

Abstract Submitted
for the DFD15 Meeting of
The American Physical Society

Identifying Coherent Structures in a 3-Stream Supersonic Jet Flow using Time-Resolved Schlieren Imaging ANDREW TENNEY, Syracuse Univ, THOMAS COLEMAN, MATTHEW BERRY, ANDY MAGSTADT, Syracuse University, SIVARAM GOGINENI, Spectral Energies LLC, BARRY KIEL, AFRL — Shock cells and large scale structures present in a three-stream non-axisymmetric jet are studied both qualitatively and quantitatively. Large Eddy Simulation is utilized first to gain an understanding of the underlying physics of the flow and direct the focus of the physical experiment. The flow in the experiment is visualized using long exposure Schlieren photography, with time resolved Schlieren photography also a possibility. Velocity derivative diagnostics are calculated from the grey-scale Schlieren images are analyzed using continuous wavelet transforms. Pressure signals are also captured in the near-field of the jet to correlate with the velocity derivative diagnostics and assist in unraveling this complex flow. We acknowledge the support of AFRL through an SBIR grant.

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Date submitted: 31 Jul 2015

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