Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

Direct-drive Energetics of laser-Heated Foam Liners for Hohlraums[1] ALASTAIR MOORE, CLIFF THOMAS, KEVIN BAKER, Lawrence Livermore National Laboratory, JOHN MORTON, AWE, TED BAUMANN, MONIKA BIENER, SUHAS BHANDARKAR, DENISE HINKEL, OGGIE JONES, NATHAN MEEZAN, JOHN MOODY, ABBAS NIKROO, MORDY ROSEN, WARREN HSING, Lawrence Livermore National Laboratory — Lining the walls of a high-Z hohlraum cavity with a low-density foam is predicted to mitigate the challenge presented by hohlraum wall expansion. Once heated, wall material quickly fills the cavity and can impede laser beam propagation. To avoid this, ignition hohlraums are typically filled with a gas or irradiated with a short ($<$ 10 ns) laser pulse. A gas-fill has the disadvantage that it can cause laser plasma instabilities (LPI), while a short laser pulse limits the design space to reach low-adiabat implosions. Foam-liners offer a potential route to reduce wall motion in a low gas-fill hohlraum with little LPI. Results from quasi 1-D experiments performed at the NIF are presented These characterize the x-ray conversion efficiency, backscattered laser energy and heat propagation in a 250μm thick Ta_2O_5 or ZnO foam-liners spanning a range of densities from underdense to overdense, when irradiated at up to 4.9 x 10^{14} W/cm^2 is incident on a planar foam sample, backed by a Au foil and generates a radiation temperature of up to 240eV - conditions equivalent to a single outer cone beam-spot in an ignition hohlraum.

[1]This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

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Date submitted: 15 Jul 2016 Electronic form version 1.4