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3 Dimensional Magneto-hydrodynamic modeling of liner implosions on the Z Generator C.A. JENNINGS, D.B. SINARS, R.D. MCBRIDE, S.A. SLUTZ, M.E. CUNEO, M.C. HERRMANN, Sandia National Laboratories, J.P. CHITTENDEN, Imperial College, London — Metal 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)]. Maintaining the integrity of the imploding liner is critical to effective fuel compression. Experiments at Sandia National Laboratories diagnosing the development of Magneto-Rayleigh-Taylor (MRT) instabilities in Beryllium and Aluminum liners have provided a valuable dataset for validating simulations. We present 3 dimensional, MHD simulations of liner implosions, demonstrating good agreement with radiographic data. We then use our model to explore how the choice of a 2 or 3 dimensional geometry affects the growth of simulated MRT instabilities, and examine how the presence of an axial magnetic field can affect the development and growth of these instabilities. * Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

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