Shock-resolved Navier-Stokes Simulation of the Richtmyer-Meshkov Instability RICHARD KRAMER, University of Illinois at Urbana-Champaign, DALE PULLIN, California Institute of Technology — Results are presented from a numerical investigation of the Richtmyer-Meshkov instability, using a first-order perturbation of the two-dimensional Navier-Stokes equations about a one-dimensional unsteady shock-resolved base flow. This approach captures perturbations on the shocks and their influence on the interface growth to accurately examine the start-up and early linear growth phases of the instability. Weak, intermediate and strong incident shocks cases are examined for a single fluid and an Air/SF_6 mixture, across a range of contact-zone perturbation wave numbers, and compared to analytic models for transient and asymptotic growth of the instability.

Richard Kramer
University of Illinois at Urbana-Champaign