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Supersonic flow through clumpy environments: simulations and experiments 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 — Over the past decade, high resolution images of a number of Herbig-Haro objects using the Hubble Space Telescope have revealed complex, chaotic, evolving morphologies of bow shocks, knots, and filamentary structure. Such morphologies are likely a consequence of internal and terminal working surfaces moving into a medium that is highly inhomogeneous. To investigate how inhomogeneities play a role in shaping the morphology of such objects, laboratory experiments have been proposed to examine bow shock evolution as it propagates through a clumpy environment and subsequent development of small scale structure after shock passage. The experiments will be carried out at the Omega Laser Facility utilizing an existing platform which launches a near planar shock into an RF ($C_{15}H_{12}O_4$) cylinder. Two types of downstream targets will be embedded in the RF cylinder: a clumpy target consisting of a 1mm-diameter RF foam sphere containing $\sim$ 47 randomly distributed 127-μm diameter ruby microspheres, and a 1 mm-diameter sphere target of "uniformly" mixed RF foam with sapphire nanopowder. Calculations pertaining to the experimental configuration will be presented and compared to experimental data, if available.

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