

Abstract Submitted
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Significant reduction of instability growth in magnetically driven liner implosions¹ KYLE PETERSON, TOM AWE, STEVE ROSENTHAL, RYAN MCBRIDE, DANIEL SINARS, EDMUND YU, GRAFTON ROBERTSON, MIKE CUNEO, MARK SAVAGE, PATRICK KNAPP, PAUL SCHMIT, STEVE SLUTZ, Sandia National Laboratories, BRENT BLUE, DIANA SCHROEN, General Atomics, KURT TOMLINSON, Sandia National Laboratories — Recent experiments on Sandia’s Z facility have shown a significant reduction of instability growth [1] in solid metallic rods driven with a ~ 20 MA, 100ns current pulse when thick, ~ 70 μm dielectric coatings were employed to mitigate nonlinear growth of the electrothermal instability [2]. In this paper, we present new electrothermal mitigation experiments with MagLIF [3] relevant aluminum (aspect ratio 9) and beryllium liners (aspect ratio 6). These experiments show a similar improvement in instability performance while imploding to much higher convergence ratios and undergoing much greater acceleration.

[1] K.J. Peterson, T. J. Awe, et al., PRL 112, 135002 (2014).

[2] K.J. Peterson, D. B. Sinars, et al., Phys. Plasmas 20, 056305 (2012).

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

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