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The "second-wind" phenomenon in single-wavelength Rayleigh-Taylor PRAVEEN RAMAPRABHU, KARTHIK MUTHURAMAN, UNC Charlotte, GUY DIMONTE, Los Alamos National Laboratory, PAUL WOODWARD, University of Minnesota, CHRIS FRYER, Los Alamos National Laboratory, YUAN-NAN YOUNG, NJIT, SUNG-IK SOHN, Kangnung National University — The late-time, single-mode Rayleigh-Taylor (RT) flow asymptotes to a Froude number approaching 1, higher than predicted by potential flow models. The reacceleration to a higher terminal velocity [1] appears to be triggered by the appearance of Kelvin-Helmholtz (KH) vortices at small Atwood numbers. At large density differences, the KH instability is stabilized, with the result that the terminal velocity is in agreement with Layzer-type models. We compare results from simulations using multiple codes, with recently published experiments of [2], and with a simple model. The appearance of KH is also complicated by the presence of additional effects such as viscosity and surface tension. The results are of relevance to bubble- competition models of fully turbulent RT. [1] Ramaprabhu, P., et al. 2006, Physical Review E. 74, 066308. [2] Wilkinson, J.P. & Jacobs, J.W. 2007, Phys. Fluids 19, 124102.

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