

Abstract Submitted  
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**Investigation of Late-Time Nonlinear Effects in Richtmyer-Meshkov Instability Using Compressible and Incompressible Simulations<sup>1</sup>**

MARCO LATINI, California Institute of Technology, OLEG SCHILLING, Lawrence Livermore National Laboratory — The WENO method is used to investigate the late-time dynamics of the single-mode Richtmyer-Meshkov instability using a model of the Mach 1.3 air(acetone)/SF<sub>6</sub> Jacobs-Krivets shock tube experiment. The effects of compressibility are explored by varying the Mach number in the WENO simulations and comparing the results to an incompressible vorticity-streamfunction (VS) simulation. The WENO density fields capture the small-scale disordered structure resembling that in the experimental PLIF images, while the VS densities do not. The amplitudes agree with the experimental data points up to reshock. The bubble and spike amplitudes from the two methods agree at early times. At later times, the WENO bubble amplitude is smaller than the VS amplitude and vice versa for the spike: this difference is attributed to pressure perturbations that are absent in the incompressible simulations. The amplitudes from the WENO and VS simulations are also compared with the predictions of nonlinear instability growth models.

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