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Hot Electron Generation from Laser-Cone Target Interactions in Fast Ignition[1] JUN LI, JONATHAN DAVIES, CHUANG REN, ANDREY SOLODOV, WOLFGANG THEOBALD, University of Rochester, JOHN TONGE, WARREN MORI, UCLA — We present recent 2D PIC simulations for the cone-in-shell integrated fast ignition experiments on the Omega laser facility [W. Theobald et al., Phys. Plasmas, May 2011]. The initial plasma density profile in the PIC simulations is taken from hydrodynamic simulations, including the pre-plasma inside the gold cone generated by the prepulse. The main pulse of Omega-EP has a peak intensity of 10^{19}W/cm^2, duration of 10 ps and total energy of 1 kJ. Hot electron generation from laser-pre-plasma interactions and electron transport in under-100nc plasmas are studied. An artificial drag is applied to hot electrons above 30kev in the >100 nc region to facilitate the establishment of an return current and allow the simulations to run close to 10ps. The simulation results show a large average divergence angle of 57 degree and high absorption rate of ∼50% for the hot electrons generated.

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