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Freeze-out of the linear Richtmyer-Meshkov instability JUAN GUSTAVO WOUCHUK, FRANCISCO COBOS CAMPOS, E.T.S.I.Industriales-INEI-Cytema-UCLM-Ciudad Real-Spain, TAKAYOSHI SANO, Institute of Laser Engineering-Osaka University-Suita, Osaka 565-0871, Japan — When a planar shock refracts a corrugated contact surface separating two fluids with different thermodynamic properties, a transmitted and reflected wavefronts run inside each fluid. Due to the surface ripple, pressure, density and velocity perturbations are generated in both materials. When the fronts separate away, a steady normal velocity develops at the contact surface. For specific choices of the pre-shock parameters, the final value of the normal velocity at the surface ripple may become zero. This effect, known as "freeze-out" has been proposed by G.Fraley [Phys. Fluids **29**, 376 (1986)] and has been later on studied by K. Mikaelian [Phys. Fluids **6**, 356 (1994)]. We present here an analytical to study freeze-out in both situations of shock and rarefaction reflected at the contact surface. Freeze-out contours are derived as well as the detailed temporal evolution of the pressure and velocity perturbations in linear theory. Weak/strong incident shock limits are discussed.

[1] J. G. Wouchuk and K. Nishihara, Phys. Rev. E **70**, 026305 (2004).
[2] J. G. Wouchuk and T. Sano, Phys. Rev. E **91**, 023005 (2015).

Juan Gustavo Wouchuk
E.T.S.I.Industriales-INEI-Cytema-UCLM-Ciudad Real-Spain

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