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Calculating response of NIF ignition capsules to random 3D errors¹ O.S. JONES, J.L. MILOVICH, D.A. CALLAHAN, S.W. HAAN, C.C. WIDMAYER, LLNL — To estimate the probability of ignition for a given ICF capsule design, an error budget has been developed in which an allowable range of values for each important parameter is defined. We generally categorize the deviations of each parameter from its ideal value as 1D (affecting the implosion velocity and fuel entropy) or 3D (affecting the amount of distortion of the imploded core at time of maximum compression). In this work we focus on estimating the effect of various 3D errors. To do this we carried out numerous 3D calculations of ignition hohlraums and capsules with imposed errors in laser beam pointing, laser power, capsule centering, etc. The calculations were done using the Hydra radiation hydrodynamics code. The large size and number of required simulations presented new challenges for completing the studies in a reasonable amount of time. We will quantify the effect of each type of 3D random error and assess its impact on the overall error budget rollup.

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