Observation of rapid energy transfer from relativistic, short pulse laser generated electrons to solid material\(^1\) R. SHEPHERD, H. CHEN, Y. PING, LLNL, G. DYER, Univ. of Texas, Austin, S. WILKS, LLNL, H.-K. CHUNG, Univ. of California, Berkeley, K. FOURNIER, A. NILES, A. KEMP, S. HANSEN, K. WIDMANN, LLNL, A. FAENOV, T. PIKOZ, VNIIFTRI, Moscow Region, Russia, P. BEIERSDORFER, LLNL — With the advent of high intensity ultra-short pulse lasers, relativistic electron generation in laser-solid interactions is common in laboratory plasmas. The coupling of these electrons to the surrounding matter plays a critical role in short pulse laser applications such as harmonic generation \([1]\), short pulse x-ray production \([2]\), and fast ignition \([3]\). We present the experimental observation of the energy transfer and damping rate of relativistic electrons in solid density matter. In general, this data provides a unique window into the time scale for collisional relaxation between relativistic particles and cold classical particles in a dense medium.


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