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Progress Toward the Formation of Fully Spherical Imploding Plasma Liners on PLX[1] SAMUEL LANGENDORF, TOM BYVANK, JOHN DUNN, Los Alamos National Laboratory, FRANKLIN WITHERSPOON, ANDREW CASE, EDWARD CRUZ, HyperV Technologies, JASON CASSIBRY, University of Alabama in Huntsville — The Plasma Liner Experiment (PLX) at LANL is being upgraded to form spherically imploding supersonic plasma liners from the merger of up to 36 individual plasma jets. Previous work has studied the individual merging of multiple supersonic plasma jets [1,2], and has shown that the resulting structure may exhibit shock formation or a diffuse interpenetration, depending strongly on the relative velocity of the jets and the plasma ionization state. These experiments will investigate the liner structure beyond the initial merging phase, through the convergence and stagnation of the formed plasma liner. Diagnostic measurements will characterize the evolution of the plasma structure, density profile, temperature, ionization state, and ram/stagnation pressure, with application to the use of plasma liners as a standoff driver for magneto-inertial fusion. Measurements results will be used to benchmark fluid simulation predictions and to understand scaling to increased liner energies.
[1] A. Moser et al., Physics of Plasmas 22.5 (2015): 055707.
[2] S. J. Langendorf et al., Physical review letters 121 (18), 185001.

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