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First Results from Laser-Driven MagLIF Experiments on OMEGA: Optimization of Illumination Uniformity P.-Y. CHANG, D.H. BARNAK, R. BETTI, J.R. DAVIES, G. FIKSEL, Fusion Science Center and Laboratory for Laser Energetics, U. of Rochester — The physics principles of magnetic liner inertial fusion (MagLIF) are investigated on the Omega Laser Facility using 40 beams for compression and 1 beam for preheating a small (300-μm-radius, 1-mm-long) cylindrical plastic shell. Here we report of the first implosion experiments to optimize the illumination uniformity. These initial experiments do not include laser preheat. The beams in ring 3 and ring 4 around the symmetric axis are used to implode a cylindrical target. Beams in different rings illuminate the target surface with different incident angles, leading to different energy-coupling efficiencies. The beams in ring 3 have a shallower angle of incident than ring 4. When implosion velocities are compared for targets driven by either ring 3 or ring 4, we find that ring 3 couples $\sim 40\%$ less kinetic energy than ring 4. One- and two-dimensional simulations using *LILAC* (1-D) and *FLASH* (2-D) are used to compare to the experimental results and to optimize the illumination uniformity. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944 and by DE-FG02-04ER54786 and DE-FC02-04ER54789 (Fusion Science Center).

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