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Multidimensional Numerical Investigation of NIF Saturn PDD Designs with 3-D Laser Ray Tracing P.W. MCKENTY, R.S. CRAXTON, S. SKUPSKY, J.A. MAROZAS, T.J.B. COLLINS, A. SHVYDKY, D. KELLER, D.D. MEYERHOFER, R.L. MCCRORY, Laboratory for Laser Energetics, U. of Rochester — The Laboratory for Laser Energetics continues to validate the use of the NIF and the LMJ in the x-ray-drive configuration for direct-drive-ignition experiments. Progress in this area indicates that polar direct drive (PDD) is a viable and attractive option for achieving ignition on these megajoule-class laser systems. Recent work has focused on the implementation of the Saturn PDD illumination scheme, which, employing an equatorial CH ring as a plasma lens, attempts to minimize target perturbations due to the absence of the equatorial beams in the x-ray-drive laser configuration. This paper will examine the implementation of the standard "all-DT" direct-drive-ignition design with a fixed CH equatorial ring. Previous work[1] employed 2-D hybrid *SAGE–DRACO* calculations and indicated minimal performance degradation from 1-D results. We will report on recent 2-D hydrodynamic *DRACO* simulations, examining the effects of the Saturn PDD illumination as modeled with fully integrated 3-D ray-trace models. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement DE-FC52-92SF19460.

[1]R. S. Craxton *et al.*, Phys. Plasmas **12**, 056304 (2005).

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