

Abstract Submitted
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High Resolution Integrated Hohlräum-Capsule Simulations for Virtual NIF Ignition Campaign¹ O.S. JONES, M.M. MARINAK, C.J. CERJAN, D.S. CLARK, M.J. EDWARDS, S.W. HAAN, S.H. LANGER, J.D. SALMONSON, LLNL — We have undertaken a virtual campaign to assess the viability of the sequence of NIF experiments planned for 2010 that will experimentally tune the shock timing, symmetry, and ablator thickness of a cryogenic ignition capsule prior to the first ignition attempt. The virtual campaign consists of two teams. The “red team” creates realistic simulated diagnostic data for a given experiment from the output of a detailed radiation hydrodynamics calculation that has physics models that have been altered in a way that is consistent with probable physics uncertainties. The “blue team” executes a series of virtual experiments and interprets the simulated diagnostic data from those virtual experiments. To support this effort we have developed a capability to do very high spatial resolution integrated hohlraum-capsule simulations using the Hydra code. Surface perturbations for all ablator layer surfaces and the DT ice layer are calculated explicitly through mode 30. The effects of the fill tube, cracks in the ice layer, and defects in the ablator are included in models extracted from higher resolution calculations. Very high wave number mix is included through a mix model. We will show results from these calculations in the context of the ongoing virtual campaign.

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