Abstract Submitted
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Particle-in-cell simulations of hot electron generation with high intensity IR laser in shock ignition regime[1] JUN LI, SHU ZHANG, Center for Energy Research, Univ of California - San Diego, ELI BORWICK, CHUANG REN, University of Rochester, FARHAT BEG, Center for Energy Research, Univ of California - San Diego, MINGSHENG WEI, General Atomics — Experiments [1] conducted on OMEGA EP laser facility with high-intensity, multi-kJ IR laser (510^{15}W/cm^2, 2.5kJ, 100 ps) have shown strongly directional hot electrons with moderate temperature (90 keV), which is favorable for electron assisted shock ignition. We performed 2-dimensional particle-in-cell (PIC) simulations using the OSIRIS code to study the hot electron generation by laser plasma instabilities(LPI) in the experiments. We aimed at investigating the hot electron energy fraction, temperature and angular distribution and the corresponding LPIs contribution. The simulation results show SRS is the dominant LPI. The hot electrons generated by SRS are directional with a half angle of 23 degree, and the temperature of the hot electrons is 81 keV, which agrees very well with the experiments. More details of the simulation results will be presented in the meeting. The research used resources of the National Energy Research Scientific Computing Center. [1] M.S. Wei et al., Bulletin of the APS, 61 (2016): BAPS.2016.DPP.JO8.12

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Jun Li
Univ of California - San Diego

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