	3	9	−		350 738.922(0.003)	1.017	40.227	
1	29	*	25	+	1	28	*	24	+		350 743.258(0.103)	140.818	258.937	
0	22	12	11		0	21	12	10		350 752.910(0.050)	350 752.930(0.008)	10.404	141.586	11
0	22	11	11	−	0	21	12	10	−	350 764.322(0.050)	350 764.339(0.008)	17.588	141.562	6
1	14	−9	6		1	13	6	7			350 929.248(0.009)	1.999	128.002	
0	23	10	13	+	0	22	11	12	+	350 994.759(0.050)	350 994.756(0.009)	23.106	149.699	6
0	23	11	13	+	0	22	11	12	+	351 004.449(0.050)	351 004.447(0.009)	11.641	149.699	6
0	23	10	13	+	0	22	10	12	+	351 039.182(0.050)	351 039.193(0.009)	11.641	149.697	6
0	23	11	13	+	0	22	10	12	+	351 048.700(0.050)	351 048.884(0.009)	23.107	149.697	6
0	25	*	17		0	24	*	16		351 065.850(0.050)	351 065.909(0.010)	93.272	163.737	11
0	24	9	15	−	0	23	10	14	−	351 068.019(0.990)	351 067.364(0.009)	28.006	157.078	6
0	24	10	15	−	0	23	10	14	−	351 068.019(0.990)	351 067.472(0.009)	12.705	157.078	6
0	24	9	15	−	0	23	9	14	−	351 068.019(0.990)	351 067.938(0.009)	12.705	157.078	6
0	24	10	15	−	0	23	9	14	−	351 068.019(0.990)	351 068.045(0.009)	28.006	157.078	6
0	12	*	10		0	11	*	11			351 145.578(0.004)	0.271	25.635	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	22	12	11	−	0	21	12	10	−	351 271.670(0.050)	351 271.578(0.008)	10.708	141.562	11
1	12	3	9		1	11	−2	10			351 281.641(0.005)	0.415	102.061	
1	12	−4	9		1	11	1	10			351 285.014(0.005)	0.415	102.061	
1	13	*	11	+	1	12	*	12	+		351 437.395(0.009)	0.235	108.616	
0	25	*	17	+	0	24	*	16	+	351 438.740(0.050)	351 438.704(0.010)	93.117	163.743	11
1	14	10	4		1	13	8	5			351 471.228(0.009)	0.905	131.209	
0	16	−15	1		0	15	−14	1			351 564.992(0.005)	28.992	86.244	
0	22	−13	9		0	21	14	8			351 578.945(0.010)	7.566	147.036	
0	26	*	19		0	25	*	18		351 613.280(0.050)	351 613.255(0.012)	104.901	169.720	11
0	22	−11	11		0	21	−11	10			351 672.424(0.008)	10.417	141.545	
1	30	*	27	−	1	29	*	26	−		351 692.439(0.117)	152.672	262.691	
1	23	13	10		1	22	−14	9			351 886.260(0.047)	5.866	234.068	
0	26	*	19	−	0	25	*	18	−	351 952.590(0.050)	351 952.602(0.012)	104.769	169.720	11
0	22	12	11		0	21	−11	10		351 994.820(0.050)	351 994.825(0.008)	18.175	141.545	11
0	14	10	5	−	0	13	7	6	−	352 063.836(0.050)	352 063.831(0.004)	1.621	56.158	6
0	27	*	21		0	26	*	20		352 224.440(0.050)	352 224.432(0.013)	116.572	175.036	11
1	27	15	12		1	27	12	15			352 238.509(0.008)	0.251	296.931	
0	21	14	8		0	20	14	7		352 385.871(0.050)	352 385.825(0.008)	8.324	135.282	6
0	27	*	21	+	0	26	*	20	+	352 537.970(0.050)	352 537.982(0.013)	116.456	175.024	11
1	17	12	5		1	16	11	5			352 542.650(0.016)	12.117	162.171	
0	23	14	9	+	0	22	15	8	+	352 549.405(0.050)	352 549.445(0.010)	5.624	162.081	6
0	16	15	2		0	15	14	2			352 561.643(0.005)	29.013	85.883	
0	22	11	11	−	0	21	11	10	−	352 598.350(0.050)	352 598.282(0.008)	10.729	141.501	11
1	18	14	5	−	1	17	13	4	−		352 792.120(0.019)	17.735	176.041	
1	16	11	5	−	1	15	10	6	−		352 826.630(0.014)	5.245	152.214	
0	28	*	23		0	27	*	22		352 871.920(0.050)	352 871.913(0.014)	128.313	179.694	11
1	24	9	15		1	23	−10	14			352 882.793(0.055)	27.066	231.856	
1	24	−10	15		1	23	−10	14			352 885.992(0.055)	12.728	231.856	
1	24	9	15		1	23	9	14			352 895.888(0.055)	12.728	231.855	
1	24	−10	15		1	23	9	14			352 899.086(0.055)	27.067	231.855	
1	25	8	17		1	24	−9	16			352 924.447(0.063)	32.579	238.557	
1	25	−9	17		1	24	−9	16			352 924.487(0.063)	13.273	238.557	
1	25	8	17		1	24	8	16			352 924.631(0.063)	13.273	238.557	
1	25	−9	17		1	24	8	16			352 924.671(0.063)	32.579	238.557	
1	22	−12	11		1	21	−12	10			353 032.057(0.041)	11.063	216.163	
1	17	−11	7		1	16	−10	7			353 075.099(0.016)	10.029	159.037	
0	22	12	11	−	0	21	11	10	−	353 105.530(0.050)	353 105.521(0.008)	17.662	141.501	11
0	28	*	23	−	0	27	*	22	−	353 161.790(0.050)	353 161.777(0.014)	128.210	179.662	11
1	21	11	10		1	20	11	9			353 208.745(0.034)	10.475	204.018	
1	23	10	13		1	22	−11	12			353 210.841(0.047)	21.515	224.388	
0	14	11	4	+	0	13	9	5	+		353 226.581(0.004)	0.606	58.257	
1	26	*	19		1	25	*	18			353 266.002(0.073)	103.617	244.533	
1	14	6	8	+	1	13	5	9	+		353 346.544(0.008)	1.617	126.301	
1	14	7	8	+	1	13	4	9	+		353 353.827(0.008)	1.617	126.301	
1	23	−11	13		1	22	−11	12			353 367.922(0.047)	11.907	224.388	
0	16	15	2	+	0	15	14	1	+		353 432.596(0.005)	28.977	86.228	
0	16	15	1	−	0	15	14	2	−		353 433.096(0.005)	28.977	86.228	
0	29	*	25		0	28	*	24		353 542.868(0.050)	353 542.871(0.017)	140.137	183.699	6
0	13	12	1	+	0	12	10	2	+		353 644.636(0.004)	0.273	53.112	
0	17	−13	4		0	16	−12	4		353 760.936(0.050)	353 760.937(0.006)	17.944	89.618	6
1	23	10	13		1	22	10	12			353 762.868(0.048)	11.897	224.370	
1	27	*	21		1	26	*	20			353 771.492(0.083)	115.477	249.803	
0	29	*	25	+	0	28	*	24	+	353 806.584(0.050)	353 806.581(0.017)	140.045	183.639	6
1	15	9	6	−	1	14	8	7	−		353 810.091(0.010)	3.587	140.356	
0	13	12	2	−	0	12	10	3	−		353 865.118(0.004)	0.273	53.105	
1	25	14	11		1	24	15	9			353 897.065(0.065)	0.955	264.251	
1	23	−11	13		1	22	10	12			353 919.948(0.048)	21.539	224.370	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	17	13	5		0	16	12	5			353 944.168(0.005)	17.941	89.237	
1	21	14	8	−	1	20	14	7	−		354 180.092(0.033)	2.902	210.001	
1	14	−10	5		1	13	−8	6			354 219.014(0.009)	0.177	130.060	
0	30	*	27		0	29	*	26		354 231.530(0.050)	354 231.503(0.022)	152.047	187.055	11
1	28	*	23		1	27	*	22			354 370.271(0.094)	127.351	254.371	
0	30	*	27	−	0	29	*	26	−	354 461.960(0.050)	354 461.896(0.022)	151.968	186.955	11
1	12	9	3		1	11	6	5			354 520.680(0.010)	0.184	114.238	
0	17	13	5	+	0	16	12	4	+	354 535.430(0.050)	354 535.406(0.005)	18.487	89.446	11
1	14	7	7		1	13	−6	8			354 576.110(0.008)	2.387	125.687	
1	13	11	2		1	12	9	3			354 676.814(0.007)	0.518	126.064	
1	17	15	3	+	1	16	14	2	+		354 839.195(0.015)	27.953	168.141	
1	29	*	25		1	28	*	24			355 008.031(0.106)	139.275	258.230	
1	17	15	2	−	1	16	14	3	−		355 009.521(0.015)	27.979	168.137	
0	14	−7	7		0	13	6	8			355 153.886(0.004)	1.961	52.127	
1	22	12	10	+	1	21	13	9	+		355 180.028(0.038)	22.449	219.321	
0	17	12	5	+	0	16	11	6	+	355 185.812(0.050)	355 185.795(0.005)	12.647	87.115	6
0	14	−7	7		0	13	−5	8			355 189.816(0.004)	0.463	52.126	
1	22	13	10	+	1	21	13	9	+		355 468.080(0.038)	3.934	219.321	
1	15	10	6	−	1	14	7	7	−		355 580.143(0.010)	3.507	140.353	
1	30	*	27		1	29	*	26			355 622.507(0.121)	151.278	261.367	
0	14	7	7	−	0	13	6	8	−	355 626.557(0.050)	355 626.517(0.004)	1.952	51.926	6
1	23	−14	10		1	22	14	8			355 632.793(0.049)	0.737	234.876	
0	14	7	7	−	0	13	5	8	−	355 685.554(0.050)	355 685.652(0.004)	0.487	51.924	6
1	18	−12	7		1	17	11	6			355 723.329(0.021)	3.464	171.536	
1	23	11	12	−	1	22	12	11	−		356 038.690(0.045)	28.740	227.969	
1	23	12	12	−	1	22	12	11	−		356 049.265(0.045)	3.838	227.969	
1	22	12	10	+	1	21	12	9	+		356 050.969(0.038)	3.935	219.291	
1	23	11	12	−	1	22	11	11	−		356 072.344(0.045)	3.837	227.968	
1	23	12	12	−	1	22	11	11	−		356 082.919(0.045)	28.744	227.968	
