

Abstract Submitted  
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**MACH2 modeling of solid liners imploding fusion fuel in multi-MA pulsed power generators** HAFIZ RAHMAN, EMIL RUSKOV, PAUL NEY, Magneto-Inertial Fusion Technology Inc. (MIFTI) — Staged Z-pinch is a potential high-energy gain fusion concept, where a high-atomic number liner implodes onto a DD or DT target using pulsed multi-MA current source. We used the two-dimensional code MACH2 for a comparative study of three different types of solid liners (Be, Cu, and Ag) imploding onto DD and DT target. Comparison is also made with experiments and simulations of Be-liner imploding on DD target, with and without preheating of MagLIF like target at the Sandia National Laboratory Z-facility. Our study shows that high-atomic number liners generate strong shock waves which facilitate target plasma preheating to few hundred eV before the final adiabatic compression of the target. This eliminates the auxiliary heating requirement for the Magneto-Inertial fusion concept. In addition, significantly higher yield is produced. Our modeling results suggest that fusion energy breakeven, and beyond, is possible in a high current machine like the Sandia National Laboratory Z-facility.

Hafiz Rahman  
Retired

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