

Abstract Submitted
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Improving (a,n) cross sections on light elements at the University of Notre Dame¹ RICHARD DEBOER, UND, M. FEBBRARO, ORNL, K.T. MACON, LSU, M. WIESCHER, UND — (α, n) cross sections on light elements are useful for a number of applications ranging from nuclear astrophysics and nuclear structure to reactor design and nuclear non-proliferation to neutrino and dark matter detection. In particular many of these applications require the partial cross sections from threshold up to about 9 MeV in order to accurately predict neutron energy spectra. For practical reasons, the majority of previous measurements are limited to total cross sections. Compilations attempt to give partial cross sections based on statistical model calculations, but there are large uncertainties associated with these calculations, which are not propagated on to simulation codes, giving end users a false sense that these cross sections are all “well-known”. In this talk I will describe our general efforts to improve these cross sections by building on previous experiments, using state-of-the-art deuterated liquid scintillators and HPGe detectors, and improving evaluations with comprehensive R -matrix analyses.

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