

Abstract Submitted
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Initial Findings on Hydrodynamic Scaling Extrapolations of National Ignition Facility BigFoot Implosions¹ R. NORA, J. E. FIELD, J. LUC PETERSON, B. SPEARS, M. KRUSE, K. HUMBIRD, J. GAFFNEY, P. T. SPRINGER, S. BRANDON, S. LANGER, Lawrence Livermore National Laboratory — We present an experimentally corroborated hydrodynamic extrapolation of several recent BigFoot implosions on the National Ignition Facility. An estimate on the value and error of the hydrodynamic scale necessary for ignition (for each individual BigFoot implosion) is found by hydrodynamically scaling a distribution of multi-dimensional HYDRA simulations whose outputs correspond to their experimental observables. The 11-parameter database of simulations, which include arbitrary drive asymmetries, dopant fractions, hydrodynamic scaling parameters, and surface perturbations due to surrogate tent and fill-tube engineering features, was computed on the TRINITY supercomputer at Los Alamos National Laboratory. This simple extrapolation is the first step in providing a rigorous calibration of our workflow to provide an accurate estimate of the efficacy of achieving ignition on the National Ignition Facility.

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