Abstract Submitted
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Dynamics of a thick liner for Magnetized Target Fusion R.E. SIEMON, T.J. AWE, B.S. BAUER, S. FUELLING, T. GOODRICH, I.R. LINDEMUTH, V. MAKHIN, University of Nevada, Reno — Liner inertia determines an important limit to the burn time and gain of an MTF system. Assuming as much material density as possible for the liner, the variable that determines inertia is liner thickness. Liner thickness is also important to achieve high liner velocity because of the burst condition (a limit on acceleration by magnetic fields because ohmic heating can boil the liner). Thick liners have interesting dynamics and compressional energy of the material becomes an important consideration. Early work by Gerwin and Malone (Nuclear Fusion 19, 155 (1979)) gives an analytic model that estimates the compressional energy and associated inefficiency. They find that an optimized system should allow 70% of a liner's kinetic energy to convert into plasma energy, with 30% going into liner compression. Numerical MHD models can also be used to calculate liner dynamics and the effects of compression. Results from numerical models will be compared with the analytic results, and the implications for high gain in MTF systems will be discussed.

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