# A Weighted Essentially Nonoscillatory Implementation of a Reynolds-Averaged Navier-Stokes Model for Richtmyer-Meshkov Instability-Induced Mixing

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**Abstract**

A high-order, multicomponent, weighted essentially nonoscillatory (WENO) implementation of a two-equation K-$\epsilon$ Reynolds-averaged Navier-Stokes model is used to simulate reshocked Richtmyer-Meshkov turbulent mixing at various Atwood and Mach numbers. The predicted mixing layer evolution is compared with several experimental data sets, as well as with analytical late-time self-similar solution of the transport equations. The sensitivity of the turbulence model solutions and transport equation budgets to variations in the initial conditions, variations in the key model coefficients, and order of flux reconstruction (third- and fifth-order) is explored. In addition, the convergence properties of the solutions is examined as the grid is refined in space.

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