HYDRODYNAMIC INSTABILITY EXPERIMENTS ON THE OMEGA EP LASER

C.C. Kuranz (ckuranz@umich.edu), C.A. Di Stefano, W.C. Wan, R.P. Drake,
University of Michigan

G. Malamud, A. Shimony, D. Shvarts
Nuclear Research Center, Israel

Hydrodynamic instabilities are an important phenomenon that has consequences in many high-energy-density systems, including astrophysical systems and inertial confinement fusion experiments. Using the Omega EP laser we have created a sustained shock platform to drive a steady shock wave using a ~30 ns laser pulse. Coupled with a Spherical Crystal Imager we have created high resolution radiographs to diagnose the evolution of complex hydrodynamic structures. Depending on the target geometry we drive the Kelvin-Helmholtz instability [1,2], the Richtmyer-Meshkov process [3] or the merger of vortical structures. I will present an overview of the experimental hydrodynamics program at the University of Michigan and recent results showing mode-coupling in RM experiments, suppression of KH growth due to compressible effects and prelminary results from vortex merger experiments.

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