Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Effects of Laser–Plasma Instabilities on Hydro Evolution in Direct-Drive Inertial Confinement Fusion J. LI, S.X. HU, C. REN, Laboratory for Laser Energetics, U. of Rochester — Laser–plasma instabilities and hydro evolution of coronal plasmas in an OMEGA EP long-scale-length experiment with planar targets are studied with particle-in-cell (PIC) and hydrodynamics simulations. Plasma and laser conditions are first obtained in a *DRACO* simulation with only inverse-bremsstrahlung absorption. Using these conditions, an *OSIRIS* simulation is performed to study laser absorption and hot-electron generation caused by laser–plasma instabilities near the quarter-critical region. The obtained PIC information has subsequently been coupled to another *DRACO* simulation to examine how the laser–plasma instabilities affect the overall hydrodynamics. The results show that the more-realistic laser absorption can increase the electron temperature but only slightly changes the density scale length in the corona. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944, DE-FC02-04ER54789 (Fusion Science Center), and DE-SC0012316.

J. Li
Laboratory for Laser Energetics, U. of Rochester

Date submitted: 21 Jul 2015 Electronic form version 1.4