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Initial Polar-Direct-Drive Designs to Optimize Neutron Yields on the NIF R.S. CRAXTON, A.M. COK, P.W. MCKENTY, Laboratory for Laser Energetics, U. of Rochester — Polar-direct-drive (PDD) designs are proposed for producing symmetric implosions of thin-shell, DT-gas-filled targets leading to high fusion neutron yields for neutron diagnostic development. The designs can be used as soon as the National Ignition Facility (NIF) is operational as they work with indirect-drive phase plates. Two-dimensional simulations using the hydrodynamics code *SAGE* have shown that good low-mode uniformity can be obtained by means of appropriately chosen combinations of defocusing and pointing of the beams, including pointing offsets of individual beams within some of the NIF laser beam quads. The optimizations have been carried out for targets with total laser energies ranging from 350 kJ to 1.5 MJ, enabling the optimum defocusing and pointing parameters to be determined through interpolation for any given laser energy in this range. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement DE-FC52-92SF19460.

R.S. Craxton
Laboratory for Laser Energetics, U. of Rochester

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