Abstract Submitted
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**High-density carbon (HDC) capsule designs for $\alpha$-heating and for ignition**[1] D. HO, A. AMENDT, D. CLARK, S. HAAN, J. MILOVICH, J. SALMONSON, G. ZIMMERMAN, L. BERZAK HOPKINS, J. BIENER, N. MEEZAN, C. THOMAS, L. BENEDICT, S. LE PAPE, A. MACKINNON, S. ROSS, LLNL — We show capsule designs that have HDC ablators, using 2, 3 and 4 shocks. Their advantages and disadvantages will be discussed. Two-shock designs have the shortest pulse length but have the worst 1-D ignition margin because of the high fuel adiabat. Four-shock designs have the highest 1-D ignition margin with the lowest adiabat, but have higher RT ablation front growth. This disadvantage can be overcome by using a picket to generate the 1$^{st}$ shock. The picket reduces the RT growth factor while the decaying 1$^{st}$ shock lowers the fuel adiabat further. The picket has the additional advantage of shortening the pulse length. Dopant requirements for different hohlraums will be discussed. A 3-shock design for achieving alpha heating is described, which can use either high-gas-fill (1.6 mg/cc) or near-vacuum hohlraums. A rugby-shaped hohlraum with low gas-fill (0.5 mg/cc) has high laser coupling efficiency and provides good symmetry for a 4-shock design. Comparison of simulations for selected recent HDC shots with experimental data will be presented.

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