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Drive-Symmetry Studies of NIF Exploding-Pusher Experiments

P.W. MCKENTY, R.S. CRAXTON, A. SHVYDKY, D.H. FROULA, D.T. MICHEL, J.A. MAROZAS, T.C. SANGSTER, D.D. MEYERHOFER, R.L. MCCRORY, Laboratory for Laser Energetics, U. of Rochester, J.D. KILKENNY, A. NIKROO, M.L. HOPPE, General Atomics, S. LEPAPE, A.J. MACKINNON, D.H. MUNRO, LLNL — Polar-drive (PD)[1] target implosions using DT fuel have been designed and fielded for neutron diagnostic development on the NIF. These implosions are modeled with three separate hydrodynamics codes: *LILAC*, to optimize the 1-D design; *SAGE*, to optimize the pointing uniformity; and *DRACO*, to predict the drive symmetry, neutron yield, and residual fuel motion from 2-D implosion simulations. Recent experimental results, evaluating the overall hydrodynamic assembly, have indicated a significant discrepancy with *DRACO* predictions of the in-flight shell evolution. Several scenarios will be presented in an attempt to understand the source of this discrepancy, therefore providing a clear mitigation strategy for future PD experiments on the NIF. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-08NA28302.

[1]A. M. Cok, R. S. Craxton, and P. W. McKenty, Phys. Plasmas **15**, 082705 (2008).

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