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X-ray imaging diagnostics for axially-located experiments using the Z / ZR dynamic hohlraum T. TIERNEY, G. IDZOREK, R. WATT, J. WORKMAN, R. KANZLEITER, G. MAGELSSEN, D. PETERSON, R. PETERSON, H. TIERNEY, Los Alamos National Laboratory — Radiation transport is among a class of inertial confinement fusion problems being examined using the Z dynamic hohlraum (DH) and the future ZR DH. We describe experiments wherein a target is mounted above the DH to permit radiographic access. X-ray diodes and bolometers characterize the ∼100 kJ quasi- Planckian radiation ($T_{rad} \sim$ 150-220 eV) emitted on-axis from the DH. High-resolution, soft x-ray imaging of hohlraum wall ablation and motion is sometimes complemented by a blast wave (BW) calorimeter. As an example, we describe an experimental configuration fielded at Z that imaged BWs emerging from copper wall hohlraums using the 6.15 keV monochromatic imaging system [Sinars et al., 2004]. This experiment diagnosed energy loss through gaps or holes similar to diagnostic and/or laser entrance holes in hohlraums. Future experiments require higher energy backlighters (9-25 keV) to study, e.g., how high-albedo hohlraum material ablates and fills holes. We also discuss possible x-ray diagnostics for experiments that use the ZR DH as a radiation source.

Thomas Tierney

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