FIRST DIRECT MEASUREMENT OF THE $^2\text{H}(\alpha,\gamma)^{6}\text{Li}$ CROSS SECTION AT BIG BANG ENERGIES AT LUNA

D. Trezzi for the LUNA collaboration

Università degli Studi di Milano / INFN, Milan, Italy

The amount of $^{6}\text{Li}$ 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 $^{6}\text{Li}$ during the first stages of the Universe. Whereas the destruction process cross sections are well known [2], the reaction that dominates the $^{6}\text{Li}$ production, the $^2\text{H}(\alpha,\gamma)^{6}\text{Li}$, 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 $^2\text{H}(\alpha,\gamma)^{6}\text{Li}$ cross section at BBN energies obtained at LUNA (Laboratory for Underground Nuclear Astrophysics, LNGS, Italy).