

Abstract Submitted  
for the DFD05 Meeting of  
The American Physical Society

**Reduced Reshock Growth in a Convergent/Divergent System**

STEVEN BATHA, J.R. FINCKE, J.M. TACCETTI, N.D. DELAMATER, R.M. HUECKSTAEDT, N.E. LANIER, R.R. MAGELSEN, Los Alamos National Laboratory, K.W. PARKER, S.D. ROTHMAN, C.J. HORSFIELD, AWE — The interaction of a second shock with an already shocked, Richtmyer-Meshkov unstable interface causes the growth of the instability to increase in a planar geometry. Experiments on the Omega laser, however, have measured reduced growth rates when the second shock is diverging in cylindrical geometry. Illuminating the outside of a 1-mm-diameter cylinder with 18 kJ of laser light creates a strong shock. The shock passes through an embedded Al marker band. The outside surface of the Al is either smooth or has longitudinal perturbations (azimuthally symmetric) of wavelengths 2.5, 6, or 9  $\mu\text{m}$ . The shock reflects off a hard inner cylinder that controls the timing, planarity, and strength of the rebounding shock (the reshock). Measurement of the mixing zone width after reshock show regrowth independent of the initial surface, contrary to single-shock results. Two possible explanations are considered. Freeze-out of the growth can occur by careful tailoring of the reshock timing. The loss of turbulent energy to the background strain field is also examined. This work was performed under the auspices of the United States Department of Energy under contract No. W-7405-ENG-36.

Steven Batha  
LANL

Date submitted: 15 Jul 2005

Electronic form version 1.4