Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Integrated Simulation of Fast-Ignition ICF A.A. SOLODOV, K.S. ANDERSON, R. BETTI, V. GOTCHEVA, J. MYATT, J.A. DELETTREZ, S. SKUPSKY, Fusion Science Center, Laboratory for Laser Energetics, U. of Rochester — To develop a thorough understanding of the complex physics of fast ignition, the numerical modeling of integrated fast-ignition experiments using different types of codes is required. Implosions of DT-filled cryogenic shells with a gold cone inserted to provide a plasma-free pass for an igniting pettawatt pulse need to be simulated using hydrodynamic codes. The transport of relativistic electrons from the inner cone surface to the dense fuel core must be simulated using particle and/or hybrid-PIC codes. To perform an integrated fast-ignition simulation, we have coupled the 2-D cylindrically symmetric hydrocode *DRACO* and the hybrid-PIC code *LSP. LSP* is used to simulate the heating of the dense fuel by hot electrons and to generate additional source terms in the temperature equation used in *DRACO*. *DRACO* is a 2-D hydrocode that includes all of the necessary physics required to simulate the ignition and burn of an imploded capsule. The plasma profiles in *LSP* are periodically updated according to *DRACO* results. In this talk the results of an integrated fast-ignition simulation will be presented using high-density and high-ρR fuel assembly recently suggested for fast ignition. This work was supported by the U.S. Department of Energy under Cooperative Agreements DE-FC52-92SF19460 and DE-FC02-04ER54789.

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Date submitted: 19 Jul 2007 Electronic form version 1.4