

Abstract Submitted  
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**Experimental Study of the Richtmyer-Meshkov Instability on a Coupled Multimode and Inclined Interface Perturbation**<sup>1</sup> DAVID REILLY, SKYLAR CREEL, JACOB MCFARLAND, Texas A&M University, JATIN MITRUKA, Indian Institute of Technology Kanpur, CHRISTOPHER McDONALD, DEVESH RANJAN, Texas A&M University — The inclined shock tube in the Texas A&M Shock Tube and Advanced Mixing Laboratory was used to study the effect of small amplitude, long wavelength multimode perturbations imposed on the inclined interface initial condition of the Richtmyer-Meshkov instability. The inclined interface is essentially a long wavelength, extremely large amplitude perturbation. Images of the shocked flow-field were captured with the angle of the shock tube with respect to the horizontal at  $60^\circ$  ( $\eta/\lambda = \sqrt{3}/6$ ). The modal content of the initial conditions was determined by taking the Fourier decomposition of the interface. This work is a proof of concept for creating a coupled multimode and inclined interface. Work that is currently underway will investigate the effect of these initial conditions on intermediate and late-time mixing as well as the transition to turbulence before reshock by using qualitative comparisons of Mie scattering images, mixing width measurements, and circulation from Particle Image Velocimetry (PIV).

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