**X-Ray Phase-Contrast Imaging of Imploding Strong Shock Waves**

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The application of phase-contrast imaging to diagnose laser-induced shock waves is a powerful technique to determine the shock-front position in both the high- and low-density region of the target. It is an ideal tool to detect multiple shocks, shock-front asymmetries, and to study hydrodynamic instabilities in the context of inertial confinement fusion and high-energy density physics. The platform was first developed in planar geometry on OMEGA EP by applying a short pulse backlighter and a cylindrical CH target. High-quality radiographs of the shock front with phase-contrast enhancement were obtained for single-shock and double-shock experiments. A follow-up experiment applied the platform to spherical implosions. The 60 OMEGA UV laser beams compressed a 1-mm-diam CH sphere with a 1-ns square pulse; the IR short-pulse beam from OMEGA EP (100 ps, ~5  1016 W/cm2) was focused onto a Cu wire with a of 10-m diameter producing x rays in the 8- and 9-keV range, which were detected by either an image plate or a time-gated x-ray framing camera. Radiographs with phase-contrast enhancement of the imploding shock wave were captured at different probing times by shifting the timing between drive and backlighter in subsequent shots. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0003856.