



Measurement of the ${}^7\text{Li}(p,p'\gamma){}^7\text{Li}$ reaction cross-section and 478 keV photon yield from a thick lithium target at proton energies from 0.7 to 1.85 MeV

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A cross section of inelastic scattering of protons on atomic nuclei of lithium and an yield of 478 keV photons from a thick lithium target has been measured at proton energies from 0.7 to 1.85 MeV. The study was conducted on a vacuum insulated tandem accelerator using targets with various thicknesses of lithium layer. The intensity of the emitted photons was measured by a gamma-spectrometer with high purity germanium detector. The spectrometer was calibrated on full and relative sensitivity by reference radionuclide sources of photon radiation. The measurement results were compared with those presented in the EXFOR nuclear reaction database and published in open sources. The reliability of the results of previous studies was assessed. The obtained data on the ${}^7\text{Li}(p,p'\gamma){}^7\text{Li}$ reaction cross section and 478 keV photon yield from a thick lithium target are most accurate. The report presents the results of the study and notes the importance of the results for treatment planning.

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