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Numerical Study of Temporal Density Variation Effects on Nonlinear Perturbation Evolution in Classical Rayleigh–Taylor Instability D. LI, V.N. GONCHAROV, Laboratory for Laser Energetics, U. of Rochester — A two-dimensional compressible Eulerian code was developed to investigate the effect of temporal density variation on the nonlinear bubble evolution of Rayleigh–Taylor instability.[1] In this study, a rarefaction wave is generated to accelerate the interface between heavy- and light-density fluids. When the rarefaction wave propagates through the foil, both light and heavy fluid densities decrease in time, and the perturbation evolution at the interface is affected by such decompression. We calculate the perturbation amplitude and interface curvature at the position of bubble and spike and compare the results with the prediction of Layzer-type model.[1] This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-92SF19460.

[1]V. N. Goncharov and D. Li, Phys. Rev. E **71**, 046306 (2005).

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