

Abstract Submitted
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Progress in the Design of the Stabilized Liner Compressor for MTF/MIF Plasma Target Development¹ SHERRY FRESE, MICHAEL FRESE, PETER TURCHI, DON GALE, NumerEx LLC — The Stabilized Liner Compressor (SLC) seeks to extend concepts for repetitive, rotationally stabilized, liquid-metal liners driven by free-pistons [1] to much higher drive pressures (25 vs 5 kpsi) and faster implosion speeds (2000 vs 100 m/s) than previously demonstrated. Such extension is needed to enable experiments with magnetized-plasma targets presently offering sizes and lifetimes of 10's cm diam and 10's microsec. SLC represents the confluence of several difficult technologies, including pulsed high pressures, high-speed rotating machinery and alkali-metal (Na, NaK) handling. Solution of the two-dimensional, unsteady, compressible flow of a rotating liquid-metal liner requires advanced numerical techniques. We report the use of the 2-1/2 dimensional MHD code MACH2 to explore flow options, including magnetic flux compression, and to provide pulsed pressure distributions for mechanical design. [1] P.J. Turchi, et al, "Review of the NRL Liner Implosion Program", in Megagauss Physics and Technology, P.J. Turchi, ed., Plenum, NY (1980). P. 375.

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