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Integrated P1 Hohlraum/Capsule Simulations with Comparison to Neutron and X-Ray Measurements[1] D.C. EDER, B.K. SPEARS, R.P. TOWN, O.S. JONES, D.H. MUNRO, J.L. PETERSON, T. MA, A.K. PAK, L.R. BENEDETTI, S.P. HATCHETT, J.P. KNAUER, A.J. MACKINNON, C.B. YEAMANS, J.M. MCNANEY, D.T. CASEY, Lawrence Livermore National Laboratory, NIF TEAM — We discuss integrated hohlraum/capsule simulations that drive a DT symcap capsule downward in a NIF experiment by increasing/decreasing the peak power in the upper/lower laser beams by 8%. This laser asymmetry results in a radiation drive P1/P0 at the capsule ablation surface of 2% and a downward capsule velocity of 125 microns/ns. The simulation shows small (<1%) changes in the P2 and P4 moments of the x-ray self-emission as compared to a simulation with no laser asymmetry. The calculated reduction in yield due to the induced P1 is 20%. Simulations for DT layered capsules for comparable velocities have yields an order of magnitude lower than simulations with stationary capsules. The velocity is measured by comparing the arrival times of DD and DT neutrons at detectors located at different locations. Preliminary data from a recent shot gives a downward velocity of order 100 microns/ns consistent with simulations. We also compare pre- and post-shot simulations with x-ray images at different energies. The ability to correct for capsule velocity, e.g., due to different upper/lower crossbeam transfer energies, is another tool in the quest for ignition.

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