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**Acoustics and Mean Flow of Coaxial Jets with Variable Velocity and Area Ratios** SARA ROSTAMIMONJEZI, DIMITRI PAPAMOSCHOU, U.C. Irvine — We investigate experimentally the far-field acoustics, noise source distributions, and mean flow structure of coaxial jets with secondary-to-primary velocity ratio $U_s/U_p$ ranging from 0 to 1 and diameter ratios of 1.54, 1.64, and 1.98. The mean velocity field is characterized in terms of the length of the primary core $L_p$, defined as the high-speed region of the jet, and the length of the secondary $L_s$, defined by the outer inflectional points of the radial velocity profile. The ratio $L_s/L_p$ increases with velocity ratio and with diameter ratio. For velocity ratios between 0.4 and 0.8, the elongation of the secondary core relative to the primary core is accompanied by suppression of high-frequency noise sources near the jet exit. This results in a reduction of far-field sound pressure levels, which is particularly strong when the results are scaled to constant thrust. Given the importance of $L_s/L_p$, models for the core lengths are constructed and preliminary correlations for the reduction of overall sound pressure level versus $L_s/L_p$ and other critical parameters are offered.

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