

Abstract Submitted
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Post-Shot Simulations of NIC Experiments with Comparison to X-ray Measurements¹ DAVID EDER, OGGIE JONES, LARRY SUTER, ALASTAIR MOORE, MARILYN SCHNEIDER, Lawrence Livermore National Lab — National Ignition Campaign experiments at NIF are ongoing and post-shot simulations play an important role in understanding the physical processes occurring in the quest for demonstrating fusion burn. In particular, it is important to understand the x-ray environment inside the hohlraum targets, which is studied using various x-ray diagnostics. The Dante instrument measures the time dependent x-ray emission escaping out of the hohlraum laser entrance holes (LEHs) and the SXI instrument provides a time-integrated image of both soft and hard x-rays. We compare calculated total x-ray emission with Dante data as well as the relative high energy Mband emission that contributes to capsule preheat. We correct our calculated x-ray emission to account for differences between simulation and data on LEH closure using SXI data. We provide results for both “standard candle” simulation with no added multipliers and for simulations with time-dependent multipliers that are used to obtain agreement with shock timing and implosion velocity data. The physics justification for the use of multipliers is to account for potential missing energy or incorrect ablation modeling. The relative importance of these two effects can be studied through comparison of post-shot simulations with x-ray measurements.

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