Abstract Submitted
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Modeling Solid Rayleigh-Taylor Growth ANN KAUL, Los Alamos National Laboratory — Intense impulses applied to solid materials result in high strain rates, strong plastic strains and significant temperature increments. Data in such regimes would allow confidence in material strength models to be extended to strain rates of 10^6– 10^7 s^{-1}. High explosives can be used to accelerate a plate with a perturbation on the side facing the HE. This results in a Rayleigh-Taylor-like perturbation growth that depends on amplitude and wavelength of initial surface perturbation, strength of the material, time dependence of the driving pressure force, and temperature of material. Such experiments have been conducted on perturbed copper plates at LANL, using the LANSCE proton radiography beam to obtain multiple frames of data for each experiment. The results of numerical simulations of these experiments using a 2-D ALE code will be presented. Comparisons of results obtained from various strength models used to describe the material behavior will be presented.

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