Abstract Submitted
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A 1D (radial) Plasma Jet Propagation Study for the Plasma Liner Experiment (PLX)[1] J.R. THOMPSON, I.N. BOGATU, S.A. GALKIN, J.S. KIM, FAR-TECH, Inc., D.R. WELCH, C. THOMA, Voss Scientific, LLC, I. GOLOVKIN, J.J. MACFARLANE, Prism Computational Sciences, Inc., A. CASE, S.J. MESSER, F.D. WITHERSPOON, HyperV Technologies Corp., J.T. CASSIBRY, UAH, T.J. AWE, S.C. HSU, LANL — The Plasma Liner Experiment will explore the formation of imploding spherical "plasma liners" that reach peak pressures of 0.1 Mbar upon stagnation. The liners will be formed through the merging of dense, high velocity plasma jets (n$\sim 10^{17}$ cm^{-3}, T$\sim$3 eV, v$\sim$50 km/s) in a spherically convergent geometry. The focus of this 1D (radial) study is argon plasma jet evolution during propagation from the rail gun source to the jet merging radius. The study utilizes the Large Scale Plasma (LSP) PIC code with atomic physics included through the use of a non-Local Thermal Equilibrium (NLTE) Equation of State (EOS) table. We will present scenarios for expected 1D (radial) plasma jet evolution, from upon exiting the PLX rail gun to reaching the jet merging radius. The importance of radiation cooling early in the simulation is highlighted.

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