Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Characterization of two fast electron populations from the interaction of ultra intense laser and solid target using coherent transition radiation B.I. CHO, Texas Center for High Intensity Laser Science, University of Texas at Austin, J. OSTERHOLZ, Institute for Laser and Plasmaphysics, Heinrich-Heine-University, Düsseldorf, Germany, A.C. BERNSTEIN, G.M. DYER, Texas Center for High Intensity Laser Science, University of Texas at Austin, A. KARMAKAR, A. PUHKOV, Institut für Theoretische Physik I, Heinrich-Heine-Universität, Düsseldorf, Germany, T. DITMIRE, Texas Center for High Intensity Laser Science, University of Texas at Austin — The transport of energetic electrons generated by the interaction of ultra intense laser and aluminum slab target has been studied by measuring coherent transition radiation (CTR). Two CTR emissions are observed simultaneously, indicating that the fast electrons propagate in two distinct beams, one in the direction of the laser and the other in the direction of the target normal. Analysis of experimental data implies that these two electron beams are produced by different mechanisms, i.e. jxB heating and resonance absorption, and reveals various properties of each electron population such as bunching frequencies, electron temperature, and relative ratio between the number of electrons in the beam. These results are consistent with 3D particle-in-cell simulations.

Byoung-ick Cho
University of Texas at Austin

Date submitted: 20 Jul 2008 Electronic form version 1.4