

Abstract Submitted
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NIF-Relevant, Polar-Drive Illumination Tests on OMEGA F.J. MARSHALL, V.YU. GLEBOV, P.W. MCKENTY, P.B. RADHA, A. SHVYDKY, Laboratory for Laser Energetics, U. of Rochester — The OMEGA 60-beam Laser System has been used to test illumination schemes relevant to polar-drive experiments that are proposed for the National Ignition Facility (NIF). A set of 40 OMEGA beams are similarly arranged to the 48 quads of the NIF, providing the basis for the tests. This 40-beam set is re-aimed to more uniformly illuminate the target and drive a symmetric implosion. In these tests six different beam-pointing schemes were used to implode a series of D₂-filled spherical CH shells. The uniformity of the resulting compressed shell layers was diagnosed by x-ray radiography taken in two nearly orthogonal backlighter directions. Target performance was evaluated by a suite of neutron-yield diagnostics. Optimized implosions on OMEGA are achieved by the choice of beam pointing. Two-dimensional *DRACO* simulations show nearly the same size and shape of the compressed shell layer as that measured. These experiments increase confidence in our ability to optimize the choice and predict the outcome of polar-drive experiments on the NIF. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement Nos. DE-FC52-08NA28302, DE-FC02-04ER54789, and DE-FG02-05ER54839.

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