Abstract Submitted
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**Exploration of Plasma-Jet Magneto-Inertial Fusion Burn Dynamics**[1] JOHN F. SANTARIUS, University of Wisconsin — Magneto-inertial fusion (MIF) implodes a conducting liner, compressing a magnetized plasmoid to fusion-relevant temperatures. The target's magnetic field reduces thermal conduction, and the liner's inertia provides transient plasma stability and confinement. The present work explores the burn dynamics of using plasma jets to form the MIF liner [1]. Particular attention is paid to the question of burning the thin inner layer of the liner. This exploration of MIF parameter space yields promising fast shock and long dwell time implosion modes. The investigation uses UW's 1-D Lagrangian radiation-hydrodynamics code, BUCKY, which solves single-fluid equations with ion-electron interactions, PdV work, table-lookup equations of state, fast-ion energy deposition, and pressure contributions from all species. Extensions to the code include magnetic field evolution as the plasmoid compresses plus dependence of the thermal conductivity and fusion product energy deposition on the magnetic field.
[1] Y.C. F. Thio, et al., "Magnetized Target Fusion in a Spheroidal Geometry with Standoff Drivers," in Current Trends in International Fusion Research, E. Panarella, ed. (National Research Council of Canada, Ottawa, Canada, 1999), p. 113.

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