Abstract Submitted
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Novel MHD features in indirect- and direct-drive magnetized ICF implosions[1] G. B. ZIMMERMAN, D. D.-M. HO, J. R. ANGUS, J. D. MOODY, LLNL, R. M. KULSRUD, PPPL, G. E. KEMP, C. B. YEAMANS, B. BLUE, G. LOGAN, LLNL — Imposing a 30 50 T B-field makes the requirements for ignition less stringent.1,2 We present several novel MHD features in magnetized implosions. (1) During the implosion, the compressed B-field in the shell diffuses rapidly into the inner gas region. The increased field is then frozen in after shock heating. Consequently, magnetic diffusion enhances the central field in the assembled configuration. (2) The B-field suppresses electron heat conduction across the field. Therefore, the ablation of the inner material surface is more pronounced in the polar regions than at the waist, resulting in a pancake shape in the hotspot Ti and Te contours while the x-ray contours are sausage. (3) During the pulse power ramp-up of the B-field, the induced E field is below the threshold for breakdown in the gas region due to high neutral collisionality. (4) We also show yield enhancement by magnetization on an indirect- and a direct-drive NIF implosion. 1. L. J. Perkins et al., PoP, 24 062708 (2017). 2. D. Ho et al., APS-DPP (2016).

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