

Abstract Submitted
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Simulation and Analysis of Backlit Images of Cryogenic Implosions on OMEGA R. EPSTEIN, V.A. SMALYUK, F.J. MARSHALL, J.A. DELETTREZ, V.N. GONCHAROV, P.W. MCKENTY, D.D. MEYERHOFER, P.B. RADHA, S.P. REGAN, T.C. SANGSTER, W. THEOBALD, Laboratory for Laser Energetics, U. of Rochester — Radiographs of cryogenic implosions on OMEGA have been obtained using short-pulse backlighters driven by the OMEGA EP laser. Computer simulations of an implosion and its x-ray images are used to assess the implosion performance. The radiograph simulation takes into account spatial and temporal resolution, camera spectral response, and the backlighter spectrum. Radial mass distributions are obtained from the radiographs using Abel inversion and the known temperature and density dependence of the free-free opacity of the hydrogen shell. This extends similar analyses of warm-shell radiographs based on the simpler temperature and density dependence of the CH bound-free opacity. The first measurements (which were short of peak compression) are consistent with simulations. More-recent measurements closer to peak compression will be presented. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-08NA28302.

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