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Time-resolved PIV measurements on the Richtmyer-Meshkov Instability in a Dual-Driver Vertical Shock Tube. KEVIN FERGUSON, JEFFREY JACOBS, University of Arizona — Experiments on the Richtmyer-Meshkov Instability (RMI) using Particle Image Velocimetry (PIV) in a dual driver vertical shock tube are presented. Two shock waves generated at opposite ends of a vertical shock tube travel in opposing directions, impacting a perturbed interface formed between Air and Sulfur Hexaflouride (SF_6). Perturbations are formed using a pair of voice coil driven pistons that generate Faraday waves on the interface. The order in which the two shocks arrive at the interface as well as the temporal separation in their arrival are controllable. Shock strengths are chosen to result in halted interface motion after passage of the second shock wave, permitting a long observational window in which the instability can develop. Four vertically stacked cameras are used to view the instability growth. This permits a wide range of shock-to-reshock timings to be studied with both the incident and reshocked instability growth regimes visible. Information on the growth of the RMI, including measurements of the growth exponent, θ, anisotropy, and turbulent kinetic energy decay are presented.

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