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Experimental investigation of the effect of multimodal inclined interface on Richtmyer-Meshkov instability evolution MOHAMMAD MOHAGHAR, JOHN CARTER, BENJAMIN MUSCI, DEVESH RANJAN, Georgia Institute of Technology — In the Georgia Tech Shock Tube and Advanced Mixing Laboratory, the evolution of Richtmyer-Meshkov instability (RMI) which arises from two initial conditions, namely, a predominantly single mode, inclined interface between two gases, and a perturbed, multimodal, inclined interface are studied. The gas combination of nitrogen-acetone as light gas and carbon dioxide as heavy gas (Atwood number of 0.23) with an inclination angle of 80 degrees ($\eta/\lambda = 0.097$) was chosen in this set of experiments. The interface is visualized using planar laser diagnostics (simultaneous PLIF/PIV measurements), once impulsively accelerated by a Mach ~ 1.55 . The ensemble-averaged turbulence measurements of the density, velocity and density-velocity cross-statistics are used to investigate the effects of added secondary modes to the interface on the correlation between turbulence and mixing quantities.

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