

Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

Particle-in-Cell Modeling of Laser–Plasma Interactions in Three Dimensions H. WEN, A.V. MAXIMOV, R. YAN, J. LI, C. REN, J.F. MYATT, Laboratory for Laser Energetics, U. of Rochester — In the direct-drive method of inertial confinement fusion, the laser–plasma interactions (LPI’s) near quarter-critical density are very important for laser absorption and fast-electron generation.¹ Three-dimensional simulations with the particle-in-cell (PIC) code *OSIRIS* have allowed us to study different parametric instabilities including two-plasmon decay, stimulated Raman scattering, and stimulated Brillouin scattering. These instabilities may co-exist and interact in the region near quarter-critical density. The spectra of forward-going and backward-going scattered light and fast electrons in two-dimensional and three-dimensional PIC simulations have been studied. Characteristics of LPI driven by a plane-wave laser and by an incoherent laser beam are compared. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

¹J. F. Myatt *et al.*, Phys. Plasmas **20**, 052705 (2013).

A.V. Maximov
Laboratory for Laser Energetics, U. of Rochester

Date submitted: 10 Jul 2014

Electronic form version 1.4