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Observations of nuclear-burn-region size in shock-driven implosions of capsules with different D3He fill pressures at OMEGA F.H. SEGUIN, M. ROSENBERG, H. RINDERKNECHT, A. ZYLSTRA, J. FRENJE, C.K. LI, H. SIO, M. GATU JOHNSON, R. PETRASSO, MIT, R. BETTI, J. DELETTREZ, V. GLEBOV, T.C. SANGSTER, C. SORCE, C. STOECKL, LLE, A. NICKROO, G.A. — Fuel capsules with thin glass shells, filled with D3He gas at a wide range of pressures (1 atm to 25 atm), have been imploded at OMEGA in order to quantify how the accuracy of hydrodynamic modeling breaks down when fuel pressure is reduced to the point where the ion-mean-free-path lengths are no longer small compared to the plasma size. The spatial distribution of nuclear burn in these shock-driven implosions is being studied directly with penumbral imaging, utilizing the 14.7-MeV protons generated by the D-3He reaction, and the results will be used in conjunction with measurements of yield and fuel temperature to constrain modeling and improve our understanding of implosion behavior in this kinetic regime. This work was supported in part by the U.S. DOE and LLE.

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