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Enhancing Neutron Yield in Cylindrical Implosions with an Applied Magnetic Field J.L. PEEBLES, J.R. DAVIES, D.H. BARNAK, R. BETTI, V.YU. GLEBOV, J.P. KNAUER, Laboratory for Laser Energetics, U. of Rochester — Laser-driven MagLIF (magnetized liner inertial fusion) is being developed on the OMEGA laser; multiple experimental campaigns have been conducted that have examined yield dependence on magnetic field, preheat energy, and fill pressure. Magnetic fields were generated in the region of interest using coils driven by current from the magneto-inertial fusion electrical discharge system (MIFEDS). A variety of coil designs were used and current was varied to generate different levels of magnetic field without impeding the path of the 40 implosion beams. We demonstrate a large enhancement of neutron yield by applying an initial field of 10 T along the axis of a cylindrical implosion. The 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.

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