Abstract Submitted
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Design of laser-driven shock ignition targets ANDREW J. SCHMITT, J.W. BATES, S.P. OBENSCHAIN, Plasma Physics Division, Naval Research Lab, D.E. FYFE, LCP & FD, Naval Research Lab, S.T. ZALESAK, Berkley Research Associates — Shock ignition target designs can produce high gains at modest driver energies.[1] High resolution 2D simulations that include nominal pellet perturbations have shown that gains well over 100 can be generated with targets driven by short-wavelength sub-megajoule KrF lasers.[2] A key feature of shock ignition is the separation of the compression and ignition parts of the target assembly. allowing independent control. We use a simple theoretical model of the assembled pellet to demonstrate how to optimize this separation, and show how it differs from optimized fast ignition and conventional central ignition designs. We also address the issue of high convergence ratios found in previous simulations of shock ignition targets,[2] which can lead to greater sensitivity of the target gain to low-mode pellet asymmetries. We investigate techniques to minimize both this sensitivity, and present 2D simulations that demonstrate the effectiveness of these strategies. Work supported by US DoE/NNSA.

[1]R. Betti, C.D. Zhou, K.S. Anderson, *et al.*, Phys. Rev. Lett. **98**, 155001
[2]A.J. Schmitt, J.W. Bates, S.P. Obenschain *et al.*, Fusion Sci.Tech. **56**, 377 (2009).

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