Abstract Submitted
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Ion temperature measurements in shock-driven implosions on OMEGA and the NIF H. SIO, A. ZYLSTRA, M. ROSENBERG, C. WAUGH, H. RINDERKNECHT, N. SINENIAN, M. MANUEL, D. CASEY, M. GATU JOHNSON, C.K. LI, F. SEGUIN, J. FRENJE, R. PETRASSO, MIT, V.YU. GLEBOV, P.B. RADHA, J. DELETTREZ, P. MCKENTY, C. STOECKL, T.C. SANGSTER, LLE, S. PAPE, R. BIONTA, A. MACKINNON, O. LANDEN, LLNL, J. KILKENNY, A. NIKROO, GA — Y. KIM, H. HERMANN, LANL Shock-driven "exploding pusher" implosions are commonly used at the OMEGA and the NIF facilities as test platforms for calibrating and validating diagnostics. We present extensive data on temperatures in exploding pushers obtained through methods: measurement of Doppler broadening of fusion products (from both DD and D^3He reactions), and measurement of temperature sensitive yield ratios of DD and D^3He yields. Since burn-averaged nuclear observables depend on density and temperature gradients and the time evolution after the spherical shock collapse, it is not evident a priori that these methods measure the same Ti. We compare experimental results to both radiation hydrodynamics simulations and an analytic Guderley shock model. This work was supported in part by LLE, the NLUF, the FSC, the US DOE, LLNL, and GA.

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