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Comparison and Properties of Near-Field and Far-Field Events of High Speed Jet[1] PINQING KAN, JACQUES LEWALLE, Syracuse University — Two independent algorithms are applied to different signals to extract events that are potentially responsible for jet noise production. The data consist of 10 kHz TRPIV measurement and pressure sampling in both near- and far-field. One method uses near-field diagnostics (representatives of 2D velocity sections, e.g. velocity, vorticity, Q criterion, etc.) and near-field and far-field pressure. Applying cross-correlation and continuous wavelet to pairs of these signals, we look for the more dominant events in the time, frequency and lag domain. These are regarded as the main contributors of communication between the selected signals and are recorded as Near-Field Events. The other method only uses far-field microphones. The short time excerpts are identified as Far-Field Events that are common to three FF signals and responsible for peak energy spectrum. To compare these events, we map out their property distribution, including frequency, magnitude and time of occurrence. The individual events are also compared and a high portion is found to be common to both lists. We regard this as a verification of both algorithms.

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