NIF power balance performance modeling and testing[1] D.H. KALANTAR, S.N. DIXIT, C.A. HAYNAM, N.C. MEHTA, M.J. SHAW, C.C. WID-MAYER, W.H. WILLIAMS, Lawrence Livermore National Laboratory, NIF PDS TEAM — A model for predicting power balance performance on the National Ignition Facility (NIF) has been developed. The Power Balance Model (PBM) uses Laser Performance Operations Model (LPOM) runs with statistical variations in laser performance beam-to-beam and quad-to-quad. We have used this model to predict power balance performance for full NIF ignition shots. These predictions will be presented and compared with results from a series of single quad laser shots where one beam was diagnosed at 3w with the Precision Diagnostic Station (PDS) [1]. The shot-to-shot power repeatability from these PDS tests is consistent with the predicted power balance performance, and with the performance requirements for the ignition campaigns.

[1] C. Haynam, et al, International Conference on Inertial Fusion Sciences and Applications, 2007.

Daniel Kalantar
LLNL

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