

Technical Meeting on (α,n) Reaction Nuclear Data Evaluations and Data Needs

Contribution ID: 17

Type: **not specified**

Overview of the (α,n) reaction measurements on light nuclei

Tuesday, 28 November 2023 18:00 (45 minutes)

I will present an overview of the new project to measure the (α,n) reactions on light elements, such as ${}^7\text{Li}$, ${}^{10,11}\text{B}$, ${}^{13}\text{C}$, and ${}^{19}\text{F}$. As an experimental campaign for next 5 years, this study will provide partial, total reaction cross sections, neutron spectra, and gamma- and charged- particle yields. The experiment end station is composed of two different types of neutron detector arrays (deuterated liquid scintillators and stilbene scintillators), High Purity Ge detectors located at multiple angles, and two sets of silicon detector telescopes ($\Delta E1 - \Delta E2 - \Delta E3$) at forward and backward angles. The experiment will be performed at the Institute for Structure and Nuclear Astrophysics at the University of Notre Dame using the FN tandem and the 5U accelerators to cover the alpha energy from 2 to 9 MeV. Including the multi-channel R-matrix analysis on the data we obtain, we also plan to assess the impact of the updated (α,n) nuclear data for the interest of nuclear applications.

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