

Abstract Submitted
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Designs for subscale hohlraum energetics experiments on the National Ignition Facility¹ N.B. MEEZAN, D.A. CALLAHAN, M.J. EDWARDS, D.E. HINKEL, B.K. SPEARS, S.H. GLENZER, L.J. SUTER, Lawrence Livermore National Laboratory — The 96-beam energetics campaign on the National Ignition Facility will use subscale targets to emulate the plasma conditions and laser-plasma interaction (LPI) behavior of ignition hohlraums. These “plasma emulator” targets are geometrically scaled by a scale-factor s . To lowest order, the laser pulse shapes are also directly scaled (time $t \propto s$ and power $P \propto s^2$); however, fine-tuning the pulse can improve the hohlraum emulator quality. The plasma density inside the hohlraum depends strongly on the mass ablated from the capsule during the foot, so we try to match this to the ignition value, $m_{96}(t) = s^3 m_{ignition}(st)$. Matching the ablated mass leads to ignition-like hohlraum plasma conditions. Linear gain analysis predicts LPI behavior in the emulator hohlraum that is qualitatively and quantitatively similar to that of an ignition hohlraum.

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