

Measurements of the γ ray emission cross-sections in $\text{Fe}(n, x\gamma)$ -type reactions

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Iron-based alloys are important construction materials which are widely used in science and industry. Information about cross-sections of different nuclear reactions on iron is needed to accurate modeling of different nuclear facilities, elemental analysis and other applications. From theoretical point of view, experimental cross-sections are needed to adjust optical potentials for incoming and outgoing particles.

Measurements of the γ ray emission cross-sections in $\text{Fe}(n, x\gamma)$ were performed using TANGRA facility with high-purity germanium (HPGe) detector[1]. Neutron generator ING-27 with embedded 64-pixel α -detector was used as 14.1 MeV neutron source. In this experiment 17 γ -transitions were observed; for 13 γ -transitions cross-sections were measured and compared with data obtained in other experiments and results of calculations in TALYS. Data processing procedure and discrepancy between our results and previous measurements[2-5] will be discussed.

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