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Diagnostics for the Plasma Liner Experiment (PLX) ELIZABETH MERRITT, MARK GILMORE, ALAN LYNN, University of New Mexico, JASON CASSIBRY, University of Alabama Huntsville, F. DOUGLAS WITHERSPOON, HyperV Technologies, SCOTT HSU, Los Alamos National Laboratory, PLX TEAM
— High pressure imploding plasma liners are possible sources for assembling plasmas suitable for scientific studies of HEDP and a potential stand-off driver solution for magneto-inertial fusion (MIF). The Plasma Liner Experiment (PLX) will merge 30 dense, high Mach number plasma jets to study plasma liner formation and convergence dynamics. Measurements of the ion and electron densities, temperatures, and velocities will be crucial for characterizing the thermodynamic state of the liner from formation through stagnation. Hydrodynamic simulations predict widely varying density and temperature ranges in the liner over its evolution, from 10^{15} - 10^{19} cm^{-3} and a few to hundreds of eV. To examine the plasma over this wide range of parameters, we will employ laser interferometry, Schlieren imaging, visible imaging, visible and VUV spectroscopy, pressure probes, x-ray photodiodes and bolometry. Simulation results for the proposed interferometers and Schlieren imaging are presented as well as an overview of the entire diagnostic suite.

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