

Abstract Submitted
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Comparison of 10kHz TR-PIV and LES near-field data in high speed jets¹ JACQUES LEWALLE, PINQING KAN, Syracuse University — The identification of the sources of noise in high-speed jets may help formulate control strategies, an important unsolved problem. We report on the existence of large intermittent and localized relative phase velocities for near-jet fluctuations, and on the flow patterns that are associated with them (see companion abstract by P. Kan). Here we analyze two data sets. Experimentally, 10 kHz TR-PIV in a $Ma = 0.6$ cold jet ($Re = 700,000$) yielded two components of velocity, from which we calculate the phase velocities for various indicators (see related abstracts by Z.P. Berger and by M.G. Berry; data provided by Spectral Energies LLC). Similar results are obtained for $Ma=0.9$ LES results ($Re = 400,000$, sampling at 80 kHz). The comparison of algorithms and flow patterns vindicates our approach. Correlations with far-field events will also be attempted. Thanks to Guillaume Daviller (Institut PPrime, France) for the LES data, and to the Glauser group at Syracuse University.

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Jacques Lewalle
Syracuse University

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