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Magnetized Spherical Implosions on the OMEGA Laser P. CHANG, G. FIKSEL, M. HOHENBREGER, J.P. KNAUER, R. BETTI, Laboratory for Laser Energetics, U.of Rochester — In previous experiments, a line-average magnetic field between 30 to 40 MG was observed in cylindrical imploding targets.[1] The hot spot was magnetized and the heat conduction was suppressed according to Braginskii's formula. No clear evidence of neutron-yield enhancement was observed. Several conjectures have been proposed to explain the observations, such as the low hot-spot density that led to the ion mean free path to exceed the hot-spot size. In addition, the high shot-to-shot variations in the neutron-yield measurements make it difficult to accurately determine the correct neutron output. We have carried out a set of spherical implosions on OMEGA with embedded seed magnetic fields. The hot-spot density and collisionality are more than an order of magnitude higher than in cylindrical implosions. Furthermore, less shot-to-shot variations are expected. Results from the measurements of the hot-spot temperature and neutron yield of spherical implosions are reported to shed some light on the issue of magnetic insulation of magnetized inertial fusion targets. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement Nos. DE-FC52-08NA28302 and DE-FC02-04ER54789.

[1]O.V. Gotchev *et al.*, Phys. Rev. Lett. **103**, 215004 (2009)

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