Abstract Submitted
for the DPP07 Meeting of
The American Physical Society

Using beam phasing and pointing to control indirect drive implosion symmetry[1] G. KYRALA, A. SEIFTER, N. HOFFMAN, D. WILSON, S.R. GOLDMAN, N. DELAMATER, Los Alamos National Lab, F.J. MARSHALL, V. YU GLEBOV, C. STOECKL, LLE Univ Rochester, J. FRENJE, C. LI, MIT — Implosions using inertial confinement fusion must be symmetric to achieve ignition on the NIF. This requires precise control of the drive symmetry incident on the ignition capsule. We performed two studies, using either beam pointing, or power imbalance [phasing] of three cones from the OMEGA laser to affect the symmetry of an imploded capsule. For pointing we used a NIF 0.7 scale vacuum-hohlraum and D_2-filled 1400 μm CH capsules to verify the technique. We captured images at different times for different pointings of the inner and middle laser cones, verifying the technique and demonstrating symmetry tuning. For phasing, a 1/4 scale NIF vacuum-hohlraum was used to drive a 475 μm diameter $D_2-{}^3He$-filled capsule. Imaging of the imploded core was used to measure the implosion symmetry and to verify its control. We also show that propagation of the inner beam cone is important, even in a vacuum hohlraum, and has the largest effect on the hohlraum energetics.

[1]Work supported by US DOE/NNSA, performed at LANL, operated by LANS LLC under Contract DE-AC52-06NA25396.

G. Kyrala
Los Alamos National Lab

Date submitted: 31 Aug 2007 Electronic form version 1.4