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Electron transport simulations for non-uniformly laser-irradiated targets MICHAIL TZOUFRAS, UCLA, TONY BELL, University of Oxford, FRANK TSUNG, WARREN MORI, UCLA — To investigate electron transport in the context of the interaction of intense short-pulse lasers with plasmas, the density of which can range from less than critical to more than solid, we have developed the parallel 2D3P Vlasov-Fokker-Planck code OSHUN. OSHUN employs the expansion of the distribution function to spherical harmonics and allows retention of an arbitrary number of terms in the expansion to make it possible to treat distribution functions that substantially deviate from isotropy. A rigorous Fokker-Planck collision operator has been implemented, which recovers transport coefficients with excellent accuracy. One-dimensional Vlasov-Fokker-Planck modeling has indicated that non-local transport of laser-heated electrons can be beneficial to shock ignition by depositing the energy at higher density and by inhibiting losses to the plasma corona. Here we extend this study by using OSHUN to explore the multi-dimensional nature of non-local transport for simple geometries. This study aims to assess the effects of non-uniform irradiation on Shock Ignition targets and the possibility that non-local transport can sufficiently smooth an asymmetric irradiation profile to drive a spherically convergent shock.

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