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Study of Acceleration, Transport and Dephasing of Hot Electrons in Solid Density Plasmas Irradiated with Ultra Intense Laser Pulses B.I. CHO, Texas Center for High Intensity Laser Science, The University of Texas at Austin, J. OSTERHOLZ, Institute of Laser and Plasma physics, Heinrich-Heine-University, Düsseldorf, Germany, A.C. BERNSTEIN, G.M. DYER, T. DITMIRE, Texas Center for High Intensity Laser Science, The University of Texas at Austin — We have characterized the transport of hot electrons in solid targets by coherent transition radiation (CTR). CTR was observed from the rear side of aluminum foils irradiated with the THOR laser (800 nm, 40 fs, 600 mJ, $2 \times 10^{19} \ \mathrm{W/cm^2}$) at the University of Texas at Austin. In the experiment, two distinct beams of hot electrons are emitted simultaneously from the target rear side. This observation shows that two different mechanisms, namely resonance absorption and $j \times B$ heating, accelerate the electrons at the target front side. These two distinct beams propagate through aluminum foils with different spatial and temporal characteristics and electron temperatures. The interpretation is confirmed by calculations of the electron acceleration and transport inside the target.

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