

Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

Measurement of the ${}^6\text{He}$ Decay Produced by the ${}^9\text{Be}(n,\alpha){}^6\text{He}$ Reaction KATELYN COOK, MICAH COATS, MARK YULY, Houghton Coll, STEPHEN PADALINO, State University of New York at Geneseo, CRAIG SANGSTER, SEAN REGAN, Laboratory for Laser Energetics — The OMEGA laser at LLE is routinely used to implode gas-filled capsules to study light ion fusion reaction rates of interest to stellar nucleosynthesis. As a first step toward a possible measurement of the ${}^3\text{H}(t,\gamma){}^6\text{He}$ radiative capture reaction, a detector system capable of measuring the 801 ms half-life of ${}^6\text{He}$ has been developed and is being tested using ${}^6\text{He}$ nuclei produced via the ${}^9\text{Be}(n,\alpha){}^6\text{He}$ reaction. Deuterons from the SUNY Geneseo tandem Pelletron produce neutrons in a thick deuterated polyethylene target via the ${}^2\text{H}(d,n){}^3\text{He}$ reaction. These neutrons are allowed to strike a beryllium target placed in front of a silicon ΔE -E detector telescope, which is used to identify the β particles from ${}^6\text{He}$ decay. Following an approximately five second long activation period, the beryllium sample is immediately counted for about five seconds. The pulse heights for each detector and the timestamp are recorded using a specially configured femtoDAQ acquisition system and used to measure the decay curve. Funded in part by a grant from the DOE through the Laboratory for Laser Energetics.

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Date submitted: 15 Jul 2016

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