

Abstract Submitted
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Sequencing of acoustic events in the near field of subsonic jets¹

JACQUES LEWALLE, PINQING KAN, Syracuse University — Our group has developed several pattern recognition algorithms to identify short events common to near-and far-field signals. Here we are treating far-field and near-field pressure data as well as TR-PIV (10kHz) sections through the near jet. Our algorithms are based on wavelet transforms (band-pass filtering) and cross-correlations, identifying short excerpts in the time-frequency-lag domain that contribute most to the correlations. Matching such events between multiple signal pairs exposes the sequencing of near-field activity. We consider only near-field events (NFEs) matched with a loud far-field event (FFE). The NFEs are based on the correlation of velocity, vorticity, 2-D divergence, Q-index and Kulite signals with far-field pressure. The timing of the NFEs maps out possible sequences of events related to loud coherent noise emission. Results at several subsonic Mach numbers are compared.

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