Large-Eddy Simulations of Rayleigh-Taylor Instability in a Convergent Geometry\textsuperscript{1} BRANDON MORGAN, Lawrence Livermore National Laboratory, WOLFGANG BLACK, JACOB MCFARLAND, Department of Mechanical and Aerospace Engineering, University of Missouri — Large-eddy simulation (LES) is performed of a Rayleigh-Taylor mixing layer in a convergent geometry. The harmonic content of a multimode initial condition is varied, and effects of the initial condition on linear and non-linear growth rates are analyzed. Simulations are demonstrated to cover several bubble merger generations, and distance from self-similarity is quantified using the metric proposed by Morgan \textit{et al.} [Morgan, B.E., Olson, B.J., White, J.E., and McFarland, J.A., “Self-similarity of a Rayleigh-Taylor mixing layer at low Atwood number with a multimode initial perturbation,” \textit{J. Turbul.}, 2017]. Finally, turbulence profiles are compared against LES from a planar mixing layer and against one-dimensional Reynolds-averaged Navier-Stokes simulation.

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