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PIV Analysis of the Richtmyer-Meshkov Instability for a He/SF₆ Interface CHRIS WEBER, NICHOLAS HAEHN, JASON OAKLEY, MARK ANDERSON, RICCARDO BONAZZA, University of Wisconsin-Madison — Experiments are presented for the Richtmyer-Meshkov instability of a nearly single mode interface of helium over sulfur hexafluoride. The initial condition is an interface created by oscillating a pair of rectangular pistons to form a nearly 2D sinusoidal standing wave in a vertical shock tube. The incident shock wave ($M = 1.2$) deposits a large amount of vorticity on this high Atwood number ($A = (\rho_2 - \rho_1)/(\rho_2 + \rho_1) = 0.95$) interface resulting in amplitude growth and asymmetrical spike/bubble development. Particle imaging velocimetry (PIV) is accomplished by seeding the top gas with Al₂O₃ particles and acquiring a pair of planar images that are analyzed to obtain the velocity field. Experimentally determined amplitude growth rate, circulation, and energy spectra are compared with models and numerical simulations.

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