

Abstract Submitted  
for the APR08 Meeting of  
The American Physical Society

**Multiview core imaging of OMEGA direct-drive implosions<sup>1</sup>** T. NAGAYAMA, R. MANCINI, University of Nevada, Reno, R. TOMMASINI, J. KOCH, Lawrence Livermore National Laboratory, J. DELETTREZ, S. REGAN, V. SMALYUK, Laboratory for Laser Energetics — We discuss the observation and data analysis of OMEGA direct-drive implosion cores based on data recorded with three identical multi-monochromatic x-ray imagers. These instruments observed the implosion core along three quasi-orthogonal lines-of-sight, and recorded gated images of the core. The targets were plastic shells filled with deuterium gas and a tracer amount of argon for diagnostic purposes. Core imaging was based on argon Ly $\alpha$ , He $\beta$  and Ly $\beta$  line emission. The data analysis rely on detailed spectral models that take into account non-equilibrium atomic kinetics, Stark broadened line shapes, and radiation transport calculations and a search and reconstruction technique based on a novel application of Pareto genetic algorithms to plasma spectroscopy. The spectroscopic analysis yields the spatial profiles of temperature and density in the core at the collapse of the implosion.

<sup>1</sup>This work is supported by DOE/NLUF Grant DE-FG52-07NA28062, LLNL

R. Mancini  
University of Nevada, Reno

Date submitted: 13 Jan 2008

Electronic form version 1.4