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Magnetized Target Formation and Liner Uniformity for Plasma-Jet-Driven Magneto-Inertial-Fusion[1] TOM BYVANK, Los Alamos National Laboratory, DOUGLASS ENDRIZZI, CARY FOREST, University of Wisconsin, SCOTT HSU, Los Alamos National Laboratory, KARSTEN MCCOLLAM, University of Wisconsin, PETROS TZEFERACOS, University of Rochester, SAMUEL LANGENDORF, Los Alamos National Laboratory — The plasma-jet-driven magneto-inertial fusion (PJMIF) concept seeks to use a spherical plasma liner to compress a magnetized plasma target to thermonuclear conditions. The desired target plasma has $\beta > 1$ and Hall magnetization parameter $\omega\tau > 1$. Additionally, the parameters of such a target plasma are of interest as a laboratory platform to study fundamental physics related to astrophysical systems. Research on the Big Red Ball at the Wisconsin Plasma Physics Laboratory (WiPPL) has collided pre-magnetized plasmas to successfully form a plasma with $\beta > 1$ and $\omega\tau > 1$. At the Plasma Liner Experiment (PLX) at Los Alamos National Laboratory, we explore formation of a spherical plasma liner using up to 36 discrete plasma jets with high standoff distance from the region of plasma interaction and compression. Work is in progress to create target plasmas with $\beta > 1$, $\omega\tau > 1$, at higher densities than the plasmas formed at WiPPL, and then to compress this target plasma with the PLX liner. Utilizing the FLASH code, we study effects on target compression of the liner uniformity (from collision of discrete jets) and of the anisotropic thermal conductivity (from the target magnetic field). In this work, we continue to characterize and evaluate the PJMIF concept.

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