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Thermonuclear Reaction Rate of T(t,2n)α Measured in ICF Plasmas C.R. BRUNE, Ohio University, D.T. CASEY, J.A. CAGGIANO, R. HATARIK, D.P. MCNABB, D.B. SAYRE, V.A. SMALYUK, Lawrence Livermore National Laboratory, A.D. BACHER, Indiana University, J.A. FRENJE, M. GATU-JOHNSON, A.B. ZYLSTRA, Massachusetts Institute of Technology, M. COUDER, University of Notre Dame — Measurements of charged-particle reactivity have been performed in inertial confinement fusion experiments at the National Ignition Facility. Time-of-flight detectors were used to measure neutrons from the T(t,2n) and T(d,n) reactions produced by implosions with tritium-filled targets (0.1% deuterium). Along with the measured target fuel composition and reactant ion temperature, the well-known T(d,n) reactivity was used to convert the measured neutron yields into a T(t,2n) reactivity. The ion temperature was determined to be 3.3(3) keV, corresponding to an effective energy of 16 keV. In comparison to accelerator measurements of the low-energy T(t,2n) cross section, the source of all previous data, our experiment has resulted in T(t,2n) data with better statistics and lower backgrounds.

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