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Shock Ignition of Thermonuclear Fuel with High Areal Density R. BETTI, K.S. ANDERSON, C. ZHOU, Fusion Science Center, Laboratory for Laser Energetics, U. of Rochester, J. PERKINS, M. TABAK, P. BEDROSSIAN, K.N. LAFORTUNE, LLNL — In the shock-ignition concept,[1] massive cryogenic shells are first imploded with a low-implosion velocity on a low adiabat using an adiabat-shaping laser-pulse. While the low-implosion velocity yields a small, dense, but cold, hot spot, the low adiabat of the fuel leads to large values of the areal density. The assembled fuel is then ignited from the central hot spot heated by the collision of a spherically convergent *ignitor* shock and the return shock. The ignitor shock can be driven by the same driver used in the assembly and the resulting thermonuclear gain can be significantly larger than in standard hot-spot ignition for equal driver energy. We present the results of one- and two-dimensional simulations used to assess the sensitivity of the thermonuclear gain to hot-electron preheating, laser imprinting, and inner-surface roughness. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement Nos. DE-FC02-04ER54789 and DE-FC52-92SF19460.

[1]C. Zhou and R. Betti, Bull. Am. Phys. Soc. **140**, 50 (2005).

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