Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

**A New Intermediate Far-Field Spot Design for Polar Direct Drive at the National Ignition Facility** D. CAO, J.A. MAROZAS, T.J.B. COLLINS, P.B. RADHA, P.W. MCKENTY, Laboratory for Laser Energetics, U. of Rochester — New far-field spot shapes were required and subsequently designed for the intermediate phase plates that will be fielded at the National Ignition Facility for polar-direct-drive laser-coupling experiments. Two-dimensional *DRACO* simulations using the new far-field spot design, coupled with appropriate ring energies and beam pointing angles, achieve a high neutron yield-over-clean (YOC) ratio with a clean hot-spot radius averaging 50 $\mu$m and a convergence ratio (CR) above 17 when performed with a 1300-$\mu$m plastic shell target driven by a 700-kJ double-picket pulse. This meets the original design objectives of maintaining a clean hot spot with a CR of 17. The presented far-field spot shapes are based on an ignition polar-direct-drive configuration[1] modeled with the iSNB nonlocal thermal transport model.[2] In addition, the use of Multi-FM[3] during the first two pickets does not hinder performance, but instead slightly improves the neutron yield. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

[1]T. J. B. Collins *et al.*, Bull. Am. Phys. Soc. **59**, 150 (2014).
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[3]J. A. Marozas, J. D. Zuegel, and T. J. B. Collins, Bull. Am. Phys. Soc. **52**, 145 (2007).

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Date submitted: 21 Jul 2015 Electronic form version 1.4