

Abstract Submitted
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Exploration of kinetic and multiple-ion-fluids effects in D^3He and T^3He gas-filled ICF implosions using multiple nuclear reaction histories HONG SIO, HANS RINDERKNECHT, MICHAEL ROSENBERG, ALEX ZYLSTRA, FREDRICK SÉGUIN, MARIA GATU JOHNSON, CHIKANG LI, RICHARD PETRASSO, Massachusetts Institute of Technology, NELSON HOFFMAN, KRIGORY KAGAN, KIM MOLVIG, Los Alamos National Laboratory, PETER AMENDT, CLAUDIO BELLEI, SCOTT WILKS, Lawrence Livermore National Laboratory, CHRISTIAN STOECKL, VLADIMIR GLEBOV, RICCARDO BETTI, THOMAS SANGSTER, JOSEPH KATZ, Laboratory for Laser Energetics — To explore kinetic and multi-ion-fluid effects in D^3He and T^3He gas-filled shock-driven implosions, multiple nuclear reaction histories were measured using the upgraded Particle Temporal Diagnostic (PTD) on OMEGA. For D^3He gas-filled implosions, the relative timing of the DD and D^3He reaction histories were measured with 20 ps precision. For T^3He gas-filled implosions (with 1-2% deuterium), the relative timing of the DT and D^3He reaction histories were measured with 10 ps precision. The observed differences between the reaction histories on these two OMEGA experiments are contrasted to 1-D single-ion hydro simulations for different gas-fill pressure and gas mixture. This work is supported in part by the U.S. DOE, LLNL, LLE, and NNSA SSGF.

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