

Development of the evaluated cross sections database for (n, γ)-type reactions

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The study of characteristic γ -ray emission from fast neutron-induced reactions is crucial for both fundamental nuclear physics and applied research. It provides valuable information about nuclear structure and the probabilities of exciting specific nuclear states. Gamma-ray spectroscopy of products of reactions with fast neutrons (particularly around 14 MeV) is a prospective technique for investigating the elemental composition of materials.

To date, the most complete set of the γ -emission cross-sections in neutron-induced reactions is a INDC report made by Simakov et al. [1] in 1997 which contains set of experimental data and evaluated cross-sections values.

Since that time a number of experiments dedicated to γ -emission cross-sections measurements was made at GELINA [2], nELBE [3], CoGNAC [4] and TANGRA [5] projects that provide more accurate data in comparison with the previous measurements so a new evaluation is required.

In the proposed report an analysis of the EXFOR database with LLM application as well as subsequent evaluation of the cross-section values based on processed EXFOR data will be discussed.

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References

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