Abstract Submitted
for the DPP10 Meeting of
The American Physical Society

Implosion symmetry tuning with megajoule laser pulses on the National Ignition Facility J. KLINE, LANL, N. MEEZAN, S. DIXIT, LLNL, G. KYRALA, LANL, R. LONDON, C. THOMAS, D. CALLAHAN, K. WIDMANN, S. GLENZER, L. SUTER, D. HINKEL, E. WILLIAMS, E. DEWALD, O. LANDEN, J. EDWARDS, B. MACGOWAN, L. DIVOL, C. HAYNAM, D. KALANTAR, S. LE PAPE, J. MOODY, J. RALPH, M. ROSEN, M. SCHNEIDER, B. YOUNG, LLNL
— A key element for indirect drive inertial confinement fusion is tuning the implosion symmetry. Symmetric implosions maximize the transfer of kinetic energy to the hot spot. One technique to measure the drive symmetry is the symcap. A symcap is a surrogate capsule that replaces the DT fuel layer by an equivalent mass of ablator material to mimic the hydrodynamic behavior of the capsule. The symcaps are filled with gas that provides an x-ray self-emission flash upon stagnation and is used to diagnose the radiation drive based on the shape of the emission. Simulations indicate that the shape of the emission flash correlates well with an ignition capsule's core shape. Using this data, the radiation drive in the hohlraum can be tuned to achieve symmetric implosions. The current symmetry campaign sets the initial hohlraum conditions to provide symmetric implosions for the ignition campaign. Experimental results will be presented for symmetry tuning with laser energies up to 1.3 MJ. Work for DOE by LANL (DE-AC52-06NA25396 and by LLNL (DE-AC52-07NA27344).

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Date submitted: 16 Jul 2010 Electronic form version 1.4