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Measurements of Sensitivity of Implosion-Phase Mixing to Low-Mode Symmetry at the National Ignition Facility S.A. MACLAREN, D.B. SAYRE, S.F. KHAN, T. MA, R.E. TIPTON, J.E. PINO, J.D. SALMONSON, J.E. RALPH, J.R. RYGG, D.T. CASEY, LLNL, G.A. KYRALA, LANL — The 2-Shock platform at the National Ignition Facility (NIF) is a non-igniting indirect-drive target designed to produce a near 1D-like implosion for hydro-code validation. This is accomplished with a sub-scale (675 m radius) capsule in a nominal (2.875 mm radius) near-vacuum hohlraum, providing a case-to-capsule ratio 63% larger that that of a standard ignition target. Additionally, the low aspect ratio (3.9) of the capsule shell combined with the temperature of the foot pulse essentially eliminates ablation front instability growth. The result is a platform that is well suited to the study of mixing at the gas-ablator interface without these complicating factors. A layer of CD plastic on the inner 3.2 m of the CH capsule shell filled with a mixture of hydrogen and tritium allows us to infer the mixture of ablator material into the gas through the ratio of DT to TT neutron production. In 2015, we used the 2-Shock platform to measure the sensitivity of ablator-gas mixing to inner surface roughness and implosion convergence ratio. This year we developed the capability to deliberately adjust the low-mode in-flight symmetry of the implosion in both the prolate and oblate directions. We present the initial results of mix measurements from deliberately low-mode asymmetric implosions aimed at determining the relationship between this type of asymmetry and mix. This work was performed under the auspices of the Lawrence Livermore National Security, LLC, (LLNS) under Contract No. DE-AC52-07NA27344

Steve MacLaren
LLNL

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