1	20	14	6	+	1	19	14	5	+		356 181.494(0.028)	5.371	199.099	
1	24	−14	11		1	23	14	9			356 206.534(0.056)	0.577	247.968	
1	22	13	10	+	1	21	12	9	+		356 339.022(0.038)	22.579	219.291	
0	17	13	4	−	0	16	12	5	−	356 467.751(0.050)	356 467.728(0.005)	18.416	89.402	6
0	22	12	10	+	0	21	13	9	+	356 650.139(0.050)	356 650.136(0.008)	13.259	144.423	6
0	14	8	7		0	13	6	8			356 700.030(0.004)	0.461	52.127	
1	24	10	14	+	1	23	11	13	+		356 715.288(0.052)	32.883	235.937	
1	24	11	14	+	1	23	11	13	+		356 715.572(0.052)	5.523	235.937	
1	24	10	14	+	1	23	10	13	+		356 716.351(0.052)	5.523	235.937	
1	24	11	14	+	1	23	10	13	+		356 716.634(0.052)	32.883	235.937	
0	14	8	7		0	13	−5	8			356 735.960(0.004)	1.950	52.126	
1	13	5	8		1	12	−4	9			356 737.442(0.006)	1.301	113.779	
1	13	−6	8		1	12	3	9			356 993.398(0.006)	1.301	113.779	
0	18	13	6		0	17	−12	5		357 280.959(0.050)	357 280.937(0.009)	2.746	99.119	6
1	16	13	3		1	15	−12	4			357 315.532(0.013)	25.858	155.654	
1	25	*	16	−	1	24	10	15	−		357 456.270(0.060)	44.161	243.250	
1	25	*	16	−	1	24	9	15	−		357 456.291(0.060)	44.161	243.250	
1	17	−13	5		1	16	12	4			357 497.964(0.016)	16.239	164.714	
0	14	−10	4		0	13	−7	6			357 533.492(0.004)	0.332	56.385	
1	12	−9	4		1	11	−6	6			357 579.696(0.009)	0.178	112.869	
1	19	14	6	−	1	18	13	5	−		357 632.576(0.024)	15.036	186.700	
0	22	−12	10		0	21	13	9		357 721.566(0.050)	357 721.568(0.008)	13.931	144.432	6
1	21	13	8		1	20	13	7			357 746.696(0.035)	9.783	207.984	
0	14	8	7	−	0	13	6	8	−		357 844.170(0.004)	0.484	51.926	
0	14	8	7	−	0	13	5	8	−		357 903.305(0.004)	1.933	51.924	
0	16	10	6	+	0	15	9	7	+	358 104.158(0.050)	358 104.085(0.005)	4.647	74.064	6
1	26	*	18	+	1	25	*	17	+		358 137.794(0.070)	99.722	249.930	
0	18	−12	6		0	17	−11	6			358 518.271(0.006)	1.450	97.461	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	16	−11	5		0	15	−9	6			358 558.904(0.005)	1.355	75.656	
1	27	*	20	−	1	26	*	19	−		358 983.868(0.080)	111.402	255.993	
1	21	15	7	+	1	20	15	6	+		359 017.991(0.033)	4.595	212.001	
1	16	10	6		1	15	−9	7			359 119.862(0.015)	3.846	148.025	
0	22	15	8		0	21	−15	6			359 120.077(0.012)	0.632	149.983	
1	21	13	8	−	1	20	13	7	−		359 439.642(0.032)	2.929	209.673	
0	21	−12	9		0	20	−12	8		359 503.155(0.050)	359 503.113(0.008)	10.187	132.155	6
1	22	−13	10		1	21	−13	9			359 599.962(0.041)	10.780	219.149	
0	21	14	7	+	0	20	14	6	+	359 623.150(0.050)	359 623.142(0.008)	9.245	135.587	11
0	17	−12	5		0	16	11	6		359 684.718(0.050)	359 684.728(0.007)	5.003	87.121	6
0	23	−14	9		0	22	15	8		359 735.620(0.050)	359 735.625(0.012)	5.361	161.962	6
1	28	*	22	+	1	27	*	21	+		359 749.757(0.091)	123.055	261.450	
0	16	11	5	−	0	15	9	6	−		359 763.352(0.005)	1.455	75.431	
1	22	11	11		1	21	11	10			359 766.281(0.041)	10.960	215.800	
1	15	10	5		1	14	8	6			359 945.985(0.012)	0.986	139.112	
0	16	16	0	+	0	15	15	1	+	360 015.570(0.050)	360 015.572(0.006)	32.919	89.451	6
0	21	−14	7		0	20	−14	6		360 030.717(0.050)	360 030.699(0.008)	8.600	135.669	6
1	22	15	7		1	21	15	6			360 031.483(0.040)	7.866	226.114	
1	18	10	8		1	17	9	8			360 098.005(0.020)	0.223	167.935	
1	20	14	7	−	1	19	13	6	−		360 421.936(0.028)	15.150	197.978	
0	13	−4	9		0	12	*	10			360 456.247(0.004)	0.751	37.348	
0	13	5	9		0	12	*	10			360 457.678(0.004)	0.751	37.348	
0	16	−10	6		0	15	9	7		360 483.932(0.050)	360 483.950(0.005)	4.273	74.198	6
1	16	11	5		1	15	−10	6			360 497.628(0.018)	0.514	150.146	
1	29	*	24	−	1	28	*	23	−		360 525.865(0.103)	134.789	266.323	
1	18	11	7		1	17	10	7			360 571.900(0.020)	0.930	169.654	
0	22	13	10		0	21	13	9		360 630.680(0.050)	360 630.671(0.008)	10.220	144.432	6
0	22	13	10	+	0	21	13	9	+	360 753.732(0.050)	360 753.701(0.008)	10.444	144.423	6
0	17	−14	3		0	16	−13	3			360 772.825(0.006)	22.833	92.084	
0	24	−10	14		0	23	11	13		360 951.390(0.050)	360 951.342(0.010)	26.128	161.397	11
0	24	11	14		0	23	11	13		360 952.319(0.050)	360 952.292(0.010)	11.670	161.397	6
0	24	−10	14		0	23	−10	13		360 956.315(0.050)	360 956.382(0.010)	11.670	161.397	6
0	24	11	14		0	23	−10	13		360 957.371(0.050)	360 957.331(0.010)	26.128	161.397	6
0	21	12	9	+	0	20	12	8	+	361 027.595(0.050)	361 027.566(0.008)	10.534	132.002	6
1	14	−8	7		1	13	5	8			361 041.382(0.008)	2.312	125.678	
0	23	−11	12		0	22	12	11		361 064.732(0.050)	361 064.709(0.009)	20.707	153.286	6
0	23	12	12		0	22	12	11		361 140.285(0.050)	361 140.288(0.009)	10.959	153.286	6
0	25	−9	16		0	24	10	15		361 200.591(0.050)	361 200.585(0.011)	31.511	168.770	6
0	25	10	16		0	24	10	15		361 200.591(0.050)	361 200.591(0.011)	12.173	168.770	6
0	25	−9	16		0	24	−9	15		361 200.591(0.050)	361 200.627(0.011)	12.173	168.770	6
0	25	10	16		0	24	−9	15		361 200.591(0.050)	361 200.633(0.011)	31.511	168.770	6
1	22	−15	8		1	21	−15	7			361 319.336(0.040)	10.078	224.751	
0	17	14	4		0	16	13	4			361 341.355(0.006)	22.907	91.701	
0	23	−11	12		0	22	−11	11		361 387.112(0.050)	361 387.110(0.009)	10.961	153.276	6
1	14	5	9	−	1	13	*	10	−		361 393.524(0.008)	1.115	123.455	
1	14	6	9	−	1	13	*	10	−		361 394.029(0.008)	1.115	123.455	
0	24	10	14	+	0	23	11	13	+	361 409.650(0.050)	361 409.646(0.010)	25.374	161.407	11
0	24	11	14	+	0	23	11	13	+	361 411.640(0.050)	361 411.648(0.010)	12.312	161.407	11
1	30	*	26	+	1	29	*	25	+		361 417.218(0.116)	146.590	270.637	
0	24	10	14	+	0	23	10	13	+	361 419.403(0.050)	361 419.337(0.010)	12.312	161.407	6
0	24	11	14	+	0	23	10	13	+	361 421.276(0.050)	361 421.339(0.010)	25.374	161.407	6
0	23	12	12		0	22	−11	11		361 462.689(0.050)	361 462.689(0.009)	20.718	153.276	6
1	24	−15	10		1	23	15	8			361 495.248(0.058)	0.587	250.810	
0	20	−13	7		0	19	13	7			361 538.368(0.009)	0.382	121.662	
0	23	11	12	−	0	22	12	11	−	361 553.805(0.050)	361 553.753(0.009)	20.158	153.279	6
1	17	−14	4		1	16	−13	4			361 564.623(0.017)	19.839	167.491	
0	25	9	16	−	0	24	10	15	−	361 592.383(0.100)	361 592.323(0.011)	30.185	168.788	6

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	25	10	16	−	0	24	10	15	−	361 592.383(0.100)	361 592.342(0.011)	13.412	168.788	6
0	25	9	16	−	0	24	9	15	−	361 592.383(0.100)	361 592.430(0.011)	13.412	168.788	6
0	25	10	16	−	0	24	9	15	−	361 592.383(0.100)	361 592.450(0.011)	30.185	168.788	6
0	26	*	18		0	25	*	17		361 663.729(0.050)	361 663.728(0.012)	99.008	175.447	6
0	23	12	12	−	0	22	12	11	−	361 680.926((0.050)	361 680.910(0.009)	11.332	153.279	6
0	24	−14	10		0	23	−15	8			361 723.050(0.010)	0.220	175.714	
0	26	*	18	+	0	25	*	17	+	362 014.511(0.050)	362 014.519(0.012)	98.864	175.465	6
0	23	11	12	−	0	22	11	11	−	362 061.004(0.050)	362 060.992(0.009)	11.337	153.262	6
0	13	4	9	+	0	12	3	10	+		362 136.477(0.003)	0.612	37.074	
0	13	5	9	+	0	12	2	10	+		362 139.129(0.003)	0.612	37.074	
0	23	12	12	−	0	22	11	11	−	362 188.161(0.050)	362 188.150(0.009)	20.174	153.262	6
0	27	*	20		0	26	*	19		362 228.918(0.050)	362 228.921(0.014)	110.643	181.448	6
0	17	14	4	−	0	16	13	3	−	362 517.471(0.050)	362 517.463(0.005)	22.996	91.973	6
1	23	11	12		1	22	−12	11			362 541.035(0.047)	17.901	227.939	
