**DETERMINATION OF THE ASYMPTOTIC NORMALIZATION COEFFICIENTS FOR 7Li+p→8Be FROM THE PERIPHERAL DIRECT CAPTURE 7Li(p,γ)8Be REACTION AND THE ASTROPHYSICAL S FACTOR AT LOW ENERGIES**

K. I. Tursunmakhatov

*Gulistan State University, Gulistan, Uzbekistan;*

*Institute of Nuclear Physics, Tashkent,Uzbekistan;*

 E-mail: tursunmahatovqi@mail.ru

The reaction 7Li(p,γ)8Be is part of the pp-chain in the Sun, leading to the formation of 8Be. In the present work, the analysis of the experimental astrophysical *S* factors *S*exp(*E*) for the nuclear-astrophysical 7Li(p,γ)8Be reaction in the off-resonance energy region measured in [1] are performed within the modified two body potential approach [2], and assuming that, in this energy region (E≤ 200 keV) radiative proton capture by 7Li nucleus is direct.

The method involves two additional conditions that verify the peripheral character of the direct radiative capture reaction 7Li(p,γ)8Be in the off-resonance energy region: 1) $R\left(E,b\right)=const$ for arbitrary variation of the single particle asymptotic normalization coefficient *b* for each fixed experimental value of the energy *E*; 2) the ratio $C\_{p}^{2}={S^{exp}(E)}/{R(E,b)}$ must not depend neither from *b* and nor from the energy *E* for each experimental point of the energy (E=98.3, 147.6 and 198.3 keV), where $R\left(E,b\right)={S^{\left(sp\right)}(E)}/{b^{2}}$in which $S^{\left(sp\right)}(E)$ is a single-particle astrophysical *S* factor. Fulfillment of the conditions above, it allows to determine “experimental” values of ANCs $C\_{p}^{2}\left[=\left(C\_{p}^{exp}\right)^{2}\right]$ for ground and first excited states of 8Be with their uncertainty. The obtained values of ANCs $\left(C\_{p}^{exp}\right)^{2}$ can be used in the expression $S\left(E\right)=\left(C\_{p}^{exp}\right)^{2}R(E,b)$ for obtaining the extrapolated values of *S*(*E*) and its uncertainties within the energy range *E*< 98.3 keV, including *E=*0.

Variation of values of the parameters of the Woods-Saxon potential $r\_{0}$ and *a* is done in the wide range (1.1≤ *r*0 ≤1.4 fm, 0.59≤ *a* ≤0.72 fm) and it is shown that the reaction is strongly peripheral. As a result, the new values of ANCs $\left(C\_{p}^{exp}\right)^{2}$ with their uncertainties for 7Li+p→8Be were obtained. The obtained values of ANCs are used for calculation of the astrophysical S factor of the radiative resonance capture 7Li(p,γ)8Be reaction within the modified R-matrix method [3].

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