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Numerical simulations of the Single-mode, Doubly-shocked Richtmyer-Meshkov (RM) Instability VARAD KARKHANIS, PRAVEEN RAMAPRABHU, University of North Carolina at Charlotte — We describe results from numerical simulations of a single-mode, doubly-shocked material interface between gases of different densities. The time interval between the shocks was varied to observe interfacial growth due to Richtmyer-Meshkov Instability initialized with different amplitudes. The simulations were performed with low and high density ratio fluids (A = 0.15 and A = -0.99), where the latter case is relevant to ejecta formation. We compare the growth rates from our simulations after the first and second shocks with linear, nonlinear [1] and ejecta models [2,3]. In the heavy to light configuration (A = -0.99), we observe two consecutive phase inversions following each shock. We have also investigated the effect of variations in the initial interface perturbation to include sine, chevron, sawtooth, and square-wave form, and find our results to be of relevance to machined target experiments.

[1] Guy Dimonte and P. Ramaprabhu, Phys. Fluids 22, 014104 (2010).
[2] W. T. Buttler et al., J. Fluid Mech., 703 (2012).
[3] Guy Dimonte et al., J. Appl. Phys. **113**, 024905 (2013).

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