

Abstract Submitted  
for the DPP11 Meeting of  
The American Physical Society

**An Intensified Photodiode Array for Characterizing Argon Plasma Jets on the Plasma Liner Experiment**<sup>1</sup> J.S. DAVIS, T.J. AWE, S.C. HSU, LANL, A. CASE, HyperV Technologies — The Plasma Liner Experiment (PLX) will merge 30 high Mach number plasma jets to form an imploding spherical plasma liner for high energy density physics and magneto-inertial fusion studies. The peak stagnation pressures achieved will be highly dependent on the implosion velocity of the liner, which is in turn dependent on the velocities of the merging plasma jets. For initial experiments characterizing single jet propagation, an array of three intensified photodiode (gain of roughly 25 dB and a spectral range of 350–1100 nm) will be used to measure the jet’s velocity (up to 50 km/s) and acceleration (if any) as it travels from the chamber wall toward the center of a 9 ft. diameter spherical vacuum chamber. By adding filters to the photodiodes, it will be possible to correlate stages of jet evolution to specific argon emission lines, thus providing information on the state of the argon plasma as it propagates. Alignment and light collection are achieved via an aperture, lens, and fiber optic chain with the photodiodes themselves situated in an electromagnetically shielded “screen cage.” This poster will discuss the detailed design, setup, alignment, and initial experimental data of the photodiode array.

<sup>1</sup>Supported by DOE Fusion Energy Sciences.

Scott Hsu  
LANL

Date submitted: 13 Jul 2011

Electronic form version 1.4