0	27	*	20	−	0	26	*	19	−	362 552.139(0.050)	362 552.133(0.014)	110.518	181.460	6
1	21	12	9		1	20	12	8			362 559.539(0.034)	11.285	205.874	
0	17	14	3	+	0	16	13	4	+	362 662.261(0.050)	362 662.243(0.005)	22.991	91.969	6
1	26	14	12		1	26	11	15			362 723.103(0.006)	0.174	278.527	
0	14	12	3		0	13	10	4			362 798.974(0.004)	0.432	60.119	
0	28	*	22		0	27	*	21		362 848.369(0.050)	362 848.398(0.016)	122.326	186.785	6
1	17	−12	6		1	16	−11	6			362 869.907(0.016)	19.585	161.416	
1	25	9	16		1	24	−10	15			363 134.310(0.064)	29.433	243.627	
1	25	−10	16		1	24	−10	15			363 135.065(0.064)	13.338	243.627	
1	25	9	16		1	24	9	15			363 137.508(0.064)	13.338	243.626	
1	25	−10	16		1	24	9	15			363 138.264(0.064)	29.433	243.626	
0	28	*	22	+	0	27	*	21	+	363 150.170(0.050)	363 150.196(0.016)	122.215	186.784	6
0	16	10	6	+	0	15	8	7	+	363 227.040(0.050)	363 227.080(0.005)	1.271	73.894	6
0	14	−12	2		0	13	−10	3			363 294.545(0.005)	0.453	60.503	
1	26	8	18		1	25	−9	17			363 299.661(0.073)	35.008	250.329	
1	26	−9	18		1	25	−9	17			363 299.669(0.073)	13.776	250.329	
1	26	8	18		1	25	8	17			363 299.701(0.073)	13.776	250.329	
1	26	−9	18		1	25	8	17			363 299.710(0.073)	35.008	250.329	
1	24	10	14		1	23	−11	13			363 395.896(0.055)	24.020	236.175	
1	24	−11	14		1	23	−11	13			363 438.138(0.055)	12.532	236.175	
0	29	*	24		0	28	*	23		363 500.157(0.050)	363 500.165(0.018)	134.082	191.465	6
1	24	10	14		1	23	10	13			363 552.977(0.055)	12.529	236.170	
1	27	−15	13		1	26	15	11			363 585.221(0.085)	0.449	293.375	
1	24	−11	14		1	23	10	13			363 595.219(0.055)	24.026	236.170	
1	13	8	5		1	12	5	7			363 684.727(0.009)	0.208	119.078	
1	22	13	9	−	1	21	14	8	−		363 701.200(0.039)	18.580	221.815	
1	27	*	20		1	26	*	19			363 708.208(0.083)	109.449	256.317	
0	29	*	24	−	0	28	*	23	−	363 781.845(0.050)	363 781.827(0.018)	133.981	191.443	6
0	15	11	5		0	14	9	6			363 880.698(0.005)	0.603	66.056	
1	23	−12	12		1	22	−12	11			363 918.232(0.048)	11.681	227.939	
1	22	−12	11		1	21	11	10			363 920.362(0.041)	15.153	215.800	
1	21	14	8	−	1	20	13	7	−		363 997.286(0.033)	17.120	209.673	
1	22	−14	9		1	21	−14	8			364 062.618(0.040)	10.759	221.924	
1	21	−12	10		1	20	11	9			364 097.050(0.035)	12.700	204.018	
0	30	*	26		0	29	*	25		364 173.754(0.050)	364 173.751(0.022)	145.918	195.492	6
0	16	−10	6		0	15	−8	7			364 199.115(0.005)	1.162	74.074	
1	28	*	22		1	27	*	21			364 257.543(0.094)	121.297	261.604	
0	30	*	26	+	0	29	*	25	+	364 432.227(0.050)	364 432.219(0.022)	145.828	195.440	6
1	23	12	11		1	22	−13	10			364 532.266(0.047)	12.992	231.144	
1	13	9	4		1	12	6	6			364 660.283(0.011)	0.331	120.941	
1	29	*	24		1	28	*	23			364 892.858(0.106)	133.167	266.191	
1	14	−10	5		1	13	7	6			364 901.429(0.012)	0.580	129.704	
1	19	−12	8		1	18	11	7			365 010.939(0.024)	9.922	181.681	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	17	−15	3		1	16	−14	3			365 046.076(0.017)	23.480	170.440	
1	15	8	7	+	1	14	7	8	+		365 078.936(0.010)	2.675	138.088	
1	15	8	7	+	1	14	6	8	+		365 086.104(0.010)	0.238	138.087	
0	17	−13	4		0	16	12	5			365 189.877(0.009)	0.208	89.237	
1	14	12	2	+	1	13	9	5	+		365 194.482(0.011)	0.370	134.709	
1	15	9	7	+	1	14	7	8	+		365 306.516(0.010)	0.240	138.088	
1	15	9	7	+	1	14	6	8	+		365 313.684(0.010)	2.669	138.087	
1	30	*	26		1	29	*	25			365 566.185(0.120)	145.087	270.072	
1	22	14	9	−	1	21	14	8	−		365 628.205(0.038)	3.667	221.815	
1	13	12	1		1	12	10	2			365 774.451(0.007)	0.389	128.408	
0	18	12	7		0	17	11	7			365 845.552(0.006)	1.085	96.556	
1	22	14	8	+	1	21	15	7	+		365 918.942(0.041)	12.563	223.977	
1	16	14	2		1	15	13	2			365 925.870(0.013)	29.536	159.036	
0	14	11	4		0	13	−8	5			366 054.681(0.007)	0.313	57.673	
1	20	−12	9		1	19	11	8			366 083.043(0.029)	11.470	192.577	
1	17	12	5	+	1	16	11	6	+		366 172.519(0.016)	6.624	162.797	
1	18	14	4	+	1	17	13	5	+		366 177.004(0.019)	17.614	175.749	
0	15	10	6		0	14	8	7			366 235.912(0.004)	0.723	64.026	
1	23	12	11	+	1	22	13	10	+		366 252.315(0.045)	25.633	231.178	
0	22	−12	10		0	21	−12	9			366 299.160(0.008)	10.389	144.146	
0	22	14	9	−	0	21	14	8	−		366 306.850(0.008)	9.984	147.094	
0	14	12	2	+	0	13	10	3	+		366 333.179(0.004)	0.434	60.248	
1	23	13	11	+	1	22	13	10	+		366 342.192(0.045)	3.770	231.178	
1	16	12	5	−	1	15	10	6	−		366 390.154(0.013)	0.380	152.214	
1	23	12	11	+	1	22	12	10	+		366 540.367(0.045)	3.769	231.168	
0	22	15	8	+	0	21	15	7	+		366 555.346(0.008)	9.152	149.854	
1	23	13	11	+	1	22	12	10	+		366 630.245(0.045)	25.673	231.168	
1	15	8	7		1	14	−7	8			366 635.317(0.011)	2.950	135.377	
1	23	11	12		1	22	11	11			366 695.115(0.048)	11.619	227.800	
0	18	13	6	+	0	17	12	5	+		366 717.648(0.006)	15.879	98.962	
1	24	11	13	−	1	23	12	12	−		366 845.821(0.052)	30.480	239.845	
1	24	12	13	−	1	23	12	12	−		366 849.054(0.052)	4.926	239.845	
1	24	11	13	−	1	23	11	12	−		366 856.396(0.052)	4.926	239.845	
1	24	12	13	−	1	23	11	12	−		366 859.630(0.052)	30.481	239.845	
0	19	13	7		0	18	−12	6			367 007.485(0.008)	8.999	109.420	
1	13	−11	3		1	12	−9	4			367 137.394(0.008)	0.178	124.797	
1	24	14	10		1	23	−15	9			367 254.756(0.056)	3.029	249.517	
0	22	14	9		0	21	14	8			367 390.055(0.008)	9.702	147.036	
0	27	15	12	−	0	27	12	15	+		367 462.948(0.005)	0.177	221.998	
1	18	12	6		1	17	11	6			367 471.621(0.020)	7.284	171.536	
1	15	8	7		1	14	6	8			367 490.660(0.010)	0.257	135.349	
0	17	−15	2		0	16	−14	2			367 492.096(0.006)	27.106	94.880	
1	25	10	15	+	1	24	11	14	+		367 529.137(0.061)	35.523	247.835	
1	25	11	15	+	1	24	11	14	+		367 529.210(0.061)	5.702	247.835	
1	25	10	15	+	1	24	10	14	+		367 529.420(0.061)	5.702	247.835	
1	25	11	15	+	1	24	10	14	+		367 529.493(0.061)	35.523	247.835	
1	21	13	8		1	20	−13	8			367 555.307(0.035)	0.643	207.657	
0	14	12	3	−	0	13	10	4	−		367 618.057(0.004)	0.432	60.204	
0	15	10	6		0	14	−7	7			367 782.056(0.005)	2.481	63.974	
1	22	14	8		1	21	14	7			367 965.254(0.041)	8.471	222.602	
0	22	12	10	+	0	21	12	9	+		367 973.092(0.008)	10.694	144.045	
1	23	−12	12		1	22	11	11			368 072.312(0.048)	18.036	227.800	
1	16	12	5	−	1	15	9	6	−		368 078.928(0.014)	4.033	152.158	
0	21	13	9		0	20	−12	8			368 080.705(0.008)	12.223	132.155	
0	21	13	8	−	0	20	13	7	−		368 087.038(0.008)	10.640	133.584	
1	26	*	17	−	1	25	*	16	−		368 235.735(0.070)	93.969	255.174	
1	22	13	9	−	1	21	13	8	−		368 258.844(0.038)	3.704	221.663	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	14	11	3		1	13	9	4			368 335.878(0.008)	0.707	133.104	
0	21	−13	8		0	20	−13	7			368 353.201(0.008)	10.454	133.721	
0	17	15	3		0	16	14	3			368 417.634(0.006)	27.164	94.516	
0	18	−13	5		0	17	−12	5			368 464.970(0.006)	12.651	99.119	
0	14	−6	8		0	13	5	9			368 518.651(0.004)	1.423	49.371	
0	14	−6	8		0	13	−4	9			368 520.082(0.004)	0.319	49.371	
1	14	13	2	+	1	13	10	3	+		368 521.481(0.015)	0.306	136.492	
0	14	7	8		0	13	5	9			368 644.669(0.004)	0.319	49.371	
0	14	7	8		0	13	−4	9			368 646.100(0.004)	1.422	49.371	
1	15	13	3	+	1	14	10	4	+		368 653.377(0.016)	1.004	144.804	
