Abstract Submitted
for the APR08 Meeting of
The American Physical Society

Using Hydrodynamic Codes in Modeling of Multi-Interface Diverging Experiments for NIF[1] MICHAEL GROSSKOPF, University of Michigan, R.P. DRAKE, C.C. KURANZ, University of Michigan, T. PLEWA, Florida State University, N. HEARN, C. MEAKIN, University of Chicago, D. ARNETT, University of Arizona, A.R. MILES, H.F. ROBEY, J.F. HANSEN, B.A. REMINGTON, W. HSING, M.J. EDWARDS, Lawrence Livermore National Laboratory — Using the Omega Laser, researchers studying supernova dynamics have observed the growth of Rayleigh-Taylor instabilities in a high energy density system. The NIF laser hopes to generate the energy needed to expand these experiments to a diverging system. We report scaling simulations to model the interface dynamics of a multilayered, diverging Rayleigh-Taylor experiment for NIF using CALE, a hybrid adaptive Lagrangian-Eulerian code developed at LLNL. Specifically, we looked both qualitatively and quantitatively at the Rayleigh-Taylor growth and multi-interface interactions in mass-scaled systems using different materials. The simulations will assist in the target design process and help choose diagnostics to maximize the information we receive in a particular shot. Simulations are critical for experimental planning, especially for experiments on large-scale facilities.

[1]This research was sponsored by LLNL through contract LLNL B56128 and by the NNSA through DOE Research Grant DE-FG52-04NA00064.

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Date submitted: 15 Jan 2008 Electronic form version 1.4