New capabilities in HYDRA for simulations of Inertial Confinement Fusion targets[1] M.M. MARINAK, G.D. KERBEL, J.M. KONING, M.V. PATEL, S.M. SEPKE, P.N. BROWN, B. CHANG, R. PROCASSINI, D. LARSON, Lawrence Livermore National Laboratory — A variety of new capabilities have been installed in the HYDRA 2D/3D multiphysics ICF simulation code. We discuss how these enhance its ability to simulate various aspects of inertial confinement fusion targets. A novel polar S_N multigroup radiation transport package now operates on 2D meshes. It converges with second order accuracy without significant ray effects. Simulations of targets illuminated with short pulse lasers are now possible by running HYDRA in conjunction with an explicit relativistic particle in cell code. Data is exchanged between the two codes automatically, enabling the plasma heating and magnetic fields generated by the short pulse laser to be included consistently in the full target simulation. A Monte Carlo burn package has also been incorporated and is being applied to model diagnostic signatures of neutrons, gamma rays and charged particles produced in NIF capsule implosions.

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