Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Plasma Jet Propagation and Stability Modeling for the Plasma Liner Experiment (PLX)[1] J.R. THOMPSON, N.I. BOGATU, S.A. GALKIN, J.S. KIM, FAR-TECH, Inc., D.R. WELCH, C. THOMA, Voss Scientific, LLC, J.J. MACFARLANE, Prism Computational Sciences, Inc., 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 ∼10^{17} cm^{-3}, v ∼50 km/s) in a spherically convergent geometry. The focus of this study is jet propagation and stability from the wall to the merging radius using analytic models and the Large Scale Plasma (LSP) code with atomic physics. We will discuss the dominant physics, including cooling due to adiabatic expansion, and charge neutralization involving the plasma equation of state (EOS), whose character transitions between local thermal equilibrium and time-dependent collisional-radiative dominance during the propagation. 1D, 2D and 3D jet propagation and stability modeling will be presented, identifying experimental parameters impacting jet expansion and stability.

[1]Work supported by US DOE grant DE-FG02-05ER54835.

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Date submitted: 16 Jul 2010 Electronic form version 1.4