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First Scaled-Down Integrated MagLIF Experiments on OMEGA

J.R. DAVIES, D.H. BARNAK, R. BETTI, V.YU. GLEBOV, J.P. KNAUER, S.P. REGAN, Laboratory for Laser Energetics, U. of Rochester — Magnetized liner inertial fusion (MagLIF)[1] is an inertial confinement fusion (ICF) scheme that relies on compression of a cylindrical, magnetized, preheated plasma to achieve fusion conditions with a lower implosion velocity and a lower convergence ratio than conventional ICF. MagLIF research to date has been centered on the Z pulsed-power machine at Sandia National Laboratories—the only facility capable of carrying out such experiments. A laser-driven version of MagLIF has now been implemented on the OMEGA laser at the Laboratory for Laser Energetics, using targets roughly ten times smaller in linear dimensions than Z targets. Laser-driven MagLIF on OMEGA will test the scaling of MagLIF and provide a higher shot rate with better diagnostic access than Z. Preliminary results from integrated MagLIF experiments on OMEGA will be presented for the first time. The information, data, or work presented herein was funded in part by the Advanced Research Projects Agency-Energy (ARPA-E), U.S. Department of Energy, under Award Number DE-AR0000568, and the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

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

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