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Evaluation of Ablator-Shell Contouring to Enhance the Performance of NIF Polar-Drive High-Yield Source Experiments P.W. MCKENTY, F.J. MARSHALL, D.R. HARDING, J.A. MAROZAS, P.B. RADHA, E.M. CAMPBELL, Laboratory for Laser Energetics, U. of Rochester, B.E. BLUE, C.B. YEAMANS, W.W. HSING, Lawrence Livermore National Laboratory, M. FARRELL, General Atomics — Current experiments at the National Ignition Facility (NIF) are investigating the use of room-temperature, large-diameter, thin-shelled plastic ablator targets to produce high neutron fluxes with total fusion output approaching 100 kJ. Recent results have produced ˜25 kJ of fusion output using ˜1.1-MJ incident 351-nm light arranged in a polar-drive (PD) beam-pointing configuration. Work done earlier on the OMEGA laser at the University of Rochester's Laboratory for Laser Energetics has demonstrated the efficacy of shell contouring to compensate for oblique laser pointing, which is implicit with polar drive. This work examines the benefit of producing contoured shells to compensate for the polar drive pointings on the NIF. The actual contours are derived from 2-D DRACO simulations modeling the appropriate targets, beam pointings, and phase-plate profiles, as well as accounting for the effects of cross-beam energy transfer between the beams. Initial simulation results are consistent with experimental data obtained on OMEGA resulting in roughly a factor-of-2 improvement in fusion output for identical PD targets with and without shell contouring. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE NA0003856. F.J. Marshall *et al.*, Phys. Plasmas **23**, 012711 (2016).

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