Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

**Hydrodynamic Instabilities at an Oblique Interface in the light to heavy configuration** CAROLYN KURANZ, University of Michigan, G. MALAMUD, Nuclear Research Center, Negev, S.R. KLEIN, M TRANTHAM, R.P. DRAKE, D. SHVARTS, W.C. WAN, University of Michigan, A.M. RASMUS, University of Michigan, Los Alamos National Laboratory, K. FLIPPO, J KLINE, C.A. DI STEFANO, Los Alamos National Laboratory, A. SHIMONY, Nuclear Research Center, Negev — Hydrodynamic instabilities are important phenomena that occur in many high-energy-density systems, including astrophysical systems and inertial confinement fusion experiments, where pressure, density, and velocity gradients are present. 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 x-ray radiographs to diagnose the evolution of complex hydrodynamic structures. This experiment involves a hydrodynamically unstable interface at an oblique angle so that the Richtmyer-Meshkov and Kelvin-Helmholtz processes are present. A precision-machined perturbation will grow due to shear and vorticity deposited at the interface. Preliminary data from recent experiments exploring the different growth between single and dual mode initial perturbations and simulations results will be shown. This work is supported by the U.S. DOE, through NNSA grants_DE-NA0002956 (SSAA) and DE-NA0002719 (NLUF), by the LLE under DE-NA0001944, and by the LLNL under subcontract B614207 to DE-AC52-07NA27344 and by LANL under subcontract BA154750/SC343761.

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Date submitted: 15 Jul 2016 Electronic form version 1.4