

Abstract Submitted
for the DPP13 Meeting of
The American Physical Society

Laser-plasma interactions and hot electron generation in shock ignition¹ RUI YAN, CHUANG REN, JUN LI, University of Rochester — We present particle-in-cell (PIC) simulations for laser-plasma interactions in the recent 40+20-beam spherical shock ignition experiments on the Omega laser facility. Two-dimensional PIC simulations including electron-ion collisions and lasting more than 10 ps show a bursting pattern in both plasma waves and hot electron fluxes, which are attributed to the interplay between stimulated Raman scattering (SRS) and two-plasmon decay (TPD) instabilities. SRS is the main source for hot electrons but TPD can produce >100 keV ones. The observed hot electron temperatures compare favorably to those measured in the experiments.

¹This work was supported by the U.S. Department of Energy under Grant No. DE-FC02-04ER54789 and Cooperate Agreement No. DE-FC52-08NA28302, by NSF under Grant No. PHY-0903797, and by NSFC under Grant No. 11129503. The research used resources of NERSC

Rui Yan
University of Rochester

Date submitted: 12 Jul 2013

Electronic form version 1.4