

Abstract Submitted
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Overview, Status, and Plans of the Plasma Liner Experiment (PLX)¹ S.C. HSU, T.J. AWE, D.S. HANNA, J.S. DAVIS, LANL, F.D. WITHERSPOON, HyperV Technologies, J.T. CASSIBRY, UAH, M.A. GILMORE, UNM, D.Q. HWANG, U.C., Davis, AND THE PLX TEAM — The Plasma Liner Experiment (PLX) is a multi-institutional collaboration that is exploring and demonstrating the feasibility of forming imploding spherical plasma liners to reach peak pressures ~ 0.1 Mbar upon stagnation. The liners will be formed via merging of 30–60 dense high Mach number plasma jets ($n \sim 10^{17} \text{ cm}^{-3}$, $M \sim 10\text{--}35$, $v \sim 50\text{--}70 \text{ km/s}$, $r_{jet} \sim 5 \text{ cm}$) in spherically convergent geometry. We are aiming for two potential follow-on applications if this work is successful: (1) assembling repetitive, macroscopic (cm and μs scale) plasmas suitable for fundamental HEDLP scientific studies and (2) a standoff driver solution for magneto-inertial fusion. This is a staged project where scientific issues will be studied first at modest stored energies ($\sim 300 \text{ kJ}$) before attempting to reach HED-relevant pressures (requiring $\sim 1.5 \text{ MJ}$). This poster provides an overview/status of the project and the research plan, which includes numerical/theoretical and experimental studies of plasma jet formation/acceleration, propagation/merging, liner convergence/stagnation, and laser driven beat waves for magnetizing the imploding liner.

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