

Abstract Submitted
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10kHz TRPIV near-field velocity and far-field noise: experimental results of a Mach 0.6 jet¹ PINQING KAN, JACQUES LEWALLE, Syracuse University — Last year, we extracted footprints of sources from far-field pressure data of high speed jet. In this paper, we focus on processing 10kHz TR-PIV data in the near-field region. The velocity and pressure data were collected in the jet experiment of Kerwin Low, et al in 2011. From the PIV snapshots, we extract kinematic indicators, construct their histories over the sequence of snapshots, and select the most promising diagnostics by cross-correlation with far-field pressure. For these indicators, including mass flux, we map out their fluctuations and their downstream propagation. In particular, the phase velocity of fluctuations is compared to the local convective speed. Events with large relative phase velocity are identified, and the corresponding velocity and vorticity fields are mapped out. Our goal is to correlate such events to the far-field footprints of sources. For more info and results related to the experiment, please refer to abstracts by Z.P. Berger and by M.G. Berry at this meeting. This work is supported by Glauser group of Syracuse University, Spectral Energies LLC under AFOSR SBIR grant, and by a Syracuse University Graduate Fellowship.

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