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Using combined D^3He-p and DT-n secondary yields to determine ρR_{fuel} and mix in D2 implosions at OMEGA and the NIF H. RINDERKNECHT, M. ROSENBERG, A. ZYLSTRA, F. SEGUIN, J. FRENJE, H. SIO, M. GATU JOHNSON, N. SINENIAN, C.K. LI, R. PETRASSO, MIT, P. AMENDT, S. WILKS, C. BELLEI, R. BIONTA, M. MORAN, J. CAGGIANO, J. KNAUER, R. HATARIK, S. FRIEDRICH, E. HARTOUNI, S. HATCHETT, J. RYGG, D.T. CASEY, A. MACKINNON, M. SCHNEIDER, LLNL — O. LANDEN LLNL, T. MURPHY, G. KYRALA, M. SCHMITT, N. HOFFMAN LANL, V. YU. GLEBOV, C. SANGSTER, J. DELETTREZ, P. RADHA, S. REGAN, C. STOECKL LLE, J. KILKENNY, A.NIKROO, GA. – Secondary yields of DT-neutrons and D^3He-protons from ICF implosions filled with pure deuterium fuel are used to experimentally determine fuel ρR and electron temperature. Increased plasma stopping power tends to enhance the DT-n yield and reduce the D^3He-p yield. Simultaneous measurements of these secondary particles are used to constrain the modeling of the amount of fuel-shell mix in low-fuel-ρR implosions on OMEGA and NIF. The range of application for this technique will be discussed and results from several experiments will be presented. This work was supported in part by the U.S. DOE, LLNL and LLE.

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