Abstract Submitted
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Measurement of the ^{7}Li(γ,t)^{4}He reaction between 4 and 11 MeV[1] STEVEN PAIN, Oak Ridge National Laboratory, CATALIN MATEI, ELI-NP, MICHAEL MUNCH, Arhaus University, CARL BRUNE, Ohio University, MICHAEL FEBBRARO, Oak Ridge National Laboratory, HUGON KARWOWSKI, TUNL/UNC, DAVID WALTER, Rutgers University, P-10-16 EXPERIMENT COLLABORATION — The discrepancy in the primordial ^{7}Li abundance, as derived from stellar observations and nucleosynthesis calculations at WMAP baryonic density, is sensitive to alpha capture rates on ^{3}He and ^{3}H. The ^{3}He(α,γ)^{7}Be reaction has been well studied over a wide range of energies, but for ^{3}H(α,γ)^{7}Li discrepancies exist in measurements below E_{CM} = 1 MeV, and limited data above 1.2 MeV do not sufficiently constrain the contribution from higher-lying resonances at astrophysical energies. To contribute to the understanding of this process we have measured cross sections and angular distributions for the time-reversed ^{7}Li(γ,α)^{3}H reaction. The measurement was performed at the HIGS facility at the Triangle Universities Nuclear Laboratory (TUNL) using quasi-monoenergetic ($\sim$3% resolution) photon energies between 4 and 11 MeV. Tritons and alpha particles were detected in silicon detectors of SIDAR surrounding the ^{7}Li target, and the beam intensity was monitored using multiple techniques. Details of the measurement, including the challenges of charged-particle measurements with gamma-ray beams, and preliminary results will be presented.

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