Progress Towards Specifying Initial Conditions for Variable Density Turbulence Models BERTRAND ROLLIN, MALCOLM J. ANDREWS, Los Alamos National Laboratory — It is now well accepted in the turbulence community that variable density turbulence can be affected at late time by the initial perturbations. This important property has opened an opportunity for prediction and "design" of late-time turbulence of particular interest for many engineering purposes. Specifically, our study aims at defining the rules for properly accounting for the initial conditions in variable density turbulence models. We report our latest advancement in this direction. A nonlinear ODE model is used to compute the evolution of bubbles/spikes in Rayleigh-Taylor/Richtmyer-Meshkov mixing after carefully formulated initial perturbations. We investigate the relations between the composition of the initial conditions, key characteristics, and quantities of the bubble/spikes evolution. Properties and possible scalings that dictate the late-time behavior of the flow will be discussed.

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