

Low-energy cross section measurement of $C^{13}(a,n)O^{16}$

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The cross section of $C^{13}(a,n)O^{16}$ has recently been directly measured in the energy range 235 - 300 keV, for the first time reaching the astrophysical energy window of the s process for the generation of heavy isotopes. By measuring deep-underground at the Gran Sasso National Laboratory (LNGS), using clean He-3 counters and applying PSD techniques for the suppression of the intrinsic background the LUNA Collaboration has drastically improved the uncertainty of the available data.

A Monte Carlo R Matrix fit has been performed, extrapolating the cross section and generating a realistic uncertainty band.

The problem of normalisation of these various data sets has not been fully resolved and will be the main focus of upcoming measurements in a wider energy range at the new LUNA MV facility of the LNGS.

We present the completed low-energy measurement and give an outlook on the future high-energy campaign.

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