Abstract Submitted
for the DPP08 Meeting of
The American Physical Society

**Modeling Observables to Diagnose Areal Density in OMEGA Implosions** P.B. RADHA, V.N. GONCHAROV, T.C. SANGSTER, R. BETTI, J.A. DELETTREZ, S.X. HU, D.D. MEYERHOFER, S. SKUPSKY, V.A. SMALYUK, C. STOECKL, Laboratory for Laser Energetics, U. of Rochester, J.A. FRENJE, C.K. LI, R.D. PETRASSO, PSFC, MIT, D. SHVARTS, NCRN — Areal density, $\rho R$, depends on laser absorption, shock timing, shell preheat, and equation-of-state of shell material. Secondary proton spectra are used to diagnose $\rho R$ during neutron production. The observed neutron-production rates are typically truncated compared to simulations. This results in a preferential sampling of areal density, leading to differences in inferred values of $\rho R$ between simulation and experiment. Simulations of low-adiabat, direct-drive implosions on the OMEGA laser are post-processed to obtain spectra after accounting for this effect. Comparisons are made with inferred $\rho R$ values from implosions irradiated with laser pulse shapes at different intensities and differing adiabat profiles in the shell. Possible reasons for deviations are discussed. This work was supported by the U.S. D.O.E Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-08NA28302.

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Date submitted: 15 Jul 2008 Electronic form version 1.4