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**Oblique Shock Interaction with a Laminar Cylindrical Jet**[1]
PATRICK WAYNE, DELL OLMSTEAD, C. RANDALL TRUMAN, PETER VOROBIEFF, The University of New Mexico, SANJAY KUMAR, The University of Texas — We present an experimental study of a planar shock interaction with an initially cylindrical, diffuse density interface, where the angle $\alpha$ between the plane of the shock and the axis of the cylinder can be zero (planar normal interaction) or non-zero (oblique interaction). The interface is formed by injecting a laminar jet of a heavy gas mixture (sulfure hexafluoride, acetone, nitrogen) into quiescent air. The jet is stabilized by an annular co-flow of air to minimize diffusion. Interaction between the pressure gradient (shock front) and density gradients leads to vorticity deposition, and during the subsequent evolution, the flow undergoes mixing (injected material – air) and eventually transitions to turbulence. Several parameters affect this evolution, including the angle $\alpha$, the Atwood number (density ratio), and the Mach number of the shock. For quantitative and qualitative characterization of the influence of these parameters, we use flow visualization in two planes that relies on planar laser-induced fluorescence (PLIF) in acetone, which forms a part of the injected material.

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