Abstract Submitted
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Developing high-resolution imaging to resolve fine-scale structures in High-Energy-Density experiments at the National Ignition Facility.[1] S. R. NAGEL, G. N. HALL, A. DO, D. K. BRADLEY, W. W. HSING, B. KOZIOZIEMSKI, L. P. MASSE, L. A. PICKWORTH, P. D. POWELL, H. F. ROBEY, Y. ZHOU, Lawrence Livermore National Laboratory, A. M. ANGULO, C. C. KURANZ, University of Michigan, C. KRAULAND, General Atomics —

We present results from experiments at the National Ignition Facility (NIF) that are part of developing a platform for performing high-resolution radiography of hydrodynamic experiments. The purpose of the experiments is to observe the nonlinear Rayleigh-Taylor instability evolution of a single mode perturbation with enough resolution to capture the turbulent transition. This presents a challenge in our High-Energy-Density (HED) experiments, since the largest length scale associated with turbulence in this regime is expected to be on the order of a few microns.

To achieve a 3 μm resolution, we have taken a comprehensive approach of not only addressing the spatial resolution of the optic and detectors used, but also the need to minimize motion blur in our platform. Here we discuss our approach and show the first experimental images obtained on our path to 3 μm imaging of a HED hydrodynamic platform at the NIF.

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Sabrina Nagel
Lawrence Livermore National Laboratory

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