

Abstract Submitted
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Turbulence measurements in reshocked Richtmyer-Meshkov unstable curtains using stereo-PIV/PLIF B.J. BALAKUMAR, GREGORY ORLICZ, SRIDHAR BALASUBRAMANIAN, PETER HUMPHREYS, CHRIS TOMKINS, KATHY PRESTRIDGE, Los Alamos National Laboratory — Estimates of two important turbulence quantities, the density self-correlation parameter (b) and the generalized Reynolds stress tensor (R_{12}), have been experimentally obtained in Richtmyer-Meshkov unstable fluid layers after reshock using simultaneous PIV/PLIF diagnostics (Balakumar et. al., Phys. Fluids, 2008). We observe a double-peak structure in “ b ” at 4 times after reshock, with peaks coinciding with the edges of the turbulent structure. Whole-field histograms of the Reynolds stress follow symmetric distributions with equal contributions of positive and negative values, while spatial contour maps clearly show a streamwise asymmetry with large fluctuations preferentially occurring upstream of the centerline. We will also present preliminary stereo-PIV/PLIF measurements in the shock tube to explore the 3D behavior of the flow field before and after reshock. Statistical convergence estimates will be provided to illustrate the difficulties of obtaining true ensemble estimates in RM flows.

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