

8:26 HE 3 Sidejet Strength and Mixing in Self-Excited Jets A. W. JOHNSON and W. M. PITTS, National Institute of Standards and Technology --- Absolutely unstable jet flows are known to produce vigorous and intermittent lateral ejections of fluid, or 'sidejets'. Sidejet generation has been attributed to the near-field interaction of axisymmetric vortices, streamwise vortices, and lobes formed on the axisymmetric ring vortices by the Widnall instability. Here we attempt to vary the strength of sidejets by varying the intensity of the primary oscillating mode associated with axisymmetric vortices of self-excited absolutely unstable round helium jets. The resulting effects on the scalar mixing field have been documented. The intensity of the oscillating mode was manipulated by varying the velocity profile over a wide range of  $D/\theta$ . Here,  $D$  is the nozzle diameter and  $\theta$  is the momentum thickness of the velocity profile at the nozzle exit. Profiles of jet concentration were measured using Rayleigh light scattering (RLS). Simultaneous concentration and velocity measurements were made using hotwire probes and RLS in the near field. Strengthening the oscillating mode increased the radial extent and strength of the corresponding sidejets. Downstream spreading and the virtual origin of the jet were also dependent on sidejet strength. Qualitative results on the temporal and spatial properties of sidejets in these flows will also be presented.