1	14	4	10	+	1	13	*	11	+		368 662.127(0.008)	0.666	120.338	
1	14	5	10	+	1	13	*	11	+		368 662.150(0.008)	0.666	120.338	
1	18	15	4	+	1	17	14	3	+		368 829.945(0.019)	25.010	177.664	
0	15	10	6	−	0	14	8	7	−		368 857.218(0.004)	0.755	63.862	
0	27	−15	12		0	27	−12	15			369 097.073(0.005)	0.182	221.928	
0	20	13	8		0	19	−12	7			369 142.134(0.008)	11.014	120.503	
0	22	13	10		0	21	−12	9			369 208.262(0.008)	14.573	144.146	
0	22	15	8		0	21	15	7			369 308.039(0.008)	8.455	149.643	
0	17	15	3	+	0	16	14	2	+		369 348.115(0.006)	27.159	94.848	
1	27	*	19	+	1	26	*	18	+		369 350.364(0.080)	102.810	261.876	
0	17	15	2	−	0	16	14	3	−		369 354.697(0.006)	27.159	94.847	
0	18	13	6		0	17	12	6			369 511.613(0.006)	12.455	98.711	
0	17	11	6	−	0	16	10	7	−		369 698.996(0.006)	6.419	84.939	
1	28	*	21	−	1	27	*	20	−		369 714.382(0.091)	117.105	267.967	
0	14	6	8	+	0	13	5	9	+		369 722.423(0.004)	1.411	49.154	
0	14	6	8	+	0	13	4	9	+		369 725.064(0.004)	0.340	49.154	
0	16	12	5		0	15	−10	5			369 901.228(0.007)	0.192	76.898	
0	14	7	8	+	0	13	5	9	+		369 922.693(0.004)	0.340	49.154	
0	14	7	8	+	0	13	4	9	+		369 925.335(0.004)	1.410	49.154	
1	18	−10	9		1	17	−9	9			370 013.073(0.020)	0.266	165.748	
1	18	15	3	−	1	17	14	4	−		370 156.358(0.019)	25.169	177.632	
1	22	14	9	−	1	21	13	8	−		370 185.849(0.039)	19.302	221.663	
0	15	11	5	+	0	14	9	6	+		370 324.144(0.004)	0.757	65.928	
1	13	4	9		1	12	−3	10			370 331.643(0.006)	0.780	110.511	
1	13	−5	9		1	12	2	10			370 347.517(0.006)	0.780	110.511	
1	29	*	23	+	1	28	*	22	+		370 446.036(0.103)	128.790	273.450	
1	18	−11	8		1	17	−10	8			370 809.372(0.020)	2.622	168.381	
0	23	12	11	+	0	22	13	10	+		370 926.746(0.009)	16.615	156.456	
0	23	−12	11		0	22	13	10			370 928.909(0.009)	17.197	156.462	
0	15	10	6	−	0	14	7	7	−		371 074.871(0.004)	2.400	63.788	
1	30	*	25	−	1	29	*	24	−		371 156.675(0.116)	140.529	278.348	
0	13	−3	10		0	12	*	11			371 205.517(0.004)	0.375	33.876	
0	13	4	10		0	12	*	11			371 205.553(0.004)	0.375	33.876	
0	25	−10	15		0	24	11	14			371 443.522(0.011)	28.536	173.437	
0	25	11	15		0	24	11	14			371 443.691(0.011)	12.165	173.437	
0	25	−10	15		0	24	−10	14			371 444.471(0.011)	12.165	173.437	
0	25	11	15		0	24	−10	14			371 444.640(0.011)	28.536	173.437	
0	24	−11	13		0	23	12	12			371 465.269(0.010)	23.177	165.333	
0	24	12	13		0	23	12	12			371 481.586(0.010)	11.507	165.333	
1	21	15	6	−	1	20	15	5	−		371 484.045(0.033)	6.123	212.271	
0	24	−11	13		0	23	−11	12			371 540.848(0.010)	11.507	165.330	
0	24	12	13		0	23	−11	12			371 557.165(0.010)	23.179	165.330	
0	21	−14	7		0	20	14	7			371 644.466(0.010)	0.652	135.282	
1	16	10	6		1	15	8	7			371 653.935(0.014)	0.822	147.607	
0	15	8	7	+	0	14	7	8	+		371 747.600(0.004)	2.412	61.493	
0	23	13	11		0	22	13	10			371 761.368(0.009)	10.799	156.462	
0	26	*	17		0	25	*	16			371 770.470(0.013)	93.113	180.819	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	25	10	15	+	0	24	11	14	+		371 861.209(0.011)	27.604	173.462	
0	25	11	15	+	0	24	11	14	+		371 861.604(0.011)	12.997	173.462	
0	25	10	15	+	0	24	10	14	+		371 863.211(0.011)	12.997	173.462	
0	25	11	15	+	0	24	10	14	+		371 863.606(0.011)	27.604	173.462	
0	15	−8	7		0	14	7	8			371 943.588(0.004)	2.416	61.668	
0	15	8	7	+	0	14	6	8	+		371 947.871(0.004)	0.623	61.487	
0	24	11	13	−	0	23	12	12	−		371 957.886(0.010)	22.569	165.344	
0	24	12	13	−	0	23	12	12	−		371 987.451(0.010)	11.972	165.344	
0	15	−8	7		0	14	−6	8			372 069.606(0.004)	0.590	61.664	
0	22	13	10	+	0	21	12	9	+		372 076.656(0.008)	14.114	144.045	
0	24	11	13	−	0	23	11	12	−		372 085.044(0.010)	11.973	165.339	
1	16	10	6	+	1	15	9	7	+		372 086.919(0.013)	4.219	150.273	
0	24	12	13	−	0	23	11	12	−		372 114.609(0.010)	22.573	165.339	
0	23	15	9		0	22	−15	7			372 123.738(0.010)	0.393	162.418	
0	26	*	17	−	0	25	10	16	−		372 133.597(0.013)	46.477	180.850	
0	26	*	17	−	0	25	9	16	−		372 133.617(0.013)	46.477	180.850	
0	23	13	10	−	0	22	14	9	−		372 172.662(0.009)	11.437	159.313	
0	23	13	11	+	0	22	13	10	+		372 176.439(0.009)	11.080	156.456	
0	27	*	19		0	26	*	18			372 265.841(0.015)	104.744	187.511	
0	21	13	9	+	0	20	12	8	+		372 350.522(0.008)	12.082	132.002	
0	17	−11	6		0	16	10	7			372 391.666(0.006)	5.620	85.039	
1	15	−10	6		1	14	−8	7			372 469.060(0.011)	0.214	137.721	
1	21	14	7	+	1	20	14	6	+		372 494.229(0.033)	4.547	210.980	
0	27	*	19	+	0	26	*	18	+		372 595.756(0.015)	104.610	187.541	
0	22	15	7	−	0	21	15	6	−		372 613.316(0.008)	9.233	149.939	
1	17	13	4		1	16	−12	5			372 623.789(0.016)	24.225	164.276	
1	23	−13	11		1	22	−13	10			372 803.492(0.048)	11.459	231.144	
0	22	−15	7		0	21	−15	6			372 807.805(0.008)	8.576	149.983	
0	28	*	21		0	27	*	20			372 845.455(0.017)	116.387	193.531	
1	26	−15	12		1	25	15	10			373 036.419(0.074)	0.875	278.487	
0	13	3	10	−	0	12	*	11	−		373 149.530(0.004)	0.378	33.573	
0	13	4	10	−	0	12	*	11	−		373 149.607(0.004)	0.378	33.573	
0	28	*	21	−	0	27	*	20	−		373 153.097(0.017)	116.269	193.553	
1	18	−13	6		1	17	12	5			373 235.379(0.020)	14.269	173.930	
1	26	9	17		1	25	−10	16			373 444.420(0.073)	31.787	255.739	
1	26	−10	17		1	25	−10	16			373 444.594(0.073)	13.929	255.739	
1	26	9	17		1	25	9	16			373 445.176(0.073)	13.929	255.739	
1	26	−10	17		1	25	9	16			373 445.350(0.073)	31.787	255.739	
0	29	*	23		0	28	*	22			373 471.955(0.020)	128.083	198.888	
1	25	−15	11		1	24	15	9			373 528.155(0.065)	1.045	264.251	
1	25	10	15		1	24	−11	14			373 539.969(0.064)	26.450	248.298	
1	25	−11	15		1	24	−11	14			373 550.836(0.064)	13.164	248.298	
0	19	13	7	+	0	18	12	6	+		373 568.920(0.007)	13.240	109.264	
1	25	10	15		1	24	10	14			373 582.210(0.064)	13.163	248.297	
1	25	−11	15		1	24	10	14			373 593.078(0.064)	26.451	248.297	
1	27	*	19		1	26	−9	18			373 687.756(0.083)	51.700	262.448	
1	27	*	19		1	26	8	18			373 687.765(0.083)	51.700	262.448	
1	24	11	13		1	23	−12	12			373 761.011(0.055)	20.754	240.078	
0	29	*	23	+	0	28	*	22	+		373 762.297(0.020)	127.977	198.897	
0	23	−12	11		0	22	−12	10			373 838.012(0.009)	10.834	156.365	
0	15	11	5		0	14	−8	6			374 009.899(0.006)	1.003	65.718	
0	30	*	25		0	29	*	24			374 127.547(0.023)	139.853	203.590	
1	16	15	1		1	15	14	1			374 145.498(0.013)	33.132	162.764	
1	28	*	21		1	27	*	20			374 158.609(0.095)	115.276	268.449	
1	24	−12	13		1	23	−12	12			374 178.268(0.055)	12.294	240.078	
1	14	6	8		1	13	−5	9			374 269.562(0.008)	1.792	122.865	
1	22	15	8	+	1	21	15	7	+		374 375.160(0.038)	3.572	223.977	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	17	12	6		0	16	−10	6			374 392.679(0.008)	0.212	86.223	
0	20	13	8	+	0	19	12	7	+		374 395.929(0.008)	11.714	120.334	
0	30	*	25	−	0	29	*	24	−		374 401.169(0.023)	139.755	203.577	
0	15	−12	3		0	14	−10	4			374 514.415(0.005)	0.610	68.311	
0	23	−13	10		0	22	14	9			374 542.400(0.010)	12.158	159.291	
1	15	7	8	−	1	14	6	9	−		374 552.253(0.010)	2.095	135.510	
1	15	8	8	−	1	14	5	9	−		374 574.340(0.010)	2.094	135.510	
0	18	13	5	−	0	17	12	6	−		374 665.647(0.006)	15.515	98.787	
