

Cross-section measurement for the ${}^7\text{Li}(p,p'){}^7\text{Li}$ and ${}^7\text{Li}(p,{}^4\text{He})$ reaction

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Reliable data on the ${}^7\text{Li}(p,{}^4\text{He})$ and on ${}^7\text{Li}(p,p'){}^7\text{Li}$ reactions cross section are important for many applications, including fusion and accelerator neutron sources with a lithium target. The existing cross-section datasets in the literature are unfortunately inadequate and discrepant in many cases. Measurements of the reactions cross section were carried out at the accelerator-based neutron source at the Budker Institute of Nuclear Physics (Novosibirsk, Russia) using a NaI, HPGe γ -ray and alpha spectrometers. The ${}^7\text{Li}(p,p'){}^7\text{Li}$ reaction cross section and 478 keV photon yield from a thick lithium target at proton energies from 0.65 MeV to 2.225 MeV have been measured with high accuracy. The ${}^7\text{Li}(p,{}^4\text{He})$ reaction cross section is determined for proton energies $E = 0.6\text{-}2$ MeV. The experimental data are compared to the data from literature, when available.

Plans to measure the ${}^{11}\text{B}(p,{}^4\text{He})$ neutronless fusion reaction cross section.

The report will describe the neutron source VITA, present and discuss the results obtained, and declare plans.

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The speaker is a student or young scientist

No

Section

1. Experimental and theoretical studies of nuclear reactions

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