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Effects of Ionization, Thermal Transport, and Radiation on Scaling Performance for Peak Pressure in Imploding Plasma Liners Formed by Converging Jets MILOS STANIC, JASON CASSIBRY, University of Alabama in Huntsville, SCOTT HSU, Los Alamos National Laboratory, PLASMA LINER EXPERIMENT TEAM — This paper is an extension of work done by (Cassibry et.al., in preparation) who performed similar research using Smoothed Particle Hydrodynamics Code (SPHC) with an ideal gas equation of state model, neglecting electron-thermal conduction, radiation conduction and radiation losses (in cases of optically thin plasma). SPHC has been modified to use a tabular equation of state, accounting for ionization effects and to include the mentioned thermal transport models. Series of simulations have been carried out and the results were analyzed in terms of recognizing the scaling laws for peak pressure and dwell time. Comparison with the previous work of (Cassibry et.al., in preparation) has also been carried out in an attempt to isolate and recognize the effects of ionization and thermal transport models. The work has been done in support of the Plasma Liner Experiment (PLX), which is a multi-institutional project working on validation of the imploding plasma liner concept for reaching High Energy Density (HEDP) regimes and a possible stand-off solution for Plasma Jet driven Magneto-Inertial Fusion (PJMIF).

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