

OBTAINING THE UNIT OF CAPACITANCE FROM THE
CALCULABLE CAPACITOR AT THE NATIONAL
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The capacitance unit at NIST is determined from a calculable cross capacitor. Its value of 0.5 pF is determined from the change in displacement of one screening electrode relative to another. This International System of units (SI) value is then transferred via a 10 pF fused silica capacitor to the bank of five 10 pF capacitors that maintains the U.S. capacitance unit. This bank is used to assign values to transfer standards used in NIST capacitance calibrations and for international comparisons. The calculable capacitor measurement is one of the most direct ways to obtain a capacitance unit in terms of the SI but is an extremely difficult experiment to perform. Other alternatives will be discussed including obtaining a capacitance unit via a dc quantum Hall effect device.