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Study and Assessment of Supersonic Plasma Jets as a Standoff Compression Driver ELIZABETH MERRITT, UNM, SCOTT HSU, LANL, ALAN LYNN, UNM, AUNA MOSER, JOHN DUNN, JOSHUA DAVIS, THOMAS AWE, LANL, MARK GILMORE, UNM, SAMUEL BROCKINGTON, F. DOUGLAS WITHERSPOON, HyperV, JASON CASSIBRY, UAH — Spherically imploding plasma liners formed by merging high Mach number plasma jets are a proposed standoff driver for magneto-inertial fusion. The Plasma Liner Experiment (PLX) is currently exploring single jet propagation and two jet merging of supersonic argon plasma jets to assess their potential for use in MIF-relevant plasma liners. Key physics issues include assessing jet densities, jet expansion and cooling during propagation, and potential merging effects such as shock heating. An 8 chord interferometer using a 561 nm diode-pumped solid state laser is being used to make time-resolved density profile measurements of the plasma jets. The interferometer phase shift is sensitive to electron, ion, and neutral atoms and thus is dependent on both plasma ionization fraction, f, and total atomic density. Interferometry measurements coupled with spectroscopy and synthetic diagnostic data allow us to infer physics such as plasma density range (10^{16} – 10^{17} cm^{-3}), jet propagation velocity ($\sim$50 km/s), and radial and axial expansion.

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