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Improvements to the 2020 Common Hohlraum Model[1] O. S. JONES, S. A. MACLAREN, J. D. SALMONSON, C. R. WEBER, D. S. CLARK, H. A. SCOTT, Lawrence Livermore Natl Lab — A model with a fixed set of physics assumptions and resolution was employed to create radiation sources to drive very high resolution calculations of several high yield NIF implosions. We will discuss the justification for the various model choices. The current model agrees fairly well with smaller scale hohlraums that typically employ lower laser intensities, but drive errors increase with hohlraum scale. We will discuss the extent to which the model agrees with radiation drive magnitude, spectrum, and angular dependence (inferred from the low mode shape of various types of capsule implosion data). The model must be adjusted at some level to adequately match the available drive and low mode shape tuning data for a given DT implosion. The fuel velocity and fuel adiabat are sensitive to how well the data are matched. The sources of random low-mode asymmetry in NIF capsule implosions are the subject of a separate investigation. Here, we focus only on the lowest even Legendre mode asymmetry in the radiation drive, P2. We compare the model's P2 predictions to data and empirical scaling curves. Recently we have updated the computational grid to include the hardware rings that clamp the laser entrance hole windows to the hohlraum. This external hardware interacts with the incoming laser. We show that it can change the P2 drive symmetry by altering the calculated crossed beam energy transfer and improves the agreement with shape data.

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