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Wave interference in Richtmyer-Meshkov flows¹ ROBERT F. STELLINGWERF, Stellingwerf Consulting, ARUN PANDIAN, SNEZHANA ABARZHI, Carnegie Mellon University — While it is a conventional wisdom that the initial conditions determine the linear and nonlinear dynamics of the Richtmyer-Meshkov (RM) flows, the research in this area is focused primarily on the effects of the wavelength and amplitude of the interface perturbation. The information is hitherto largely ignored about the influences on the evolution of Richtmyer-Meshkov instability (RMI) of the relative phase of a multi-wave perturbation and the interference of the perturbation waves. In this work we report a detailed study of confluence of effects of the relative phase as well as amplitudes of the interfacial waves on the structure of bubbles and spikes that is formed at the RM unstable interface after the shock passage. We show that the phase and the wave interference are important factors of the dynamics, because they influence the RM flow qualitatively and quantitatively, including the symmetry of the interface, the morphology of spikes and bubbles, and the RMI growth.

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