Nuclear Astrophysics at the Canfranc Underground Laboratory, 2nd CUNA Workshop



Contribution ID: 8

Type: not specified

$d(\alpha, \gamma)$ REACTION MEASUREMENT AT LUNA

The amount of 6Li produced during the Big Bang Nucleosynthesis (BBN) era can be theoretically estimated on the basis of cosmological and nuclear astrophysics knowledge [1]. The latter strongly depends on the measurement of the nuclear cross section of the processes involved in the production and destruction of 6Li during the first stages of the Universe. Whereas the destruction process cross sections are well known [2], the reaction that dominates the 6Li production, the $2H(\alpha,\gamma)6Li$, has never been directly measured in the BBN energy range and only upper limits coming from indirect measurements are available till now [3]. Here we report the first direct measurement of the $2H(\alpha,\gamma)6Li$ cross section at BBN energies obtained at LUNA (Laboratory for Underground Nuclear Astrophysics, LNGS, Italy).

[1] C. Iliadis, Nuclear Physics of Stars (Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim, 2007.

[2] K. M. Nollett et al., Phys. Rev. C 56, 1144 (1997).

[3] F. Hammache, Phys. Rev. C 82, 065803 (2010).

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