Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

Experimental evidence of early-time Power Transfer on NIF[1] J. MILOVICH, E. DEWALD, P. MICHEL, O. JONES, R. TOWN, C. THOMAS, H. ROBEY, O. LANDEN, LLNL — The 192 beams in the National Ignition Facility (NIF) are arrayed in inner and outer cones whose powers are adjusted to achieve a symmetric capsule implosion. A decade ago, it was realized that energy exchange between cones with different wavelengths can occur in the laser entrance hole region, where the beams overlap, thereby affecting symmetry. During the NIF 2009 campaign this phenomenon was observed and successfully employed to tune the peak of the laser pulse to achieve a round implosion [1]. Power transfer can also be present during other periods of the laser pulse. In particular while the laser burns through the hohlraum window and fill gas when the plasma is dense and cold. We have used the theory presented in [1] to assess the amount of power transfer during the first 2 ns of the ignition laser pulse and found that the increase in inner beam power could be as large as 300%. Accounting for this effect has brought our calculations into closer agreement with recent early-time symmetry tuning and shock timing experiments.

[1] P. Michel et al. Phys Plasmas 17, 056305 (2010)

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

J. Milovich
LLNL

Date submitted: 14 Jul 2011 Electronic form version 1.4