Abstract Submitted
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Spike penetration in blast-wave-driven instabilities R.P. DRAKE, University of Michigan — Recent experiments by C. Kuranz and collaborators, motivated by structure in supernovae, have studied systems in which planar blast waves encounter interfaces where the density decreases. During the Rayleigh-Taylor (RT) phase of such experiments, they observed greater penetration of the RT spikes than tends to be seen in simulations. Here we seek to employ semi-analytic theory to understand the general nature and regimes of spike penetration for blast-wave-driven instabilities. This problem is not trivial as one must account for the initial vorticity deposition at the interface, for its time-dependent deceleration, for the expansion of the shocked material in time and space, and for the drag on the broadened tips of the spikes. One can hope that such models will increase our ability to interpret the behavior of simulations of such systems, in both the laboratory and astrophysics. Supported by the US DOE NNSA under the Predictive Sci. Academic Alliance Program by grant DE-FC52-08NA28616, the Stewardship Sci. Academic Alliances program by grant DE-FG52-04NA00064, and the Nat. Laser User Facility by grant DE-FG03–00SF22021.

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