Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Laboratory experiments of supersonic flows through clumpy environments M.R. DOUGLAS, B.H. WILDE, LANL, B.E. BLUE, J.F. HANSEN, GA, J.M. FOSTER, P.A. ROSEN, R.J.R. WILLIAMS, AWE, P. HARTIGAN, Rice University, A. FRANK, University of Rochester — Supersonic flows through heterogeneous environments are common in astrophysics as evidenced by high resolution Hubble Space Telescope images of a variety of astrophysical objects, including supernova remnants and stellar jets. In many instances, the imaged flows exhibit a complex morphology consisting of multiple clumps, bow shocks, and filamentary structure extending over a range of spatial scales. To gain a better understanding of the dynamics occurring in such multi-clump flows, scaled laboratory experiments are being carried out at the Omega Laser Facility. In these experiments, a laser pulse is used to heat a halfraum to indirectly drive a near planar shock through a target that typically consists of many small dense spheres embedded in lower density foam. The evolution of the target is then imaged using x-ray radiography. Targets have been designed to span the parameter space of clump number and clump size distribution, as well as investigate the quantitative differences in shock propagation through a clumpy target with that of a uniform target of the same average density. An overview of the experiments and comparison with simulations will be presented.

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Date submitted: 13 Jul 2010 Electronic form version 1.4