Plasma-Jet Magneto-Inertial Fusion Burn Calculations

JOHN SANTARIUS, University of Wisconsin — Several issues exist 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 poster will explore how well the liner’s inertia provides transient plasma confinement and affects the burn dynamics. The investigation uses the University of Wisconsin’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, pressure contributions from all species, and one or two temperatures. Extensions to the code include magnetic field evolution as the plasmoid compresses plus dependence of the thermal conductivity on the magnetic field.


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