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Electromagnetic Fields and Plasma Flow in Laser-Irradiated Hohlraums at OMEGA C.K. LI, F.H. SEGUIN, J.A. FRENJE, M.J. ROSENBERG, R.D. PETRASSO, MIT, P.A. AMENDT, R.P.J. TOWN, O.L. LANDEN, J.L. MILOVICH, J.R. RYGG, LLNL, R. BETTI, J. KNAUER, D.D. MEYERHOFER, J.M. SOURES, LLE, C.A. BACK, J.D. KILKENNY, A. NIKROO, GA — We report on the first proton radiography of laser-irradiated hohlraums and of indirectly-driven capsule implosions in inertial confinement fusion (ICF). These experiments resulted in observations of self-generated electric and magnetic fields. Peak values are $\sim 10^9$ V m^{-1} and $\sim 10^6$ gauss. Time-gated radiographs of monoenergetic protons with discrete energies (15.0 and 3.3 MeV) reveal dynamic pictures of field structures and plasma flow. Near the end of the 1-ns laser drive, a stagnating Au plasma ($\sim$ 10 mg cm^{-3}) forms at the center of the hohlraum. This is a consequence of supersonic, radially directed Au jets ($\sim$ 1000 μm ns^{-1}, $\sim$ Mach 4) formed as laser-driven plasma bubbles approach one another. Experimental details will be presented and the physics will be discussed. This work was performed at the LLE NLUF, and was supported in part by the FSC at U. of R., US DoE, LLNL, LLE, and GA.

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