Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Transport of Energetic Electrons Produced from Two-Plasmon Decay in the 1-D Hydrodynamic Code *LILAC* J.A. DELETTREZ, V.N. GONCHAROV, P.B. RADHA, C. STOECKL, A.V. MAXIMOV, T.C. SANGSTER, Laboratory for Laser Energetics, U. of Rochester, J.A. FRENJE, PSFC, MIT, D. SHVARTS, NRCN — The effect of two-plasmon-decay electrons on the implosion of cryogenic targets has been the subject of intense scrutiny at the Laboratory for Laser Energetics. Preheat of the fuel caused by these electrons can reduce the maximum areal density attainable at stagnation. The electrons are created at the quarter-critical surface when a threshold depending on laser intensity and local thermal electron scale length is attained. The fraction of laser energy absorbed is a parameter that depends exponentially on the threshold condition and saturates at laser intensities of 10^{15} W/cm^2. The source distribution is Maxwellian with a temperature scaling inferred from the measurement of hard x rays. The electrons are transported with a multigroup diffusion model in which the free-streaming electrons are treated by a modified P_2 model. Simulation results from warm plastic and cryogenic implosions are compared with the following experimental diagnostics: the hard-x-ray temporal and time-integrated emission, the fast-ion spectrum, and the neutron-averaged areal density at stagnation. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement DE-FC52-92SF19460.

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Date submitted: 18 Jul 2007 Electronic form version 1.4