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Simulation of Formation and Implosion of Plasma Liners for Magnetized Target 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 Magnetized Target Fusion have been performed using the method of front tracking. The cases of single deuterium and xenon liners and double liners containing both deuterium and xenon layers have been investigated. Simulations have been compared with recent theoretical works. In most favorable setups, the state of ignition and large fusion burn up fraction and energy gains have been achieved. The main conclusion of the study is that the efficiency of the method significantly increases if a large initial target (up to 30 cm in radius) is compressed by a high Mach number liner containing a heavy gas layer (xenon). Full 3D simulations of the propagation and merger of high Mach number deuterium jets and the formation of liner have also been performed. It has been shown that the jet merger reduces the Mach number. After the 5 m propagation and full merger of 144 jets with initial Mach number 60, the average Mach number of the liner was approximately 10.

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