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Simulations of Material Mixing in a Laser-Driven Reshock Experiment BRIAN HAINES, FERNANDO GRINSTEIN, LESLIE WELSER-SHERRILL, JAMES FINCKE, Los Alamos National Laboratory — We perform simulations of a laser-driven reshock experiment in order to better understand material mixing driven by the Richtmeyer-Meshkov instability. Due to high sensitivities to target imperfections in the experimental data, direct comparisons of simulation and x-ray data are insufficient for validation. Therefore, we supplement these comparisons by performing spectral analysis. We also compare statistics of the data to results from DNS and theory of homogeneous isotropic turbulence. Our results show that in shock-driven transitional flows, some turbulent features, such as self-similarity and isotropy, only fully develop once others have decayed significantly. Finally, we evaluate a presumed PDF model for mixing at subgrid scales.

Fernando Grinstein
Los Alamos National Laboratory

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