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**Richtmyer-Meshkov mixing: experiments on the effect of initial conditions** STUART CRAIG, RICARDO MEJIA-ALVAREZ, BRANDON WILSON, KATHY PRESTRIDGE, Los Alamos National Laboratory — The development of the Richtmyer-Meshkov instability (RMI) is sensitive to a number of parameters, including incident Mach number and the initial perturbation to the interface. A set of experiments at Los Alamos National Laboratory are underway using the Vertical Shock Tube (VST) with the aim of exploring the relationships between these two parameters. These experiments have been carried out with a single initial condition at three Mach numbers and at a single Mach number with three different initial conditions. This talk will focus specifically on the results on the effects of the different initial conditions on the early-time development of the RMI mixing at an air-SF<sub>6</sub> interface. Simultaneous measurements of the velocity (PIV) and density (PLIF) fields are used to explore the relationships between three types of initial conditions and the resulting early-time mixing at a single Mach number. Phase averaging of the flow field is employed in order to reduce intermittency and improve the statistical convergence of a number of turbulence statistics such as Favre-averaged Reynolds stresses, mixing rate, and enstrophy.

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