Abstract Submitted
for the DPP09 Meeting of
The American Physical Society

3D studies of the NIF symmetry tuning targets[1] J. MILOVICH, O. JONES, M. EDWARDS, S. WEBER, E. DEWALD, O. LANDEN, M. MARINAK, LLNL — Minimizing radiation drive asymmetries is necessary for a successful ignition campaign. Since the ignition capsule symmetry is most sensitive to the foot (first 2 ns) and the peak of the laser pulse, two different targets will be fielded on the NIF: re-emit and symmetry capsules (Sym-Caps). The first measures the incoming flux asymmetries during the foot by observing the re-radiated flux of a high-Z ball in place of the ignition capsule. The Sym-Caps resemble the ignition target with the frozen DT layer replaced by an equivalent mass of ablator material, thus preserving the hydrodynamic implosion properties. By measuring the x-ray self-emission near peak compression the ignition capsule core shape can be tuned. Simulations with 2D radiation-hydrodynamic simulations codes omit 3D effects in the hohlraum such as diagnostic holes, capsule roughness, shot-to-shot variations caused by laser beam power imbalances and pointing errors. We study these effects by performing 3D simulations using HYDRA and found that tuning the laser pulse using a finite number of shots is not substantially compromised.

[1]Prepared by LLNL under Contract DE-AC52-07NA27344.

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Date submitted: 13 Jul 2009 Electronic form version 1.4