Abstract Submitted
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Stabilized Liner Compressor: The Return of Linus[1] PETER TURCHI, Retired, SHERRY FRESE, MICHAEL FRESE, NumerEx LLC, CHARLES MIELKE, MARK HINRICHS, DOAN NGUYEN, Los Alamos National Laboratory — To access the lower cost regime of magneto-inertial fusion at megagauss magnetic field-levels [1] requires the use of dynamic conductors in the form of imploding cylindrical shells, aka, liners. Such liner implosions can compress magnetic flux and plasma to attain fusion conditions, but are subject to Rayleigh-Taylor instabilities, both in the launch and recovery of the liner material and in the final few diameters of implosion. These instabilities were overcome in the Linus program at the Naval Research Laboratory, c. 1979, providing the experimentally-demonstrated basis for repetitive operation and leading to an economical reactor concept at low fusion gain [2]. The recent ARPA-E program for low-cost fusion technology has revived interest in this approach. We shall discuss progress in modeling and design of a Stabilized Liner Compressor (SLC) that extends the earlier work to higher pressures and liner speeds appropriate to potential plasma targets.

[1] P.J. Turchi, "Imploding Liner Compression of Plasma: Concepts and Issues," IEEE Trans. on Plasma Science, 36, 1, 52 (2008).
[2] 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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