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**Optimized Pulse Shapes for Improved Exploding-Pusher Performance**[1] T.J.B. COLLINS, University of Rochester LLE, R.S. CRAXTON, J.A. MAROZAS, P.W. MCKENTY, P.B. RADHA, S.P. REGAN, M.J. ROSENBERG, E.M. CAMPBELL, University of Rochester, M. HOHENBERGER, W.W. HSING, Lawrence Livermore National Laboratory — In exploding-pusher (XP) target implosions a significant fraction of the total neutron yield is generated by the outgoing reflected shock potentially augmented by yield due to compression of the fuel by the shell. Unlike ablatively driven implosions, these are low-convergence and characterized by low areal densities and high ion temperatures, and are insensitive to the perturbations that degrade high-convergence implosions, making them of interest for study of laser-energy coupling and as neutron sources for various applications. XP's are typically driven by simple (Gaussian, flattop, ramp) pulses. We present the results of a suite of optimizations using *Telios,* designed to maximize the free-fall yield based on changes in pulse shape. For OMEGA plastic-shell 10-atm D2-filled targets, these pulses are predicted to provide significant (over 40%) increase in total and free-fall yield relative to implosions driven by a flattop pulse of the same energy. Experimental data from implosions employing optimized pulses will be compared to those using a baseline flattop pulse. The physical causes of the predicted improvement in performance, including both multiple shock dynamics and hydrodynamic coupling, will be discussed.

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