Abstract Submitted
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Analysis of NIC Cryogenic Layered Experiments via Integrated Hohlraum plus Capsule Post-Shot Simulations[1] O.S. JONES, C.J. CERJAN, D.C. EDER, P.T. SPRINGER, D.S. CLARK, M.M. MARINAK, J.L. MILOVICH, M.V. PATEL, S.M. SEPKE, L.J. SUTER, C.A. THOMAS, R.P.J. TOWN, LLNL, R.E. OLSON, SNL — We previously reported a simulation-based semi-empirical model of the NIC layered implosions [1]. In this model input parameters (chiefly laser power) are adjusted so that the simulated capsule's shock timing, time-dependent shell velocity, and imploded core shape closely match experimental measurements. We have applied this model to a growing database of layered implosions. We find that simulated ion temperatures agree well with experiments that are not heavily mixed. The model was able to predict the increase in neutron down-scattered ratio (DSR) that was seen experimentally when the laser peak power was lowered from 420 to 320 TW and extended in time to minimize shell re-expansion (so-called "no-coasting" pulse). The DSR correlates with calculated fuel adiabat and suggests that the improved fuel adiabat was the primary reason for the DSR improvement.
[1] Jones, et al., Phys of Plasma, 19, 056315 (2012)

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