Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

One-Dimensional Burn Dynamics of Plasma-Jet Magneto-Inertial Fusion[1] JOHN SANTARIUS, University of Wisconsin — This poster will discuss several issues related to using plasma jets to implode a Magneto-Inertial Fusion (MIF) liner onto a magnetized plasmoid and compress it to fusion-relevant temperatures [1]. The problem of pure plasma jet convergence and compression without a target present will be investigated. Cases with a target present will explore how well the liner's inertia provides transient plasma stability and confinement. The investigation uses UW's 1-D Lagrangian radiation-hydrodynamics code, BUCKY, which solves single-fluid equations of motion 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.

[1]Research funded by the DOE Office of Fusion Energy Sciences, grant DE-FG02-04ER54751.

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Date submitted: 17 Jul 2009 Electronic form version 1.4