

Publication

Accurate measurement of the standard $^{235}\text{U}(n,f)$ cross section from thermal to 170 keV neutron energy

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An accurate measurement of the $^{235}\text{U}(n,f)$ cross section from thermal to 170 keV of neutron energy has recently been performed at n_TOF facility at CERN using $^6\text{Li}(n,t)^4\text{He}$ and $^{10}\text{B}(n,\alpha)^7\text{Li}$ as references. This measurement has been carried out in order to investigate a possible overestimation of the ^{235}U fission cross section evaluation provided by most recent libraries between 10 and 30 keV. A custom experimental apparatus based on in-beam silicon detectors has been used, and a Monte Carlo simulation in GEANT4 has been employed to characterize the setup and calculate detectors efficiency. The results evidenced the presence of an overestimation in the interval between 9 and 18 keV and the new data may be used to decrease the uncertainty of $^{235}\text{U}(n,f)$ cross section in the keV region.

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