0	23	13	11		0	22	−12	10			374 670.471(0.009)	17.339	156.365	
1	17	11	6		1	16	−10	7			374 711.492(0.019)	3.256	159.037	
1	29	*	23		1	28	*	22			374 745.785(0.107)	127.117	273.754	
0	15	12	4		0	14	10	5			374 939.839(0.005)	0.566	67.904	
1	13	−13	1		1	12	11	1			374 954.763(0.009)	0.269	130.971	
1	14	*	11	−	1	13	*	12	−		374 961.453(0.009)	0.662	116.971	
0	23	12	11	+	0	22	12	10	+		375 030.311(0.009)	11.136	156.319	
1	24	11	13		1	23	11	12			375 138.208(0.055)	12.273	240.032	
1	14	−7	8		1	13	4	9			375 140.662(0.008)	1.791	122.864	
1	16	13	4	+	1	15	10	5	+		375 162.469(0.016)	2.581	153.581	
1	17	12	5		1	16	−11	6			375 174.981(0.020)	0.300	161.416	
1	30	*	25		1	29	*	24			375 414.332(0.120)	138.983	278.363	
1	24	−12	13		1	23	11	12			375 555.465(0.055)	20.787	240.032	
0	15	9	7		0	14	7	8			375 658.753(0.004)	0.582	61.668	
1	16	11	6	+	1	15	8	7	+		375 705.094(0.013)	4.023	150.265	
0	19	−12	7		0	18	−11	7			375 753.593(0.006)	0.288	107.969	
0	15	9	7		0	14	−6	8			375 784.771(0.004)	2.375	61.664	
1	22	12	10		1	21	12	9			375 838.245(0.041)	11.335	217.968	
1	23	13	10	−	1	22	14	9	−		375 956.575(0.045)	21.337	234.011	
0	23	13	11	+	0	22	12	10	+		376 280.004(0.009)	16.813	156.319	
0	15	12	3	+	0	14	10	4	+		376 339.353(0.005)	0.621	68.083	
0	18	−14	4		0	17	−13	4			376 443.562(0.006)	20.493	101.418	
0	13	11	3	+	0	12	8	4	+		376 558.988(0.005)	0.189	49.847	
1	23	14	10	−	1	22	14	9	−		376 668.435(0.045)	4.428	234.011	
0	15	9	7	+	0	14	7	8	+		376 870.595(0.004)	0.609	61.493	
0	18	14	5		0	17	13	5			376 875.447(0.006)	20.561	101.043	
0	15	9	7	+	0	14	6	8	+		377 070.865(0.004)	2.342	61.487	
1	24	12	12	+	1	23	13	11	+		377 123.242(0.052)	28.454	243.398	
1	24	13	12	+	1	23	13	11	+		377 151.634(0.052)	3.871	243.398	
1	24	12	12	+	1	23	12	11	+		377 213.119(0.052)	3.870	243.395	
1	24	13	12	+	1	23	12	11	+		377 241.511(0.052)	28.466	243.395	
1	18	−12	7		1	17	−11	7			377 359.721(0.020)	13.694	170.814	
1	16	9	7		1	15	−8	8			377 405.153(0.013)	3.714	145.719	
1	25	11	14	−	1	24	12	13	−		377 724.276(0.061)	32.336	252.082	
1	25	12	14	−	1	24	12	13	−		377 725.209(0.061)	5.811	252.082	
1	25	11	14	−	1	24	11	13	−		377 727.509(0.061)	5.811	252.082	
1	25	12	14	−	1	24	11	13	−		377 728.442(0.061)	32.337	252.082	
1	18	−14	5		1	17	−13	5			377 751.161(0.020)	18.076	176.639	
0	18	14	5	−	0	17	13	4	−		377 803.586(0.006)	20.828	101.292	
0	14	−11	3		0	13	−8	5			377 815.801(0.006)	0.270	57.673	
1	23	13	10	−	1	22	13	9	−		377 883.580(0.045)	4.441	233.947	
1	26	10	16	+	1	25	11	15	+		378 326.781(0.070)	38.208	260.095	
1	26	11	16	+	1	25	11	15	+		378 326.800(0.070)	5.836	260.095	
1	26	10	16	+	1	25	10	15	+		378 326.854(0.070)	5.836	260.095	
1	26	11	16	+	1	25	10	15	+		378 326.872(0.070)	38.208	260.095	
0	14	11	4	+	0	13	8	5	+		378 429.050(0.005)	0.492	57.417	
1	14	−11	4		1	13	−9	5			378 473.929(0.009)	0.252	131.924	
1	23	14	10	−	1	22	13	9	−		378 595.441(0.045)	21.628	233.947	
0	18	14	4	+	0	17	13	5	+		378 669.609(0.006)	20.800	101.272	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	15	−10	6		1	14	7	7			378 681.736(0.012)	1.460	137.514	
1	27	*	18	−	1	26	*	17	−		378 984.742(0.080)	99.623	267.457	
1	24	13	11		1	23	−14	10			379 049.708(0.055)	10.737	246.738	
1	18	13	5	−	1	17	12	6	−		379 123.885(0.019)	8.911	174.054	
1	15	−9	7		1	14	−7	8			379 169.390(0.010)	0.239	135.377	
0	14	−13	1		0	13	−11	2			379 247.689(0.005)	0.283	62.619	
1	28	*	20	+	1	27	*	19	+		379 585.052(0.091)	110.797	274.196	
1	22	13	9		1	21	13	8			379 741.951(0.041)	11.458	219.917	
0	14	13	2		0	13	11	3			379 775.052(0.005)	0.272	62.215	
1	14	*	12	+	1	13	*	13	+		379 840.433(0.010)	0.218	113.384	
1	23	−14	10		1	22	−14	9			379 860.031(0.047)	11.210	234.068	
1	16	9	7		1	15	7	8			379 933.418(0.013)	0.423	145.634	
1	15	−9	7		1	14	6	8			380 024.733(0.011)	2.549	135.349	
0	17	11	6	−	0	16	9	7	−		380 070.267(0.005)	1.579	84.594	
0	14	−5	9		0	13	4	10			380 123.392(0.004)	0.957	46.258	
0	14	−5	9		0	13	−3	10			380 123.429(0.004)	0.206	46.258	
0	14	6	9		0	13	4	10			380 129.853(0.004)	0.206	46.258	
0	14	6	9		0	13	−3	10			380 129.889(0.004)	0.957	46.258	
1	19	15	5	+	1	18	14	4	+		380 154.034(0.023)	21.071	187.963	
1	15	11	4		1	14	9	5			380 184.604(0.011)	0.942	140.793	
0	17	−11	6		0	16	−9	7			380 236.181(0.005)	1.467	84.778	
1	23	15	8		1	22	15	7			380 339.114(0.048)	8.859	238.123	
1	29	*	22	−	1	28	*	21	−		380 431.463(0.103)	122.818	280.299	
0	23	14	10	−	0	22	14	9	−		380 550.254(0.009)	10.781	159.313	
1	14	12	2		1	13	10	3			380 640.499(0.008)	0.550	135.373	
0	18	−13	5		0	17	12	6			380 695.646(0.009)	2.566	98.711	
0	23	14	10		0	22	14	9			380 770.879(0.009)	10.574	159.291	
0	19	14	6		0	18	−13	5			381 017.442(0.011)	0.959	111.410	
1	30	*	24	+	1	29	*	23	+		381 124.943(0.117)	134.534	285.807	
1	23	−15	9		1	22	−15	8			381 139.548(0.047)	11.422	236.803	
0	16	−12	4		0	15	−10	5			381 330.168(0.006)	0.741	76.898	
1	14	13	1	−	1	13	10	4	−		381 340.684(0.013)	0.268	136.066	
1	24	12	12		1	23	−13	11			381 392.329(0.056)	16.727	243.579	
0	13	10	3	+	0	12	7	6	+		381 432.683(0.004)	0.215	47.525	
1	18	−15	4		1	17	−14	4			381 452.282(0.021)	21.724	179.552	
1	17	14	3		1	16	13	3			381 480.371(0.016)	28.060	167.573	
0	15	12	4	−	0	14	10	5	−		381 508.400(0.005)	0.606	67.902	
0	19	−13	6		0	18	−12	6			381 549.719(0.007)	3.839	109.420	
0	14	5	9	−	0	13	4	10	−		381 674.612(0.004)	0.945	46.020	
0	14	5	9	−	0	13	3	10	−		381 674.689(0.004)	0.224	46.020	
0	14	6	9	−	0	13	4	10	−		381 686.085(0.004)	0.224	46.020	
0	14	6	9	−	0	13	3	10	−		381 686.161(0.004)	0.945	46.020	
0	13	*	11		0	12	*	12			381 715.088(0.004)	0.250	30.065	
0	25	−11	14		0	24	12	13			381 860.914(0.011)	25.603	177.724	
0	25	12	14		0	24	12	13			381 864.198(0.011)	12.041	177.724	
0	25	−11	14		0	24	−11	13			381 877.231(0.011)	12.041	177.723	
0	25	12	14		0	24	−11	13			381 880.514(0.011)	25.603	177.723	
0	26	−10	16		0	25	11	15			381 964.367(0.013)	30.996	185.827	
0	26	11	16		0	25	11	15			381 964.395(0.013)	12.592	185.827	
0	26	−10	16		0	25	−10	15			381 964.536(0.013)	12.592	185.827	
0	26	11	16		0	25	−10	15			381 964.564(0.013)	30.996	185.827	
0	24	−12	12		0	23	13	11			382 039.190(0.010)	19.976	168.862	
1	19	12	7		1	18	11	7			382 073.072(0.024)	0.861	181.681	
0	24	13	12		0	23	13	11			382 250.776(0.010)	11.347	168.862	
0	25	11	14	−	0	24	12	13	−		382 314.244(0.011)	24.894	177.752	
0	25	12	14	−	0	24	12	13	−		382 320.715(0.011)	12.629	177.752	
0	25	11	14	−	0	24	11	13	−		382 343.809(0.011)	12.629	177.751	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	26	10	16	+	0	25	11	15	+		382 344.701(0.013)	29.806	185.866	
0	26	11	16	+	0	25	11	15	+		382 344.776(0.013)	13.694	185.866	
0	26	10	16	+	0	25	10	15	+		382 345.096(0.013)	13.694	185.866	
0	26	11	16	+	0	25	10	15	+		382 345.172(0.013)	29.806	185.866	
0	27	*	18		0	26	*	17			382 350.172(0.016)	98.853	193.219	
0	25	12	14	−	0	24	11	13	−		382 350.281(0.011)	24.895	177.751	
0	22	−13	9		0	21	−13	8			382 384.374(0.008)	10.935	146.008	
