Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

Hot electron conversion physics in extremely high intensity laser matter interactions BRIAN CHRISMAN, YASUHIKO SENTOKU, University of Nevada, Reno, ANDREAS KEMP, Lawrence Livermore National Laboratory — The Fast Ignition experiment relies on core heating due to high energy conversion from an ignition laser to hot electrons, particularly hot electrons in the few MeV energy range. In a previous investigation [Chrisman et. al., PoP2008], high populations of MeV electrons in super intense regimes ($> 10^{20}$W/cm^2) were observed and conversion efficiency was found to scale with intensity. Further 2D PIC simulations investigate the observed absorption scaling with intensity. In particular, large static magnetic fields (100MG or more) are found in the interaction region. Under these large magnetic fields, the electron's cyclotron frequency could be higher than the laser frequency, causing a novel regime of high absorption due to an effective de-phasing of locally oscillating electrons in the laser fields.

Brian Chrisman
University of Nevada, Reno

Date submitted: 10 Jul 2008 Electronic form version 1.4