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Optimization of Multiple-Picket, Direct-Drive, Laser Pulse Shapes with Foam Shells J.P. KNAUER, V.N. GONCHAROV, J.A. DELETTREZ, V.YU. GLEBOV, F.J. MARSHALL, Laboratory for Laser Energetics, U. of Rochester, J.A. FRENJE, C.K. LI, R.D. PETRASSO, F.H. SÉGUIN, PSFC, MIT — The performance of high-gain, direct-drive inertial confinement fusion (ICF) targets is maximized by optimizing the timing of two to four converging shock waves. Targets with improperly timed shock waves have high entropies and take more energy to compress to ignition conditions. The timing of these shock waves, calculated by hydrodynamic simulations, has been checked experimentally for planar targets and needs to be verified experimentally for converging shocks. Warm, foam shell targets are being investigated as hydrodynamic equivalents to cryogenic D_2 and DT targets to optimize the convergent shock-wave timing. Foam shell targets have been used on experiments at the OMEGA Laser Facility to optimize multiple-picket laser pulse shapes. The results from this study will be presented along with a comparison of hydrodynamic simulation results to the experimental measurements. This work was supported by the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-FC52-08NA28302.

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