Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Investigation of beam non-uniformity after cross-beam energy transfer in a gas filled hohlraum LOUISA PICKWORTH, M.B. SCHNEIDER, D.E. HINKEL, M.D. ROSEN, D.A. CALLAHAN, P.A. MICHEL, A.S. MOORE, J.D. MOODY, Lawrence Livermore National Lab — Control of hotspot symmetry in an ignition capsule imploded by the x-ray drive in a high gas-filled cylindrical hohlraum at the NIF currently requires cross-beam energy transfer (CBET) from the outer beams to the inner beams.[1] CBET occurs in the central region of the laser entrance hole (LEH) where the laser beams overlap. Linear gain models applied to individual rays indicate that CBET is not uniform across the beam profile, producing a non-uniform spatial distribution on the beams that varies in time. This changing spatial distribution could introduce asymmetries in the x-ray drive applied to the ignition capsule and should be quantified. We are investigating the effects of CBET using the Quartraum experimental platform. This platform uses an LEH-only target designed to isolate the effect of CBET on the spatial-intensity distribution of the inner beams by minimizing the effect of absorption and backscatter. A time resolved image of two inner beams is captured on a high Z witness plate. Experimental results showing how the beam's x-ray foot print on the witness plate changes as a function of $\Delta\lambda$ will be shown and compared to models.[2]

[1]P. Michel et al., PoP 16, 042702 (2009)
[2]Prepared by LLNL under Contract DE-AC52-07NA27344. LLNL-ABS-67494.

Louisa Pickworth
Lawrence Livermore National Lab

Date submitted: 24 Jul 2015 Electronic form version 1.4