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Shock Ignition: A New Approach to High Gain Targets for the National Ignition Facility[1] L. JOHN PERKINS, KAI LAFORTUNE, LAURENT DIVOL, RICCARDO BETTI, LLNL — Shock-ignition is being studied as a future option for achieving high target gains on NIF, offering the potential for testing high yield (200MJ), reactor-relevant targets for inertial fusion energy and targets with appreciable gains at drive energies much less than 1MJ. In contrast to conventional hotspot ignition, the assembly and ignition phases are separated by imploding a high mass shell at low velocity. The assembled fuel is then separately ignited by a strong, spherical shock driven by a high intensity spike at the end of the pulse and timed to reach the center as the main fuel is stagnating. Because the implosion velocity is significantly less than that required for hotspot ignition, considerably more fuel mass can be assembled and burned for the same kinetic energy in the shell. Like fast ignition, shock ignition could achieve high gains at low drive energy, but has the advantages of requiring only a single laser with less demanding timing and spatial focusing requirements. We will discuss gain curves for shock-ignited NIF targets in both UV and green light and examine the feasibility of designs that employ indirect drive fuel assembly with direct drive shock ignition

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