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Hydrodynamic instabilities at an oblique interface: Experiments and Simulations[1] E. DOUGLAS-MANN, C. FIEDLER KAWAGUCHI, Bryn Mawr College, University of Michigan, M. A. TRANTHAM, University of Michigan, G. MALAMUD, Nuclear Research Center, University of Michigan, W.C. WAN, S. R. KLEIN, C. C. KURANZ, University of Michigan — Hydrodynamic instabilities are important phenomena that occur in high-energy-density systems, such as astrophysical systems and inertial confinement fusion experiments, where pressure, density, and velocity gradients are present. Using a ˜30 ns laser pulse from the Omega EP laser system, a steady shock wave is driven into a target. A Spherical Crystal Imager provides high-resolution x-ray radiographs to study the evolution of complex hydrodynamic structures. This experiment has a light-to-heavy interface at an oblique angle with a precision-machined perturbation. The incident shock wave deposits shear and vorticity at the interface causing the perturbation to grow via Richtmyer-Meshkov and Kelvin-Helmholtz processes. We present results from analysis of radiographic data and hydrodynamics simulations showing the evolution of the shock and unstable structure.

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