A 96/96-Beam Polar-Drive Configuration for Shock Ignition on the NIF

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SCHURTZ, X. RIBEYRE, CELIA, A. CASNER, CEA — A polar-drive configu-
ration for implementing shock ignition\textsuperscript{1,2} on the NIF is proposed in which 96 beams
delivering a “compression” pulse are focused on the initial target and 96 beams de-
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 \textit{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
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