Abstract Submitted
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A Phoswich Detector System to Measure Sub-Second Half-Lives using ICF Reactions MICAH COATS, KATELYN COOK, MARK YULY, Houghton College, STEPHEN PADALINO, State University of New York at Geneseo, CRAIG SANGSTER, SEAN REGAN, Laboratory for Laser Energetics — The ^{3}H(t,γ)^{6}He cross section has not been measured at any bombarding energy due to the difficulties of simultaneously producing both a tritium beam and target at accelerator labs. An alternative technique may be to use an ICF tt implosion at the OMEGA Laser Facility. The ^{3}H(t,γ)^{6}He cross section could be determined in situ by measuring the beta decay of ^{6}He beginning a few milliseconds after the shot along with other ICF diagnostics. A dE-E phoswich system capable of surviving in the OMEGA target chamber was tested using the SUNY Geneseo pelletron to create neutrons via ^{2}H(d,n)^{3}He and subsequently ^{6}He via ^{9}Be(n,α)^{6}He in a beryllium target. The phoswich dE-E detector system was used to select beta decay events and measure the 807 ms half-life of ^{6}He. It is composed of a thin, 2 ns decay time dE scintillator optically coupled to a thick, 285 ns E scintillator, with a linear gate to separate the short dE pulse from the longer E tail. Funded in part by a grant from the DOE through the Laboratory for Laser Energetics.

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