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Multicomponent Reynolds-Averaged Navier–Stokes Simulations of Reshocked Richtmyer–Meshkov Instability and Turbulent Mixing: Reshock Time and Atwood Number Effects[1] TIBERIUS MORAN-LOPEZ, National Nuclear Security Administration, OLEG SCHILLING, Lawrence Livermore National Laboratory — Reshocked Richtmyer–Meshkov turbulent mixing of gases with various Atwood numbers and shock Mach numbers is simulated using a third-order weighted essentially nonoscillatory implementation of a K–ϵ multicomponent Reynolds-averaged Navier–Stokes model. First, mixing layer widths from simulations with Mach number $Ma = 1.20$, Atwood number $At = 0.67$ (air/SF_6), and different times of reshock are shown to be in very good agreement with the experimental data of Leinov et al. [J. Fluid Mech. **626**, 449 (2009)]. Second, widths from simulations with $Ma = 1.50$ and $At = \pm 0.21$, ± 0.67 and ± 0.87 (corresponding to air/CO_2, air/SF_6 and H_2/air) are compared to the large-eddy simulation data of Lombardini et al. [J. Fluid Mech. **670**, 439 (2011)] and discussed. Budgets of the turbulent transport equations are considered to elucidate the mechanisms contributing to turbulent mixing in reshocked Richtmyer–Meshkov instability. Convergence of the mixing layer widths, mean fields, and turbulent fields under grid refinement is also assessed.

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