Abstract Submitted
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Simulations of the 3-Shock HDC gas-filled hohlraum experiments at the NIF[1] JOSE MILOVICH, J.S. ROSS, D. HO, C. WEBER, S. SEPKE, S. KHAN, C. CERJAN, N. MEEZAN, A. MACKINNON, LLNL — We describe simulation efforts to design and field a series of high-density-carbon [1] (HDC) capsule tuning experiments in 1.6 mg/cc gas-filled hohlraums at the National Ignition Facility (NIF), culminating in two DT-layered shots. The radiation-hydrodynamics code HYDRA coupled to an off-line power transfer model was employed to ascertain the optimal laser pulse that minimizes radiation asymmetries and implosion adiabat for a given stability margin. We found that these HDC targets have similar sensitivity as their CH "high-foot" [2] counterparts when laser cone-fraction and power as well as ablator thickness are varied, leading to comparable implosions. A point of divergence, however, is the measured neutron down-scatter-ratio (DSR) that typically gauges the degree of compression obtained in a DT implosion, with HDC targets having approximately half the CH value. Concerted efforts are underway to understand and ascertain the causes of this discrepancy. Simulations and comparisons with data will be presented.

[1] D. Ho et al, BAPS.2012.DPP.GO4.13.
[2] O. Hurricane et al, Nature 506, 343 (2014).

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