Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Implosion Robustness, Time-Dependent Flux Asymmetries and Big Data[1] J.L. PETERSON, J.E. FIELD, B.K. SPEARS, S.T. BRANDON, J.A. GAFFNEY, J. HAMMER, A. KRITCHER, R.C. NORA, P.T. SPRINGER, Lawrence Livermore National Laboratory — Both direct and indirect drive inertial confinement fusion rely on the formation of spherical implosions, which can be a challenge under temporal and spatial drive variations (either from discrete laser beams, a complex hohlraum radiation environment, or both). To that end, we examine the use of large simulation databases of 2D capsule implosions to determine the sensitivity of indirectly driven NIF designs to time-varying low-mode radiation drive asymmetries at varying convergence ratios. In particular, we define and calculate a large number of extensive quantities for the simulations within the database and compare with the equivalent quantities extracted from fully 3D simulations and those used in 1D hydrodynamic models. Additionally, we discuss some of the practical challenges of searching for physical insight in multi-petabyte datasets.

[1]This work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344, Lawrence Livermore National Security, LLC. LLNL-ABS-674884

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Date submitted: 22 Jul 2015 Electronic form version 1.4