Abstract Submitted
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Mixing and Turbulence Statistics in an Inclined Interface Richtmyer-Meshkov Instability[1] AKSHAY SUBRAMANIAM, SANJIVA LELE, Stanford Univ — The interaction of a Mach 1.55 shockwave with a nominally inclined interface is considered. Unlike the classical Richtmyer-Meshkov problem, the interface evolution is non-linear from early time and large highly correlated vortical structures are observed even after reshock. The simulations target the experiment of McFarland et. al. (2014). Simulations are performed using the Miranda code (Cook et. al., 2005) that uses high-order spectral-like numerics (Lele, 1992). Results from multiple grid resolutions up to 4 billion grid points establish grid convergence. Comparisons to the experiments show that the simulations adequately capture the physics of the problem. Analysis of the data from the simulations based on variable density turbulence equations in the Favre averaged form will be presented. Statistics of unclosed terms in the variable density RANS equations will also be presented and compared to standard closure models. It is observed that the Reynolds Stresses have a non-monotonic return to isotropy after reshock and that compressibility effects are important long after reshock. The effect of numerics are also quantified and presented.

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Akshay Subramaniam
Stanford Univ

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