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Simulation of Formation and Implosion of Plasma Liners for Magneto-Inertial Fusion ROMAN SAMULYAK, LINGLING WU, Stony Brook University, PAUL PARKS, General Atomics — Spherically symmetric simulations of the implosion of plasma liners and compression of plasma targets in the concept of plasma liner driven magneto-inertail fusion have been performed using the method of front tracking. Single and double-layer deuterium and xenon liners have been investigated as well as liners to be used in the PLX experiment. By varying target and liner parameters, the implosion process was optimized for maximum fusion energy gain and compared with theoretical predictions and scaling laws. In the most optimal setup, fusion ignition and energy gain of 10 was achieved with energy release of 10 GJ. 3D simulations of the propagation and merger of high Mach number deuterium jets and the formation of liners have also been performed using the FronTier code. The merger of 125, 144 and 625 jets have been simulated and the uniformity and Mach number reduction of the corresponding liners have been investigated. During late stages of the implosion, the Mach number of 3D liners was about half of that of spherically symmetric liners.

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