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Measurements of Hot Electrons Produced by Two-Plasmon Decay in Near Direct-Drive-Ignition Plasma Conditions D.T. MICHEL, B. YAAKOBI, S.X. HU, R.S. CRAXTON, J.F. MYATT, W. SEKA, D.H. EDGELL, V.N. GONCHAROV, D.H. FROULA, Laboratory for Laser Energetics, U. of Rochester — Measurements of hot-electron generation by two-plasmon-decay instability have been made in plasmas relevant to direct-drive-ignition plasma conditions. Four 351-nm, 2-ns-long beams on the OMEGA EP Laser provided the high energy (10 kJ) necessary to produce overlap laser intensities from 1 to 7 $\times$ 10^{14} W/cm^2 in large 1-mm-diam laser spots. These laser conditions produced coronal electron temperatures >2 keV with density scale lengths at $n_{cr}/4$ greater than 400 μm in CH plasmas. The total number of hot electrons increases exponentially over nearly four orders of magnitude and the hot-electron temperature increases from 30 keV to 110 keV. In this intensity range, changing the ablator material from CH to Al reduced the number of hot electrons by an order of magnitude over the entire range. Experiments to measure the angular dependence of the electrons and the coupling of these electrons to direct-drive implosions will be presented. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-08NA28302.

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