

Abstract Submitted
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Enhanced NLTE Atomic Kinetics Modeling Capabilities in HYDRA¹ MEHUL V. PATEL, HOWARD A. SCOTT, MICHAEL M. MARINAK, Lawrence Livermore National Laboratory — In radiation hydrodynamics modeling of ICF targets, an NLTE treatment of atomic kinetics is necessary for modeling high-Z hohlraum wall materials, high-Z dopants mixed in the central gas hotspot, and is potentially needed for accurate modeling of outer layers of the capsule ablator. Over the past several years, the NLTE DCA atomic physics capabilities in the 3D ICF radiation hydrodynamics code HYDRA have been significantly enhanced. The underlying atomic models have been improved, additional kinetics options including the ability to run steady-state NLTE have been added, and the computational costs have been significantly reduced using OpenMP threading. We will discuss how these code improvements will enable higher fidelity simulations of ICF hohlraum energetics, laser irradiated sphere experiments, and ICF capsule implosions.

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