Abstract Submitted
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OMEGA Polar-Drive Target Designs P.B. RADHA, F.J. MARSHALL, R. EPSTEIN, V.N. GONCHAROV, T.J.B. COLLINS, J.A. MAROZAS, A. SHVYDKY, P.W. MCKENTY, R.L. MCCRORY, D.D. MEYERHOFER, T.C. SANGSTER, S. SKUPSKY, Laboratory for Laser Energetics, U. of Rochester, J.A. FRENJE, R.D. PETRASSO, PSFC, MIT — Polar-drive (PD) ignition designs for the National Ignition Facility (NIF) rely on obliquely repointing beams to the equator, different pulse shapes for different rings of the NIF configuration, specialized phase plates for the equatorial beams, and optionally, target shimming. PD OMEGA implosions and cone-in-shell geometry are used to validate models of laser deposition, heat conduction, and nonuniformity growth. Forty of the 60 OMEGA beams emulate the NIF configuration. Simulated shock timing is in good agreement with observations. Initial experiments on high-convergence triple-picket warm plastic (CH) shells indicate that good control over the $\lambda = 2$ mode is achieved with existing OMEGA phase plates by only repointing beams. Target designs that additionally incorporate several of the NIF relevant input variables are presented. The goal is to improve OMEGA PD target performance and validate models of laser-energy deposition and heat conduction. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-08NA28302.

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