Abstract Submitted
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Optimizing Fuel Adiabat and Thickness for Beryllium Ignition Targets[1] D.C. WILSON, A.N. SIMAKOV, S.A. YI, J.L. KLINE, Los Alamos National Laboratory, J.D. SALMONSON, D.S. CLARK, J.L. MILOVICH, M.M. MARINAK, D.A. CALLAHAN, Lawrence Livermore National Laboratory — At the same radiation temperature beryllium has a higher mass ablation rate than either plastic (CH) or diamond (C). We take advantage of this by imploding a larger DT mass in beryllium capsules. With a higher initial rho-R, achieving the same final rho-R requires smaller capsule convergence. This in turn leads to more tolerance of instability growth. The capsule convergence can be further decreased by increasing the DT fuel entropy. This is achieved by increasing the power of the first laser pulse from 30 to 60 TW, raising the pressure of the first shock. Beginning with our Rev 6 beryllium ignition design we have varied the fuel thickness between 50 and 130 microns (90 nominal) and increased the adiabat from 1.6 (nominal) to 3.0. While keeping the final laser pulse energy and power fixed, we tuned the laser pulse for each capsule. We report on the capsule sensitivity to surface roughness, using 2D HYDRA capsule only simulations with drives taken from integrated hohlraum simulations. These results guide us in improving capsule robustness to perturbations.

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Douglas Wilson
Los Alamos National Laboratory

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