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Experimental and numerical study of 3D Richtmyer-Meshkov instability at an Air-SF_6 interface. CHRIS LONG, VITALIY KRIVETS, JEFF JACOBS, University of Arizona, JEFF GREENOUGH, Lawrence Livermore National Laboratory — Experiments have been conducted in a vertical shock tube with a shock wave Mach number of 1.2. The two gases (air and SF_6 with $A = 0.66$) are filled separately from the top and bottom ends of the shock tube, respectively. The gases then flow out of the tube through holes in the test section walls forming a slightly diffuse flat interface. Oscillating the flow inside of the tube generates a single-mode three- dimensional standing wave perturbation on the interface. PLIF is used to visualize the flow. The Eulerian Adaptive Mesh Refinement (AMR) code Raptor, which uses a multifluid Godunov method to solve the governing equations, has been used to simulate the entire shock tube length including driver, driven and test sections. This provides a natural mechanism for producing reflected shocks and rarefactions. Comparison between experiment and numerical simulation is presented.

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