

Abstract Submitted
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Simulation Study of Structure and Properties of Plasma Liners for the PLX- α Project¹ ROMAN SAMULYAK, WEN SHIH, Stony Brook University, SCOTT HSU, Los Alamos National Laboratory , PLX-ALPHA TEAM — Detailed numerical studies of the propagation and merger of high-Mach-number plasma jets and the formation and implosion of plasma liners have been performed using the FronTier code in support of the Plasma Liner Experiment-ALPHA (PLX- α) project. Physics models include radiation, physical diffusion, plasma-EOS models, and an anisotropic diffusion model that mimics deviations from fully collisional hydrodynamics in outer layers of plasma jets. Detailed structure and non-uniformity of plasma liners of due to primary and secondary shock waves have been studied as well as averaged quantities of ram pressure and Mach number. Synthetic data from simulations have been compared with available experimental data from a multi-chord interferometer and survey and high-resolution spectrometers. Numerical studies of the sensitivity of liner properties to experimental errors in the initial masses of jets and the synchronization of plasma gun valves have also been performed.

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