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A Plastic-Ablator Shock-Ignition Design for the NIF K.S. ANDERSON, R. BETTI, R.S. CRAXTON, Laboratory for Laser Energetics, U. of Rochester, L.J. PERKINS, LLNL — Shock ignition[1] allows for the possibility of achieving high gain on a single laser system with less input laser energy than is required for standard hot-spot ignition. In this paper, a plastic-ablator shock-ignition design for the National Ignition Facility (NIF) is investigated. Results from one- and two-dimensional simulations will be presented that study the robustness of this target caused by various quantities including ice roughness, beam geometry, laser power balance, laser imprint, and hot-electron energy deposition. Of late, particular attention has been focused on two-plasmon decay (TPD), which can accelerate hot electrons from the corona into the shell, thereby raising the target adiabat. Experiments indicate that target designs that employ plastic ablators have a higher intensity threshold for TPD than either all-DT or wetted-foam designs. Such plastic-ablator shock-ignition designs can, therefore, avoid preheat issues during the main drive and even use the production of hot electrons during the spike pulse to improve the energy coupling to the target late in the implosion. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-08NA28302.

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

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