

Abstract Submitted
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Experimental Investigation of Micrometer Scale Areal Density Variations in Metal Liners Driven by the 1 MA COBRA Pulsed Power Generator¹ LEVON ATOYAN, SERGEI PIKUZ, TANIA SHELKOVENKO, DAVID HAMMER, TOM BYVANK, Cornell University — On the 20 MA Z machine, the seed for the MRT instability was mitigated in the Magnetized Liner Inertial Fusion experiment using a thick dielectric coating.¹ We have used high-resolution radiography to study the development of small-scale ($\sim 10\text{-}30\ \mu\text{m}$) features in thin foils on the 1 MA, 100-200 ns COBRA pulsed power generator². We examined those features quantitatively in a 16 m thick cylindrical Al liner, where we show areal density variation of up to 40-50%. We then show how the features' wavelength decreases when the material is changed from Al to Ni, Cu, and Ti, going from 21.4 m for Al to 11.2 m for Ti. Moreover, we show that expansion inhibition on both sides by dielectric material reduces small-scale feature size and density, and we show how pattern seeding can affect those parameters. 1. T. J. Awe *et al.*, “Experimental Demonstration of the Stabilizing Effect of Dielectric Coatings on Magnetically Accelerated Imploding Metallic Liners”, *Phys. Rev. Lett.*, 2016, **116** 065001. 2. J. D. Douglass *et al.*, “Capabilities of the Reconfigured COBRA Accelerator”, *Proceedings of the 15th IEEE Pulsed Power Conference*, June 13-17, 2005, pp. 273-276.

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