Wavelet-Based Simulations of Single-Mode Rayleigh-Taylor Instability[1] SCOTT J. RECKINGER, DANIEL LIVESCU, OLEG V. VASILYEV — The single-mode compressible Rayleigh-Taylor instability is investigated using numerical simulations on an adaptive mesh, performed with the Adaptive Wavelet Collocation Method (AWCM). Due to the physics-based adaptivity and direct error control of the method, AWCM is ideal for resolving the wide range of scales present in the development of the instability. The problem is initialized consistent to the solutions to the linear stability theory. Of interest are the departure time from the linear growth, the onset of strong non-linear interactions, and the late-time behavior of the fluid structures. The late time buble/spike velocities are computed and compared to those obtained in the incompressible case.

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