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Comparison of measured soft x-ray drive with shock and capsule implosion velocity for ignition tuning experiments on NIF J. KLINE, LANL, D. CALLAHAN, N. MEEZAN, S. GLENZER, A. MACKINNON, S. DIXIT, LLNL, G. KYRALA, LANL, K. WIDMANN, H. ROBEY, D. CLARK, O. JONES, D. HICKS, P. CELLIERS, D. FARLEY, R. TOWN, D. KALANTAR, E. DEWALD, LLNL, A. MOORE, AWE, R. OLSON, SNL, T. DOEPPNER, J. MOODY, J. RALPH, C. THOMAS, O. LANDEN, M. EDWARDS, LLNL — Indirect drive inertial confinement fusion experiments use high-Z hohlraums to convert laser energy to soft x-ray energy. The soft x-rays then drive the capsule via material ablation to compress the fuel payload and heat the central hot spot to initiate ignition. To achieve the highest fuel compression, a shaped radiation drive is used launching multiple shocks timed minimizes fuel entropy. The strength and velocity of these shocks depend directly on the radiation drive. The main laser pulse is then used to drive the implosion such that the PdV work can heat the central core to fusion conditions. To diagnose the soft x-ray drive in the hohlraum, Dante, an 18 channel soft x-ray spectrometer, measures the flux escaping the laser entrance hole. Measurements of this flux are used to assess the conditions for the capsule implosion. In this presentation, we will examine correlations between the soft x-ray measurements and shock velocity, as well as implosion velocity for recent ignition tuning experiments on NIF.

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