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Modeling the Modification of Escaping Energetic Electron Spectrum by Target Charging with LSP[1] A. LINK, R.R. FREEMAN, D.W. SCHUMACHER, L.D. VAN WOERKOM, The Ohio State University, M.S. WEI, F.N. BEG, University of California, San Diego, M.H. KEY, A.J. MACKINNON, P.K. PATEL, Lawrence Livermore National Laboratory, R.B. STEPHENS, General Atomics
— Ultraintense lasers interacting with solid density plasma transfer their energy to electrons at the laser-plasma interface (LPI). The resulting electron spectrum is typically acquired by direct measurement of the electrons which escape the plasma. A 1D capacitor model and 2D LSP simulations were used to determine the relationship between the externally measured spectrum and the in situ spectrum. A time and space varying electron source was generated consistent with electron temperature scaling laws and experimentally observed laser to electron energy coupling as the input for the models. Results will be presented for the modification of the escaped electron spectrum's energy, angular, and temporal properties for a collisional plasma with pulse durations of 70 fs and 700 fs.

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