0	24	12	12	+	0	23	13	11	+		382 419.346(0.010)	19.420	168.871	
0	16	12	4	+	0	15	10	5	+		382 588.477(0.006)	0.884	76.684	
0	27	*	18	−	0	26	*	17	−		382 686.647(0.016)	98.708	193.263	
0	18	12	6	+	0	17	11	7	+		382 703.322(0.006)	8.857	96.499	
0	24	13	12	+	0	23	13	11	+		382 757.646(0.010)	11.695	168.871	
0	28	*	20		0	27	*	19			382 870.890(0.019)	110.481	199.928	
0	24	−12	12		0	23	−12	11			382 871.649(0.010)	11.355	168.835	
1	23	14	9	+	1	22	15	8	+		382 889.670(0.046)	17.302	236.464	
0	22	−15	7		0	21	15	7			382 995.768(0.013)	0.648	149.643	
1	22	14	8	+	1	21	14	7	+		383 057.790(0.038)	3.558	223.405	
0	24	13	12		0	23	−12	11			383 083.235(0.010)	20.006	168.835	
1	13	3	10		1	12	*	11			383 117.937(0.007)	0.395	106.857	
1	13	−4	10		1	12	*	11			383 118.655(0.007)	0.395	106.857	
1	15	6	9	+	1	14	5	10	+		383 130.445(0.010)	1.506	132.635	
1	15	7	9	+	1	14	4	10	+		383 132.333(0.010)	1.506	132.635	
0	14	13	1	−	0	13	11	2	−		383 139.252(0.004)	0.272	62.411	
0	28	*	20	+	0	27	*	19	+		383 180.878(0.019)	110.356	199.969	
0	14	13	2	+	0	13	11	3	+		383 227.310(0.004)	0.272	62.408	
0	22	13	9	−	0	21	13	8	−		383 317.631(0.008)	11.260	145.862	
0	18	−15	3		0	17	−14	3			383 349.613(0.006)	25.093	104.118	
0	15	11	5	+	0	14	8	6	+		383 419.890(0.006)	1.211	65.491	
0	29	*	22		0	28	*	21			383 462.366(0.022)	122.133	205.968	
1	14	9	5		1	13	6	7			383 478.735(0.011)	0.358	128.002	
0	24	12	12	+	0	23	12	11	+		383 669.039(0.010)	11.707	168.829	
1	23	12	11		1	22	12	10			383 693.276(0.048)	11.488	230.505	
1	26	10	16		1	25	−11	15			383 727.565(0.073)	28.832	260.759	
1	26	−11	16		1	25	−11	15			383 730.261(0.073)	13.793	260.759	
1	26	10	16		1	25	10	15			383 738.432(0.073)	13.793	260.758	
1	26	−11	16		1	25	10	15			383 741.129(0.073)	28.833	260.758	
0	29	*	22	−	0	28	*	21	−		383 754.931(0.022)	122.022	206.000	
1	27	9	18		1	26	−10	17			383 767.988(0.084)	34.166	268.196	
1	27	−10	18		1	26	−10	17			383 768.027(0.084)	14.515	268.196	
1	27	9	18		1	26	9	17			383 768.161(0.084)	14.515	268.196	
1	27	−10	18		1	26	9	17			383 768.201(0.084)	34.166	268.196	
0	22	14	8	+	0	21	14	7	+		383 832.044(0.008)	10.690	147.583	
0	13	*	11	+	0	12	*	12	+		383 924.624(0.004)	0.251	29.725	
0	24	13	12	+	0	23	12	11	+		384 007.338(0.010)	19.465	168.829	
0	23	15	9	+	0	22	15	8	+		384 043.927(0.009)	10.189	162.081	
0	30	*	24		0	29	*	23			384 094.909(0.025)	133.843	211.346	
1	25	11	14		1	24	−12	13			384 099.553(0.064)	23.353	252.559	
1	28	*	20		1	27	*	19			384 128.687(0.095)	109.138	274.913	
0	24	14	10	+	0	23	15	9	+		384 140.823(0.011)	9.354	174.891	
0	18	15	4		0	17	14	4			384 179.897(0.006)	25.183	103.754	
1	25	−12	14		1	24	−12	13			384 218.066(0.064)	12.909	252.559	
1	24	−13	12		1	23	−13	11			384 366.892(0.058)	11.898	243.579	
0	30	*	24	+	0	29	*	23	+		384 374.064(0.025)	133.741	211.364	
1	25	11	14		1	24	11	13			384 516.810(0.064)	12.903	252.545	
1	29	*	22		1	28	*	21			384 615.102(0.107)	121.100	280.930	
1	25	−12	14		1	24	11	13			384 635.323(0.064)	23.362	252.545	
0	22	−14	8		0	21	−14	7			384 697.183(0.008)	10.499	147.678	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	16	9	7	−	1	15	8	8	−		385 137.575(0.012)	3.289	148.004	
1	16	9	7	−	1	15	7	8	−		385 159.158(0.012)	0.214	148.003	
0	18	15	4	+	0	17	14	3	+		385 165.794(0.006)	25.230	104.067	
0	18	15	3	−	0	17	14	4	−		385 223.408(0.006)	25.228	104.065	
1	30	*	24		1	29	*	23			385 235.622(0.121)	132.937	286.254	
1	18	−13	6		1	17	−12	6			385 540.453(0.023)	0.276	173.520	
0	15	−11	4		0	14	−8	6			385 553.115(0.006)	0.430	65.718	
0	18	−12	6		0	17	11	7			385 642.112(0.007)	7.079	96.556	
1	16	10	7	−	1	15	8	8	−		385 720.334(0.012)	0.218	148.004	
1	16	10	7	−	1	15	7	8	−		385 741.918(0.012)	3.270	148.003	
0	23	15	9		0	22	15	8			385 811.466(0.009)	9.685	161.962	
0	16	9	7	−	0	15	8	8	−		385 890.291(0.005)	2.921	71.722	
0	16	9	7	−	0	15	7	8	−		386 486.180(0.005)	0.785	71.702	
0	17	−12	5		0	16	−10	6			386 623.355(0.007)	1.169	86.223	
1	23	15	9	+	1	22	15	8	+		386 783.833(0.045)	3.617	236.464	
1	20	15	6	+	1	19	14	5	+		386 796.580(0.028)	17.117	199.099	
0	19	13	7		0	18	12	7			386 804.045(0.007)	3.455	108.759	
1	19	15	4	−	1	18	14	5	−		386 891.721(0.023)	21.418	187.809	
0	16	−9	7		0	15	8	8			386 955.796(0.005)	2.898	71.870	
0	15	−7	8		0	14	6	9			387 307.767(0.004)	1.847	58.938	
0	15	−7	8		0	14	−5	9			387 314.227(0.004)	0.423	58.938	
1	24	13	11	−	1	23	14	10	−		387 328.285(0.052)	24.402	246.575	
0	16	−9	7		0	15	−7	8			387 344.658(0.005)	0.738	71.857	
0	16	11	6		0	15	9	7			387 422.577(0.005)	0.781	74.198	
1	24	14	11	−	1	23	14	10	−		387 563.866(0.052)	4.574	246.575	
1	19	−13	7		1	18	12	6			387 625.030(0.024)	12.519	183.793	
1	18	13	5		1	17	−12	6			387 682.214(0.020)	22.113	173.520	
0	15	8	8		0	14	6	9			387 696.629(0.004)	0.423	58.938	
0	15	8	8		0	14	−5	9			387 703.089(0.004)	1.846	58.938	
1	17	10	7		1	16	−9	8			387 915.289(0.017)	4.724	156.714	
1	25	12	13	+	1	24	13	12	+		387 927.225(0.061)	30.528	255.978	
1	25	13	13	+	1	24	13	12	+		387 936.303(0.061)	4.673	255.978	
1	25	12	13	+	1	24	12	12	+		387 955.617(0.061)	4.673	255.977	
1	25	13	13	+	1	24	12	12	+		387 964.695(0.061)	30.531	255.977	
1	24	13	11	−	1	23	13	10	−		388 040.145(0.052)	4.574	246.551	
0	24	−14	10		0	23	15	9			388 208.534(0.012)	9.971	174.831	
0	15	7	8	−	0	14	6	9	−		388 244.501(0.004)	1.832	58.751	
0	15	7	8	−	0	14	5	9	−		388 255.973(0.004)	0.450	58.751	
1	17	13	5	+	1	16	11	6	+		388 275.106(0.016)	0.313	162.797	
1	24	14	11	−	1	23	13	10	−		388 275.726(0.052)	24.502	246.551	
1	22	14	8		1	21	−14	8			388 289.856(0.041)	0.902	221.924	
0	17	12	5	+	0	16	10	6	+		388 316.921(0.006)	1.319	86.009	
1	15	−11	5		1	14	−9	6			388 410.194(0.011)	0.271	139.707	
1	26	11	15	−	1	25	12	14	−		388 472.468(0.070)	34.731	264.682	
1	26	12	15	−	1	25	12	14	−		388 472.722(0.070)	6.344	264.682	
1	26	11	15	−	1	25	11	14	−		388 473.402(0.070)	6.344	264.682	
1	26	12	15	−	1	25	11	14	−		388 473.656(0.070)	34.731	264.682	
1	16	11	5		1	15	9	6			388 786.643(0.014)	1.179	149.202	
1	17	11	6	−	1	16	10	7	−		388 839.588(0.016)	4.813	160.870	
0	15	8	8	−	0	14	6	9	−		388 840.390(0.004)	0.449	58.751	
0	15	8	8	−	0	14	5	9	−		388 851.862(0.004)	1.828	58.751	
1	14	5	9		1	13	−4	10			388 918.761(0.008)	1.214	119.636	
1	14	−6	9		1	13	3	10			388 984.866(0.008)	1.214	119.636	
1	27	*	17	+	1	26	11	16	+		389 107.146(0.080)	46.867	272.714	
1	27	*	17	+	1	26	10	16	+		389 107.165(0.080)	46.867	272.714	
1	18	12	6		1	17	−11	7			389 108.014(0.022)	3.129	170.814	
0	16	12	5		0	15	10	6			389 577.319(0.006)	0.618	76.242	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	28	*	19	−	1	27	*	18	−		389 625.841(0.091)	105.186	280.098	
1	21	15	7	+	1	20	14	6	+		389 633.077(0.033)	15.466	210.980	
1	24	12	12		1	23	12	11			389 663.556(0.056)	11.973	243.303	
1	17	15	2		1	16	14	2			389 832.036(0.016)	31.707	171.242	
1	19	−11	9		1	18	−10	9			389 952.516(0.024)	0.469	178.091	
0	24	13	11	−	0	23	14	10	−		389 977.179(0.010)	15.346	172.006	
