Abstract Submitted
for the DPP12 Meeting of
The American Physical Society

Merging of High Speed Argon Plasma Jets[1] ANDREW CASE, SARAH MESSER, SAM BROCKINGTON, LIN-CHUN WU, F. DOUGLAS WITHERSPOON, HyperV Technologies — Formation of an imploding plasma liner for the Plasma Liner Experiment (PLX) requires individual plasma jets to merge into a uniform shell of plasma converging on the target region. Understanding dynamics of the merging process requires knowledge of the plasma phenomena involved. We present here results from the study of the merging of six plasma jets in three dimensional geometry. The experiments were performed using HyperV Technologies Corp. one centimeter MiniRailguns using a preionized Argon plasma armature on a vacuum chamber designed to partially reproduce the port geometry of the PLX vacuum chamber. Diagnostics include fast imaging, spectroscopy, interferometry, fast pressure probes, B-dot probes, and high speed spatially resolved photodiodes, permitting measurements of plasma density, temperature, velocity, stagnation pressure, and magnetic field. These experimental results are compared with simulation results from the LSP 3D hybrid PIC code.

[1]Work supported by USDOE under DE-FG02-08ER85114, DE-FG02-05ER54810, and DE-FG02-05ER54835.

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Date submitted: 19 Jul 2012 Electronic form version 1.4