

Abstract Submitted
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Saturn Designs for Small Proton-Backlighter Targets at the National Ignition Facility R.S. CRAXTON, E.M. GARCIA, L.T. BROWNING, Laboratory for Laser Energetics, U. of Rochester, S. LE PAPE, H.-S. PARK, LLNL, C.K. LI, PSFC, MIT, A.B. ZYLSTRA, LANL — Small exploding-pusher capsules with D^3He fill are ideal sources for high-resolution proton radiography for many high-energy-density experiments at the National Ignition Facility (NIF). However, the laser energy that can be delivered to these capsules is currently limited by the need to minimize laser blowby—unabsorbed laser light passing by the target into opposing beam ports with the potential of damaging laser optics. This issue arises because it is logistically convenient to leave the indirect-drive phase plates in place. Saturn targets,¹ in which the capsule is surrounded by a toroidal plastic ring, promise to remove the energy limitation by blocking blowby light, permitting a brighter proton source. A design has been developed using the 2-D hydrodynamics code *SAGE*² for a ring that can be used to block the laser blowby for target diameters from 440 to 866 μm and drive beams from any of the NIF quads. Full-power NIF beams can be safely used. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

¹R. S. Craxton and D.W. Jacobs-Perkins, Phys. Rev. Lett. **94**, 095002 (2005).

²R. S. Craxton and R.L. McCrory, J. Appl. Phys. **56**, 108 (1984).

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

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