Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

NIF Double Shell outer-shell experiments[1] E. C. MERRITT, D. S. MONTGOMERY, J. L. KLINE, W. S. DAUGHTON, D. C. WILSON, E. S. DODD, D. B. RENNER, T. CARDENAS, S. H. BATHA, Los Alamos National Laboratory
— At the core of the Double Shell concept is the kinetic energy transfer from the outer shell to the inner shell via collision. This collision sets both the implosion shape of the inner shell, from imprinting of the shape of the outer shell, as well as the maximum energy available to compress the DT fuel. Therefore, it is crucial to be able to control the time-dependent shape of the outer shell, such that the outer shell is nominally round at the collision time. We present the experiment results from our sub-scale (˜1 MJ) NIF outer-shell only shape tuning campaign, where we vary shape by changing a turn-on time delay between the same pulse shape on the inner and outer cone beams. This type of shape tuning is unique to this platform and only possible since the Double Shell design uses a single-shock drive (4.5 ns reverse ramp pulse). The outer-shell only targets used a 5.75 mm diameter standard near-vacuum NIF hohlraum with 0.032 mg/cc He gas fill, and a Be capsule with 0.4% uniform Cu dopant, with ˜242 um thick ablator. We also present results from a third outer-shell only shot used to measure shell trajectory, which is critical in determining the shell impact time.

[1]This work conducted under the auspices of the U.S. DOE by LANL under contract DE-AC52-06NA25396

Elizabeth Merritt
Los Alamos National Laboratory

Date submitted: 13 Jul 2016 Electronic form version 1.4