

Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

A 96/96-Beam Polar-Drive Configuration for Shock Ignition on the NIF R.S. CRAXTON, L. TUCKER, T. MO, K.S. ANDERSON, R. BETTI, Laboratory for Laser Energetics, U. of Rochester, L.J. PERKINS, LLNL, G.P. SCHURTZ, X. RIBEYRE, CELIA, A. CASNER, CEA — A polar-drive configuration for implementing shock ignition^{1,2} on the NIF is proposed in which 96 beams delivering a “compression” pulse are focused on the initial target and 96 beams delivering a short-pulse, “shock” pulse are focused at a later time on the compressed target surface. Since the NIF requires each quad to have a single pulse shape, 24 quads are used to deliver each pulse with all beams given horizontal repointings (half to the left and half to the right), in addition to the vertical repointings needed for polar drive, resulting in close to 48-quad symmetry for both compression and main pulses. The 2-D hydrodynamics code *SAGE* has been used to optimize the beam pointing and focusing parameters for a proposed initial experiment in which a surrogate plastic-shell target is irradiated with 96 beams to explore the uniformity that can be achieved with the compression pulse. The design uses the phase plates currently installed 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.

¹R. Betti *et al.*, Phys. Rev. Lett. **98**, 155001 (2007).

²L. J. Perkins *et al.*, Phys. Rev. Lett. **103**, 045004 (2009).

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

Date submitted: 08 Jul 2010

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