

Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Assessment of radiography for diagnosing short wavelength instability growth and mix in NIF ignition capsules¹ KYLE PETERSON, ROGER VESEY, MARK HERRMANN, SNL, DAN CLARK, LARRY SUTER, BRUCE HAMMEL, STEVE HAAN, OTTO LANDEN, LLNL — Understanding and controlling hydrodynamic instabilities is critical to achieving ignition at National Ignition Facility (NIF). High resolution x-ray radiography of a NIF capsule may be able to measure key aspects of short wavelength instability growth including time dependent areal density variations, the dominant wavelength of growth, amount of growth from isolated capsule defects on the ablator and ice surfaces, and growth of perturbations as a result of the fill tube or dust contaminants. Radiography of the capsule limb may also place constraints on the width of the ice/ablator mix layer. Measurement of these various observables are important to determine what effect target design changes has on instability growth and to validate code predictions. We present an analysis of 2D and 3D HYDRA simulations and demonstrate how radiography can be used to diagnose signatures of mix in NIC capsules.

¹Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

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Date submitted: 12 Aug 2010

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