Abstract Submitted
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Non-equilibrium electron distributions driven by inverse Bremsstrahlung heating and ionization: Langdon effect revisited[1] HAI LE, MARK SHERLOCK, HOWARD SCOTT, Lawrence Livermore Natl Lab, AVRAM MILDER, DUSTIN FROULA, University of Rochester Laboratory for Laser Energetics — We utilize a computational model that self-consistently combines physics of kinetic electrons and atomic processes to study time evolution of the electron distribution driven by inverse Bremsstrahlung (IB) heating and ionization. The model consists of a kinetic Vlasov- Boltzmann-Fokker-Planck equation for free electrons and a non-Maxwellian collisional-radiative model for atomic state populations. The influence of atomic kinetics on inverse Bremsstrahlung (IB) heating is examined in detail. We show that atomic kinetics affects non-linear IB absorption rates by further modifying the electron distribution in addition to laser heating. Comparisons with experimental data from a laser-produced plasma experiment will be shown.

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