Richtmyer–Meshkov mixing: Modeling and simulation of experiments NICHOLAS DENISSEN, SUSAN KURIEN, Los Alamos National Laboratory — Hydrodynamic instabilities that result from the interaction of a shock-wave with a perturbed interface are known as Richtmyer–Meshkov instabilities (RMI). RMI is important in a wide variety of applications including Inertial Confinement Fusion. Recent experiments at Los Alamos National Laboratory (LANL) have focused on careful measurement of initial conditions and repeated statistical measurements of the instability growth and transition to turbulence. This talk will discuss ongoing efforts to model these experiments using weakly non-linear theoretical models, one dimensional Reynolds–Averaged Navier–Stokes models and three-dimensional Implicit Large Eddy Simulations (ILES). Analysis of the experimental data supplies the initial condition for the theoretical model and the ILES calculations. The effect of different initial conditions and mesh resolutions will be examined in light of interest in international collaboration on an RMI test problem. Comparison of the different models to experimental data will be presented. All calculations are performed in the arbitrary Lagrangian/Eulerian (ALE) code FLAG, developed at LANL. The ALE framework allows us to assess the effects of numerical diffusion on RMI computations by varying the remap strategy.

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