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Polar-Direct-Drive Experiments on OMEGA F.J. MARSHALL, R.S. CRAXTON, M.J. BONINO, R. EPSTEIN, V.YU. GLEBOV, D. JACOBS-PERKINS, J.P. KNAUER, J.A. MAROZAS, P.W. MCKENTY, S.G. NOYES, P.B. RADHA, W. SEKA, S. SKUPSKY, V.A. SMALYUK, Laboratory for Laser Energetics, U. of Rochester — Polar direct drive (PDD), a promising ignition path for the NIF while the beams are in the indirect-drive configuration, is currently being investigated on the OMEGA Laser System by using 40 beams in six rings that are repointed to more uniformly illuminate the target. The OMEGA experiments are being performed with standard "warm" targets (865-μm-diam, 20-μm-thick, 15-atm, D_2-filled CH shells), with and without the use of an equatorial "Saturn-like" toroidally shaped CH ring (nominal dimensions: 2200-μm diam, 300-μm thick). For Saturn targets, the plasma formed around the ring refracts light toward the target equator as the ring plasma expands. The nominal laser drive is a 1-ns flat pulse, $\sim$400 J per beam, employing 1-THz, 2-D SSD with polarization smoothing. Target implosion symmetry is diagnosed with framed x-ray backlighting using additional OMEGA beams and by time-integrated x-ray imaging of the stagnating core. The best results have been obtained with Saturn targets by varying the beam pointing and ring diameter, achieving $\sim$75% of the fusion yield from symmetrically illuminated targets with the same total energy (60 beams, 15.3 kJ). This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-92SF19460.

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