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Numerical simulations of cylindrical Richtmyer-Meshkov instability at a solid-gas interface A. LÓPEZ ORTEGA, M. LOMBARDINI, P.T. BARTON, D.I. PULLIN, D.I. MEIRON, California Institute of Technology — Richtmyer–Meshkov flows occur in a wide range of physical phenomena and are of particular interest in shock compression of condensed matter. In this presentation, we discuss numerical simulations of a perturbed, solid–gas interface following the passage of a shock wave in cylindrical geometries. Results are obtained using a shock-capturing scheme applied to the equations of motion for contiguous gaseous and elastic–plastic solid media in a level set-based, multi–material and fully compressible Eulerian framework. Multiple Atwood ratios, initial amplitudes and shock strengths are investigated. Results show that fluid–solid interfaces become unstable when a plasticity model is added to the description of the solid. Under certain initial conditions, ejecta can be formed. This contrasts to previous results (López Ortega et. al, *PRE*, 2010) for purely elastic solids, in which the interface exhibited stable behavior.

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