Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

Spherical Strong-Shock Inferences on OMEGA R. NORA, M. LAFON, R. BETTI, Laboratory for Laser Energetics and Fusion Science Center, U. of Rochester, W. THEOBALD, W. SEKA, J.A. DELETTREZ, Laboratory for Laser Energetics, U. of Rochester — A milestone for shock ignition[1] is to experimentally verify the generation of several hundred Mbar shocks at shock-ignition–relevant laser intensities. This paper presents the first experimental evidence of strong shocks generated in a spherical geometry. Using the temporal delay between the launch of the strong shock at the outer surface of the spherical target and the time when the shock converges at the center, the shock properties can be inferred using radiation–hydrodynamic simulations. Peak ablation pressures exceeding 200 Mbar are inferred at laser intensities of $\sim 3\times10^{15}$ W/cm^2. The shock strength is significantly enhanced by the coupling of copius amounts of hot electrons, up to 2 kJ with $T_{\rm hot} \sim 50$ to 100 keV. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944 and the Office of Fusion Energy Sciences Number DE-FG02-04ER54786.

[1]R. Betti *et al.*, Phys. Rev. Lett. **98** 155001 (2007).

R. Nora
Laboratory for Laser Energetics and Fusion Science Center, U. of Rochester

Date submitted: 08 Jul 2014 Electronic form version 1.4