

Abstract Submitted
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Studies of Cylindrical Liner Z-Pinches at 1 MA on COBRA¹

LEVON ATOYAN, TOM BYVANK, ADAM CAHILL, WILLIAM POTTER, PHILIP DE GROUCHY, BRUCE KUSSE, DAVID HAMMER, Cornell University — Tests of the magnetized liner inertial fusion (MagLIF) concept will make use of the 27 MA Z-machine to implode a cylindrical metal liner onto a preheated plasma contained within it [1]. While most pulsed power machines produce much lower currents than the Z-machine, there are questions that can be addressed on smaller scale facilities. Recent work on the 1 MA Cornell Beam Research Accelerator (COBRA) has made use of 10 mm long cylindrical metal liners having a 4 mm diameter and a varying wall thickness to study the initiation of plasma on the liner's outer surface as well as axial magnetic field compression [2]. We will present experimental results with both imploding and non-imploding liners, investigating the impact the liner's external surface structure has on initiation, outer surface ablation, and implosion. The effect of a uniform axial external magnetic field on observed surface striations [3] will also be discussed.

[1] S. A. Slutz, et al., *Phys. Plasmas* **17**, 056303 (2010).

[2] P.-A. Gourdain, et al., *Nucl. Fusion* **53**, 083006 (2013).

[3] T. J. Awe, et al., *Phys. Rev. Lett.* **111**, 235005 (2013).

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