

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

Contribution ID: 3

Type: **not specified**

Refining the low energy R -matrix fit of $^{13}\text{C}(\alpha, n)^{16}\text{O}$

Wednesday, 29 November 2023 18:00 (45 minutes)

Recent measurements of the differential cross section of the $^{13}\text{C}(\alpha, n)^{16}\text{O}$ reaction have been made at the University of Notre Dame's Nuclear Science Laboratory over an incident laboratory alpha-particle beam energy range from 0.7 to 6.5 MeV. For nuclear astrophysics application, the cross section is desired at ≈ 150 keV and, while the present data is at higher energy, I've shown previously that the differential data has a substantial impact on reducing the extrapolation uncertainty. However, there remain some issues with the fitting that need to be resolved including a larger increased normalization factor for the simultaneously fit $n+^{16}\text{O}$ total cross section data, energy calibration inconsistencies, and poorer agreement with the fits in regions of low cross section. I'll discuss recent progress in resolving some of these issues, which has resulted in a significantly more consistent fitting across the different data sets.

Primary author: DEBOER, Richard (University of Notre Dame)

Presenter: DEBOER, Richard (University of Notre Dame)