0	23	−13	10		0	22	−13	9			390 353.509(0.009)	10.997	158.763	
1	15	7	8		1	14	−6	9			390 422.333(0.010)	2.276	132.611	
1	29	*	21	+	1	28	*	20	+		390 447.157(0.104)	116.873	286.858	
1	14	−13	2		1	13	11	2			390 513.955(0.009)	0.421	137.895	
0	24	−13	11		0	23	14	10			390 607.675(0.010)	16.001	171.992	
1	15	5	10	−	1	14	*	11	−		390 965.267(0.010)	1.043	129.478	
1	15	6	10	−	1	14	*	11	−		390 965.375(0.010)	1.043	129.478	
0	14	−4	10		0	13	*	11			391 124.054(0.004)	0.698	42.797	
0	14	5	10		0	13	*	11			391 124.272(0.004)	0.698	42.797	
1	30	*	23	−	1	29	*	22	−		391 134.374(0.117)	128.540	292.989	
0	16	11	6		0	15	−8	7			391 137.742(0.006)	2.257	74.074	
0	16	11	6	+	0	15	9	7	+		391 235.212(0.005)	0.848	74.064	
1	23	14	9	+	1	22	14	8	+		391 345.888(0.045)	3.672	236.182	
1	22	15	8	+	1	21	14	7	+		391 514.008(0.039)	16.497	223.405	
0	19	14	6	−	0	18	13	5	−		391 585.111(0.007)	18.343	111.284	
0	19	−14	5		0	18	−13	5			391 656.356(0.007)	16.933	111.410	
1	17	13	5	+	1	16	10	6	+		391 665.702(0.017)	3.998	162.684	
1	19	−14	6		1	18	13	5			391 699.562(0.027)	0.467	186.451	
1	23	−13	11		1	22	12	10			391 964.502(0.048)	13.961	230.505	
1	22	15	7	−	1	21	15	6	−		392 038.855(0.039)	5.884	224.662	
0	23	13	10	−	0	22	13	9	−		392 087.611(0.009)	11.344	158.648	
0	19	14	6		0	18	13	6			392 201.474(0.007)	16.919	111.037	
0	26	−11	15		0	25	12	14			392 297.362(0.014)	28.024	190.462	
0	26	12	15		0	25	12	14			392 297.983(0.014)	12.547	190.462	
0	26	−11	15		0	25	−11	14			392 300.646(0.014)	12.547	190.461	
0	26	12	15		0	25	−11	14			392 301.267(0.014)	28.024	190.461	
1	23	14	9		1	22	14	8			392 483.818(0.048)	10.011	234.876	
0	25	−12	13		0	24	13	12			392 500.969(0.012)	22.546	181.613	
0	27	*	17		0	26	11	16			392 505.958(0.017)	46.469	198.568	
0	27	*	17		0	26	−10	16			392 505.986(0.017)	46.469	198.568	
0	25	13	13		0	24	13	12			392 550.047(0.012)	11.888	181.613	
0	24	14	11		0	23	14	10			392 598.517(0.010)	11.197	171.992	
1	24	−13	12		1	23	12	11			392 638.118(0.059)	16.674	243.303	
0	15	−13	2		0	14	−11	3			392 695.873(0.005)	0.448	70.276	
0	26	11	15	−	0	25	12	14	−		392 704.510(0.014)	27.165	190.505	
0	26	12	15	−	0	25	12	14	−		392 705.857(0.014)	13.301	190.505	
0	26	11	15	−	0	25	11	14	−		392 710.981(0.014)	13.301	190.504	
0	26	12	15	−	0	25	11	14	−		392 712.329(0.014)	27.165	190.504	
0	25	−12	13		0	24	−12	12			392 712.555(0.012)	11.890	181.606	
0	25	13	13		0	24	−12	12			392 761.633(0.012)	22.552	181.606	
0	24	14	11	−	0	23	14	10	−		392 829.318(0.010)	11.453	172.006	
1	28	15	13		1	28	12	16			392 846.302(0.008)	0.183	311.113	
0	27	10	17	+	0	26	11	16	+		392 852.163(0.017)	31.988	198.620	
0	27	11	17	+	0	26	11	16	+		392 852.177(0.017)	14.401	198.620	
0	27	10	17	+	0	26	10	16	+		392 852.239(0.017)	14.401	198.620	
0	27	11	17	+	0	26	10	16	+		392 852.253(0.017)	31.988	198.620	
0	15	13	3		0	14	11	4			392 874.649(0.005)	0.428	69.883	
1	19	−12	8		1	18	−11	8			392 928.823(0.024)	3.697	180.750	
0	28	*	19		0	27	*	18			392 936.841(0.020)	104.590	205.973	
0	14	4	10	+	0	13	*	11	+		392 954.774(0.004)	0.701	42.531	
0	14	5	10	+	0	13	*	11	+		392 955.213(0.004)	0.701	42.531	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
0	25	12	13	+	0	24	13	12	+		392 962.025(0.012)	21.956	181.638	
1	19	14	5	+	1	18	13	6	+		392 978.803(0.023)	12.216	185.991	
1	15	−8	8		1	14	5	9			393 015.984(0.010)	2.269	132.609	
0	25	13	13	+	0	24	13	12	+		393 046.038(0.012)	12.319	181.638	
1	24	−14	11		1	23	−14	10			393 057.560(0.055)	11.880	246.738	
0	28	*	19	−	0	27	*	18	−		393 248.258(0.020)	104.457	206.028	
0	25	12	13	+	0	24	12	12	+		393 300.325(0.012)	12.321	181.627	
0	25	13	13	+	0	24	12	12	+		393 384.338(0.012)	21.966	181.627	
0	29	*	21		0	28	*	20			393 477.874(0.023)	116.219	212.700	
1	13	−10	4		1	12	−7	6			393 580.646(0.010)	0.179	121.132	
0	29	*	21	+	0	28	*	20	+		393 768.749(0.023)	116.104	212.751	
0	20	14	7		0	19	−13	6			393 768.939(0.010)	6.441	122.147	
1	19	−14	6		1	18	−13	6			393 841.323(0.024)	15.738	186.380	
1	25	12	13		1	24	−13	12			394 026.123(0.064)	19.572	256.400	
1	27	10	17		1	26	−11	16			394 040.196(0.084)	31.083	273.559	
1	27	−11	17		1	26	−11	16			394 040.844(0.084)	14.354	273.559	
1	27	10	17		1	26	10	16			394 042.892(0.084)	14.354	273.559	
1	27	−11	17		1	26	10	16			394 043.540(0.084)	31.084	273.559	
0	30	*	23		0	29	*	22			394 079.272(0.027)	127.883	218.759	
1	28	9	19		1	27	−10	18			394 117.602(0.095)	36.546	280.997	
1	28	−10	19		1	27	−10	18			394 117.610(0.095)	15.066	280.997	
1	28	9	19		1	27	9	18			394 117.641(0.095)	15.066	280.997	
1	28	−10	19		1	27	9	18			394 117.649(0.095)	36.546	280.997	
1	26	11	15		1	25	−12	14			394 263.413(0.074)	25.830	265.375	
1	17	10	7		1	16	8	8			394 265.720(0.017)	0.683	156.502	
1	26	−12	15		1	25	−12	14			394 295.529(0.074)	13.522	265.375	
0	30	*	23	−	0	29	*	22	−		394 357.201(0.027)	127.778	218.801	
1	26	11	15		1	25	11	14			394 381.926(0.074)	13.521	265.371	
1	26	−12	15		1	25	11	14			394 414.042(0.074)	25.833	265.371	
1	29	*	21		1	28	*	20			394 529.948(0.108)	115.096	287.726	
1	15	12	3		1	14	10	4			394 772.756(0.010)	0.738	142.933	
0	16	10	7		0	15	8	8			394 800.311(0.005)	0.708	71.870	
1	25	−13	13		1	24	−13	12			394 995.316(0.064)	12.468	256.400	
1	22	−13	10		1	21	12	9			394 999.255(0.041)	11.930	217.968	
1	30	*	23		1	29	*	22			395 052.697(0.120)	126.680	293.759	
1	15	13	2	−	1	14	10	5	−		395 083.842(0.013)	0.449	143.935	
1	21	12	9		1	20	−12	9			395 124.900(0.034)	0.173	204.788	
0	16	10	7		0	15	−7	8			395 189.173(0.005)	2.748	71.857	
1	17	12	6	−	1	16	10	7	−		395 225.751(0.015)	0.227	160.870	
1	23	15	9	+	1	22	14	8	+		395 240.052(0.046)	18.743	236.182	
1	25	14	11		1	24	−15	10			395 339.137(0.064)	7.233	262.868	
1	16	8	8	+	1	15	7	9	+		395 456.446(0.012)	2.567	145.415	
1	16	8	8	+	1	15	6	9	+		395 458.310(0.012)	0.178	145.415	
1	15	12	3	+	1	14	9	6	+		395 464.162(0.011)	0.227	142.305	
1	16	9	8	+	1	15	7	9	+		395 518.689(0.012)	0.179	145.415	
1	16	9	8	+	1	15	6	9	+		395 520.554(0.012)	2.566	145.415	
0	19	14	5	+	0	18	13	6	+		395 570.397(0.007)	18.192	111.195	
1	17	12	6	−	1	16	9	7	−		395 808.510(0.016)	4.394	160.851	
0	16	10	7	−	0	15	8	8	−		396 261.562(0.005)	0.739	71.722	
0	20	−13	7		0	19	−12	7			396 292.359(0.007)	0.636	120.503	
1	24	14	10	+	1	23	15	9	+		396 345.929(0.053)	20.353	249.366	
1	23	13	10		1	22	13	9			396 356.150(0.047)	12.237	232.584	
0	16	11	6	+	0	15	8	7	+		396 358.206(0.005)	2.228	73.894	
0	15	13	2	−	0	14	11	3	−		396 360.114(0.005)	0.429	70.059	
1	17	11	6		1	16	9	7			396 570.066(0.017)	1.227	158.307	
0	23	14	10		0	22	−13	9			396 581.988(0.009)	13.695	158.763	
1	14	10	4		1	13	7	6			396 585.592(0.012)	0.271	129.704	

TABLE 2. Microwave transitions of CH_3COOH in the order of frequency for the v_t=0 and 1 torsional states—Continued

v_t'	J'	K_a'	K_c'	Par′	v_t''	J''	K_a''	K_c''	Par″	Obs. Freq. (unc.) (MHz)	Calc. Freq. (unc.) (MHz)	μ^2S (D^2)	E_1 (cm^{-1})	Ref.
