Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Creation and characterization of warm dense plasmas with lasers for transport study of fast electrons[1] T. YABUUCHI, H. SAWADA, M.S. WEI, F.N. BEG, UCSD, R.B. STEPHENS, GA, S.P. REGAN, K. ANDERSON, R. BETTI, U. Rochester, M.H. KEY, A.J. MACKINNON, M.S. MCLEAN, P.K. PATEL, S.C. WILKS, LLNL — In fast ignition (FI), fast electrons propagate through hot dense plasmas before arriving the compressed fuel to ignite it. Study of the fast electron transport in plasmas is important for FI under various conditions of temperature and density, which determine the plasma resistivity. To develop a platform for the transport study, a large volume warm dense plasma was created and its conditions were investigated using Al 1s-2p line absorption spectroscopy. A long pulse laser ($\sim 10^{15}$ W/cm^2) was used to shock heat an Al doped CH foam (0.2 g/cm^3) target. The target was backlit with a quasi-continuous Sm x rays around 1.5 keV and the absorption spectra were measured with x-ray streak camera. The measured spectra were fitted with an atomic physics code to infer the plasma density and temperature. A comparison of the results with 2D radiation hydrodynamics code DRACO will be presented.

[1]Work supported by US DOE under Contracts DE-FG52-09NA29033 (NLUF), DE-FC02-04ER54789 (FSC), and DE-FG02-05ER54834 (ACE).

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Date submitted: 16 Jul 2010 Electronic form version 1.4