

Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Optimization of Capsule Dopant Levels to Improve Fuel Areal Density¹ D. E. HINKEL, T. DPPNER, L. P. MASSE, K. WIDMANN, B. BACHMANN, L. DIVOL, M. J. MACDONALD, L. R. BENEDETTI, J. E. RALPH, O. L. LANDEN, D. A. CALLAHAN, O. A. HURRICANE, Lawrence Livermore Natl Lab — The Capsule Dopant Study, a series of implosions at the National Ignition Facility, seeks to investigate improvements in fuel areal density of ICF implosions. Each experiment is fielded with a different amount of dopant in the ablator, while preserving peak velocity, coast time, remaining mass and fuel adiabat. The Scale 0.9 CH implosions are utilized in this study, as these implosions are near-round with small swings in symmetry across burn. Further, these implosions are fairly stable to ablation front perturbations from the perspective of capsule-only simulations. This study then tests the hypothesis that higher dopant levels reduce growth factors at the fuel-ablator interface, and that an increase in dopant does not compromise the stability of the fuel-ablation front. Analyses from the campaign will be presented along with comparisons to post-shot simulations.

¹This work was supported by the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

Denise Hinkel
Lawrence Livermore Natl Lab

Date submitted: 02 Jul 2019

Electronic form version 1.4