Abstract Submitted
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Hybrid-PIC Simulations of Shock Formation in Laser-Irradiated Plasmas[1] ADAM TABLEMAN, M. TZOUFRAS, University of California, Los Angeles, F. FIUZA, Lawrence Livermore National Laboratory, W.B. MORI, University of California, Los Angeles — Shock generation by hot electron beams (with intensities ranging from 10^{14} W/cm^2 to 10^{16} W/cm^2) impinging on high density targets (10^{24} /cm^3) is investigated using a 1D hybrid-PIC version of OSIRIS. The hybrid-PIC code uses a fluid model to follow electron transport at high densities. In these simulations an electron cathode is used as a proxy for hot electrons generated in under-dense regions by laser-plasma interactions. This approach enables control over the composition and energy distribution of the hot electrons entering the high density region, which, in turn, allows the direct study of hot electron energy deposition and the corresponding shock structure. Understanding how to harness the hot electrons to enhance shock formation will aid in designing Shock Ignition ICF targets with improved yield.

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Adam Tableman
University of California, Los Angeles

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