Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

Non-collective X-ray Thomson scattering from warm dense beryllium[1] ARTHUR PAK, TAMMY MA, ANDREA KRITCHER, TILO DOEPPNER, SIEGFRIED GLENZER, Lawrence Livermore National Laboratory, LAWRENCE LIVERMORE NATIONAL LABORATORY TEAM — Intense lasers can be used to shock compress solid materials creating warm dense matter (WDM), with free electron densities on the order of 10^{24} cm^{-3} and at temperatures of several eV. X-ray Thomson scattering (XRTS) can be used to diagnose the temperature, density, and charge state of such WDM. The temporal profile of the laser pulse can be shaped to quasi adiabaticly compress a solid, enabling higher shocked densities to be reached at relatively lower temperatures. In this work the effect of temporally shaping the laser pulse, to quasi adiabatically shock compress beryllium will be investigated utilizing XRTS. Experiments were preformed at the OMEGA-EP laser at the Laboratory for Laser Energetics (LLE). Initial results of the density, temperature and charge state from non-collective XRTS will be presented for the laser driven shock compression of beryllium. The effect on the inferred physical properties of the shock beryllium due to shaping the temporal profile of the laser pulse will be examined.

[1]This work was preformed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

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Date submitted: 20 Jul 2011 Electronic form version 1.4