Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Characterization of initial state of radiative shock experiments on Omega CAROLYN KURANZ, University of Michigan, R.P. DRAKE, M.J. GROSSKOPF, C.M. KRAULAND, B. TORRALVA, E. RUTTER, D.C. MARION — Radiative shocks, which are in a regime where most of the incoming energy flux is converted into radiation, can be created in a laboratory using a high-powered laser. We have performed experiments on the Omega Laser that irradiate a 20 μm thick Be disk with $\sim$4 kJ of laser energy. This shocks and accelerates the disk into a Xe or Ar gas at 1.1 atm. These radiative shocks can reach up to 130 km/s. Diagnostics for this experiment have included x-ray radiography, x-ray Thomson scattering, optical pyrometry, and UV Thomson scattering. A 3D, MHD code with a radiation solver is being developed at the Center for Radiative Shock Hydrodynamics (CRASH) that will model this experiment. The laser deposition is modeled using the Hyades code. The results from the Hyades simulation are used to initiate the CRASH code. It is important for this modeling effort that the initial pressure deposited by the laser and the initial state of the Be plasma be well characterized. A recent experiment used VISAR and optical pyrometry for early time diagnosis of this initial state of the Be. These results will be presented. Supported by the US DOE NNSA under the PSAAP by grant DE-FC52-08NA28616.

Carolyn Kuranz
University of Michigan

Date submitted: 26 Jul 2010 Electronic form version 1.4