Poster 2 Cabot & Cook

Methodology and diagnostics in large Rayleigh-Taylor instability simulations

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High-resolution three-dimensional numerical simulations of planar Rayleigh-Taylor instability using up to 1152×1152×1152 grid points were performed on ASCI supercomputers at LLNL with the *Miranda* code. Miscible fluids with a 3:1 density ratio were used, whose initial interface is seeded with multimode perturbations. Details of the high-order numerical methods and the runtime diagnostics employed in these simulations are presented. An artificial viscosity and diffusivity were employed with negligible molecular contribution to allow the widest range of spatial scales possible. Visualizations and statistics from the simulations are shown, which are providing new insight into the mixing process in Rayleigh-Taylor instability.

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