Abstract Submitted
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Acoustic source analysis of a rectangular supersonic jet[1] JORDAN KREITZMAN, JOSEPH W. NICHOLS, Univ of Minn - Minneapolis — We apply Goldstein's generalized acoustic analogy to identify acoustic sources in two high-fidelity unstructured large eddy simulation databases of a Mach 1.4 rectangular jet with and without chevrons. Two-point, two-time correlations of the acoustic source terms are evaluated at different positions in the three dimensional flow that develops downstream of the complex nozzle. Two-point statistics are compared to single-point statistics to test the quasi-normality hypothesis and other noise source models for a non-axisymmetric jet. In particular, we assess the predictive capability of a Gaussian model, a fixed-frame model and a modified-distance model. The nozzle geometries used for the simulations exactly match an experimental configuration tested at the NASA Glenn Research Center, allowing for validation in terms of both farfield noise as well as turbulence statistics.

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