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Simulation and Analysis of Time-Resolved Narrowband Radiographs of Cryogenic Implosions on OMEGA R. EPSTEIN, C. STOECKL, V.N. GONCHAROV, P.W. MCKENTY, S.P. REGAN, Laboratory for Laser Energetics, U. of Rochester — Spherical polymer shells containing cryogenic DT ice layers have been imploded on the OMEGA Laser System and radiographed with Al backlighter targets ($h\nu = 1.865$ keV) driven with 20-ps IR pulses from the OMEGA EP Laser System. The shadows of the converging DT ice shells have been obtained using a time-resolved (40-ps) narrowband crystal imaging system and improved backlight intensity. Measured x-ray radiographs are compared with their 1-D *LILAC* and *Spect3D* simulations. Moments of the imploded radial mass distributions are inferred from radiograph analysis based on Abel inversion. The sensitivity of the radiograph shadows to trace contamination by fuel–shell mix tests the hydrodynamic stability of the implosions indicated by their shell adiabats and in-flight aspect ratios. This work was supported by the U.S. Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

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