1	20	−13	8		1	19	12	7			396 668.895(0.029)	11.955	194.426	
0	16	12	5	−	0	15	10	6	−		396 794.419(0.005)	0.779	76.166	
0	24	−13	11		0	23	−13	10			396 836.155(0.010)	11.293	171.784	
0	16	10	7	−	0	15	7	8	−		396 857.451(0.005)	2.686	71.702	
1	18	14	4		1	17	13	4			396 872.925(0.020)	26.465	176.705	
0	15	13	3	+	0	14	11	4	+		396 935.685(0.005)	0.429	70.040	
1	25	12	13		1	24	12	12			397 000.685(0.064)	12.603	256.301	
0	23	15	8	−	0	22	15	7	−		397 539.846(0.009)	10.597	162.368	
1	19	−15	5		1	18	−14	5			397 803.758(0.025)	19.930	189.240	
0	19	13	6	−	0	18	12	7	−		397 931.035(0.007)	11.785	108.756	
1	24	15	10	+	1	23	15	9	+		397 958.610(0.052)	4.559	249.366	
1	21	−13	9		1	20	12	8			397 958.832(0.035)	11.364	205.874	
0	17	10	7	+	0	16	9	8	+		397 967.962(0.006)	3.567	82.609	
1	25	−13	13		1	24	12	12			397 969.878(0.064)	19.869	256.301	
1	15	*	11	+	1	14	*	12	+		397 979.314(0.010)	1.245	126.054	
0	22	14	9		0	21	−13	8			398 195.483(0.009)	12.016	146.008	
1	25	13	12	−	1	24	14	11	−		398 291.596(0.061)	27.590	259.503	
0	24	13	11	−	0	23	13	10	−		398 354.772(0.010)	11.600	171.727	
1	25	14	12	−	1	24	14	11	−		398 366.517(0.061)	4.401	259.503	
1	25	13	12	−	1	24	13	11	−		398 527.178(0.061)	4.400	259.495	
1	25	14	12	−	1	24	13	11	−		398 602.098(0.061)	27.621	259.495	
0	23	−15	8		0	22	−15	7			398 609.222(0.009)	10.196	162.418	
1	26	12	14	+	1	25	13	13	+		398 628.377(0.071)	32.133	268.918	
1	26	13	14	+	1	25	13	13	+		398 631.169(0.071)	5.784	268.918	
1	26	12	14	+	1	25	12	13	+		398 637.455(0.071)	5.784	268.918	
1	26	13	14	+	1	25	12	13	+		398 640.246(0.071)	32.135	268.918	
1	14	−14	1		1	13	12	1			398 656.744(0.011)	0.293	140.609	
1	18	11	7		1	17	−10	8			398 727.257(0.021)	5.980	168.381	
0	24	14	11		0	23	−13	10			398 826.997(0.010)	16.374	171.784	
0	19	−15	4		0	18	−14	4			399 077.995(0.007)	22.874	113.975	
0	21	14	8		0	20	−13	7			399 158.630(0.009)	11.133	133.721	
1	16	−10	7		1	15	−8	8			399 263.727(0.013)	0.327	145.719	
1	27	11	16	−	1	26	12	15	−		399 270.074(0.080)	37.371	277.640	
1	27	12	16	−	1	26	12	15	−		399 270.140(0.080)	6.531	277.640	
1	27	11	16	−	1	26	11	15	−		399 270.328(0.080)	6.531	277.640	
1	27	12	16	−	1	26	11	15	−		399 270.394(0.080)	37.371	277.640	
1	25	13	12		1	24	−14	11			399 282.105(0.064)	15.284	259.849	
1	19	−13	7		1	18	−12	7			399 373.323(0.026)	0.829	183.401	
0	17	10	7	+	0	16	8	8	+		399 545.394(0.006)	0.998	82.556	
0	15	−6	9		0	14	5	10			399 555.726(0.004)	1.335	55.844	
0	15	−6	9		0	14	−4	10			399 555.943(0.004)	0.292	55.844	
0	15	7	9		0	14	5	10			399 580.811(0.004)	0.292	55.844	
0	15	7	9		0	14	−4	10			399 581.028(0.004)	1.335	55.844	
0	24	15	10	+	0	23	15	9	+		399 628.924(0.010)	11.077	174.891	
0	19	15	5		0	18	14	5			399 780.793(0.007)	22.984	113.614	
1	28	*	18	+	1	27	*	17	+		399 863.873(0.092)	99.389	285.694	
0	17	−10	7		0	16	9	8			399 919.905(0.006)	3.471	82.732	

[a]We would like to call the reader's attention to an entry in Table 2 of Remijan *et al.* (Ref. 2) which was taken from a preliminary calculation supplied by one of us for the strengths of the lines corresponding to the frequencies 239 305.848 and 239 338.771 MHz ($22_{*,22}-21_{*,21}$ *E* and $22_{*,22}-21_{*,21}$ *A*, respectively). These line strengths are not 20.5 D^2 as indicated in that table but are found in our final calculations to be 124.428 and 124.419 D^2, respectively.

4. List of Symbols

a, b, c	"rho axis" (RAM) labels (and not principal axis labels) defined in Hougen *et al.*[16]
I_{aa}, I_{bb}, I_{cc}, I_{ab}	I_{xx} are the moments of inertia and I_{ab} is the product of inertia in the a, b, and c-RAM axis system with the sign choice of Lin and Swalen[12]
I_α	moment of inertia of the CH_3 internal rotor
A, B, C, D_{ab}	rotational parameters A, B, C, D_{ab} arise from the use of a nonprincipal axis system,[12] $A=(\hbar^2/2)[(I_{bb}+I_{aa})/(I_{bb}I_{aa}-I_{ab}^2)-I_{bb}/(I_{bb}^2+I_{ab}^2)]$, $B=\hbar^2 I_{bb}/2(I_{bb}^2+I_{ab}^2)$, $C=\hbar^2/2I_{cc}$, $D_{ab}=\hbar^2 I_{ab}/2(I_{bb}^2+I_{ab}^2)$
Δ_J, Δ_{JK}, Δ_K, δ_J, δ_K	quartic centrifugal distortion constants
H_J, H_{JK}, H_{KJ}, h_J, h_{JK}, h_K	sextic centrifugal distortion constants
ρ	internal rotation interaction constant,[12] $\rho=(I_{bb}^2+I_{ab}^2)^{1/2}I_\alpha/(I_{aa}I_{bb}-I_{ab}^2)$
F	internal rotation constant,[12] $F=\hbar^2(I_{aa}I_{bb}-I_{ab}^2)/2I_\alpha(I_{aa}I_{bb}-I_\alpha I_{bb}-I_{ab}^2)$
V_3, V_6, V_9	threefold, sixfold, and ninefold components of torsional barrier, $V(\alpha)=\frac{1}{2}V_3(1-\cos 3\alpha)+\frac{1}{2}V_6(1-\cos 6\alpha)+\frac{1}{2}V_9(1-\cos 9\alpha)$
μ_a, μ_b, μ_c	components of the electric dipole moment along the RAM axes
J	total rotational angular momentum quantum number
K_a	projection of J along the RAM a axis in the limiting prolate symmetric top
K_c	projection of J along the RAM c axis in the limiting oblate symmetric top
v_t	principal torsional quantum number in the high barrier limit
A (i.e., A_1 or A_2), E	torsion-rotation symmetry species, representing irreducible representations of the symmetry group of the internal rotational Hamiltonian
Par	parity quantum number, + and −, for the A species. $A+$ and $A-$ labels correspond to A_1 and A_2, respectively, of the G_6 group for even $J+v_t$ and to A_2 and A_1 for odd $J+v_t$ in the ground vibrational state.
P	total rotational angular momentum
P_a, P_b, P_c	projection on the RAM a, b, and c axes of the total rotational angular momentum
P_α	torsional angular momentum
α	torsional angle around internal rotation axis
$\mu^2 S$	the product of the square of the dipole moment (μ^2) and transition line strength (S)
w	the weight of the measured line in the fit ($w=1/\Delta\nu^2$, where $\Delta\nu$ is the measurement accuracy)
Conversion factors	$1\ cm^{-1}=29\,979.2458$ MHz $1\ cm^{-1}=1.196\,266\times10^{-2}$ kJ mol^{-1} $1\ cm^{-1}=1.439\ K$

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