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NUCLEAR SCIENCE AND ITS APPLICATION**

BOOK OF ABSTRACTS



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STUDY OF ${}^9\text{Be}({}^3\text{He},d){}^{10}\text{B}$ REACTION

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Correct calculations on fusion of light nuclei such as ${}^6,7\text{Li}$, ${}^9\text{Be}$ and ${}^{10,11}\text{B}$ firstly need for reliable information about interaction potential parameters and structure characteristics of the nuclei taking part in these processes. The aim of this work is to obtain asymptotical normalization coefficients (ANC) for $({}^9\text{Be}+p)$ -configuration of ${}^{10}\text{B}$ nucleus from the analysis of differential cross sections of proton transfer reaction ${}^9\text{Be}({}^3\text{He},d){}^{10}\text{B}$ at low energies.

Particularly, for correct calculations of differential cross sections of proton capture by ${}^9\text{Be}$ nucleus one will need physically justified optical potential parameters for incoming $(A+{}^3\text{He})$ and outgoing $(B+d)$ channels of ${}^9\text{Be}({}^3\text{He},d){}^{10}\text{B}$ reactions. For this purpose we made reanalysis of data on elastic scattering of ${}^3\text{He}$ ions from ${}^9\text{Be}$ nuclei (at energies 50, 60 MeV [1]) and deuterons from ${}^{10}\text{B}$ (at energies 18, 25 MeV [2]), obtained at U-150-M cyclotron INP (Almaty) with the involvement of literature data at different energies.

Analysis of differential cross sections of proton transfer reaction ${}^9\text{Be}({}^3\text{He},d){}^{10}\text{B}$ was made using DWUCK5 computer code at energies 18, 25.2, 33.3 MeV [3-5]

In papers [3-5] the authors during the analysis of experimental data have obtained spectroscopic factors which are generally energy dependence. Whereas the asymptotic normalization coefficients for $({}^9\text{Be}+p)$ -configuration of ${}^{10}\text{B}$ nucleus that we obtained in current work do not have such dependence and may be used for calculating cross sections of proton radiative capture by ${}^9\text{Be}$ nucleus.

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