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K-L turbulence model for the self-similar growth of the Rayleigh-Taylor and Richtmyer-Meshkov instabilities GUY DIMONTE, Los Alamos National Laboratory, ROBERT TIPTON, Lawrence Livermore National Laboratory — A turbulence model is developed to describe the self-similar growth of the Rayleigh-Taylor (RT) and Richtmyer-Meshkov (RM) instabilities. The model describes the dominant eddies in the mixing zone with evolutionary equations for their characteristic dimension L and energy per unit mass $K \equiv V^2/2$. The equations are based on the successful buoyancy-drag models for RT and RM flows, but constructed only with local parameters so that it can be applied to multi-dimensional flows with multiple shells of materials. The model has several unknown coefficients that are determined by comparing analytical and numerical solutions with RT and RM experiments.

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