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Collisional Relaxation of Super Thermal Electrons Generated by Relativistic Laser Pulses in Thin Solid Targets[1] ANDREAS KEMP, EMMANUEL D'HUMIERES, YASUHIKO SENTOKU, University of Nevada, Reno, HUI CHEN, HYUN CHUNG, STEPHANIE HANSEN, RONNIE SHEPHERD, SCOTT WILKS, LLNL — The interaction of intense fs laser pulses with matter generates energetic electrons that penetrate deeply into solid targets and deposit energy on sub-ps time scales. Experiments at LLNL's Comet laser facility have used a ps time-resolved K-alpha diagnostic for hot electrons, allowing us to study the highly transient energy transfer between hot and thermal electrons. For hot populations with temperatures of $\sim$500 keV generated by 0.5 ps laser pulses interacting with 12.5 μm thick Titanium slabs, relaxation times were found to be of the order of 20 ps [1]. Motivated by the discrepancy between the laser- and the K-alpha time scales, we study the roles of various effects that determine the generation of K-alpha radiation: collisional coupling between hot and thermal electrons, plasma expansion, and ionization. [1] H.Chen et al, this conference

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