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Three Dimensional modeling of instability development in MagLIF loads on the Z Generator[1] C.A. JENNINGS, E.C. HARDING, M.R. GOMEZ, S.B. HANSEN, T.J. AWE, R.D. MCBRIDE, M.R. MARTIN, K.J. PETERSON, Sandia National Laboratories, J.P. CHITTENDEN, Imperial College, London — Liners imploded by a fast rising (<100ns) current to compress a magnetized, preheated fuel offer the potential to efficiently reach fusion conditions [S.A. Slutz *et al*. Phys. Plasmas **17**, 056303 (2010)]. Experiments with these Magnetized Liner Inertial Fusion (MagLIF) loads have demonstrated success [M.R. Gomez et al Phys. Rev. Lett. **113**, 155003(2014)]. Performance may be limited by poor laser coupling in preheating the fuel to be imploded [A.B. Sefkow et al. Phys. Plasmas **21**, 072711(2014)]. However time integrated imaging also shows structure in the final fuel assembly indicating potential disruption from instabilities which may also limit neutron yield. We simulate the implosion and stagnation of MagLIF targets using the 3D MHD code GORGON. Generating synthetic diagnostics for comparison with data we discuss how implosion instabilities comparable to those diagnosed with radiography affect fuel compression and confinement. By further comparison of calculation results with PCD traces, time integrated spectra and crystal imaging we discuss how fuel conditions vary in response to feedthrough of implosion instabilities, and how structures formed may affect diagnostic interpretation.

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