

Abstract Submitted  
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**Simulating NIF Neutron Diagnostics with HYDRA**<sup>1</sup> MEHUL V. PATEL, SCOTT SEPKE, MICHAEL M. MARINAK, MICHAEL S. MCKINLEY, MATTHEW O'BRIEN, RICHARD PROCASSINI, Lawrence Livermore National Laboratory, DOUG WILSON, Los Alamos National Laboratory — LLNL's 3D radiation hydrodynamics code, HYDRA, is routinely used for modeling laser inertial confinement fusion (ICF) targets (both direct drive and indirect drive). Since neutron and gamma diagnostics will play a critical role in assessing the performance of capsule implosions at the National Ignition Facility (NIF), we have installed a particle Monte Carlo (PMC) package into HYDRA to model the transport of light nuclei ( $Z=1,2$ ), gammas, and neutrons. The PMC package uses both domain decomposition (using HYDRA's existing computational domains) and dynamic replication of domains to maximize utilization of available computational resources. Recent results from simulations of NIF capsules will be presented to demonstrate our ability to produce realistic simulated neutron images and spectra.

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