

Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

Modeling laser-plasma interactions in NIF vacuum hohlraums¹

E.A. WILLIAMS, D.E. HINKEL, Lawrence Livermore National Laboratory, C.H. STILL, A.B. LANGDON, Lawrence Livermore National Laboratory, R.E. OLSON, Sandia National Laboratory, J. KLINE, Los Alamos National Laboratory — In preparation for the NIF ignition campaign, a series of experiments are underway firing 96 and 192 beams of the NIF laser into empty gold hohlraums. The primary purpose of these experiments is to qualify the DANTE filtered x-ray diode radiation temperature diagnostic. We plan to have backscatter diagnostics available, giving us an opportunity to test our LPI modeling on the NIF scale. In addition to scaling with energy, we test the use of a gold-boron coating on the hohlraum wall to reduce SBS via increased ion Landau damping of the ion-acoustic waves. We use Lasnex to simulate the hydrodynamic evolution of the hohlraum plasma. Steady state gains were computed using our diagnostic NEWLIP. These were used to suggest appropriate backscatter simulations to be performed with pF3D, a massivel parallel code that couples paraxial light propagation with fluid models of the stimulated plasma and ion waves evolving on a background plasma. We describe the results of these simulations, pre- and post-shot, and compare them with experimental results.

¹Performed by LLNL under Contract DE-AC52-07NA27344.

E. A. Williams
Lawrence Livermore National Laboratory

Date submitted: 21 Jul 2009

Electronic form version 1.4