

Reanalysis of the Data on T-Odd Angular Correlations in the Emission of Prompt Gamma Rays and Neutrons in Fission of Uranium by Polarized Cold Neutrons

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Study of the T -odd three-vector correlation in the emission of prompt neutrons from ^{235}U fission by polarized cold neutrons has been measured at the facility MEPHISTO of the FRM II reactor (Technical University of Munich). Although these experiments were done in 2010-2012, till now the results were published only for several angles to the fission axis. The aim of this work is to show the results for all angles at which measurement done. There were used 4 NaI and 8 plastic scintillators in the experiments. NaI detectors were placed at angles $\pm 45^\circ$ and $\pm 135^\circ$, while plastic scintillators at angles $\pm 22.5^\circ$, $\pm 67.5^\circ$, $\pm 112.5^\circ$, and $\pm 157.5^\circ$ relative to direction of registration of the fragments. As a target it was used an oxide-protoxide of ^{235}U with a thickness of $500 \mu\text{g}/\text{cm}^2$ deposited on both side of a 1-mm-thick zirconium plate. The results for the ROT-effect correlation in the emission of prompt fission neutrons and gamma-rays are presented for plastic scintillators at given angles. The magnitude and the sign of the angle of rotation of polarized nuclei is determined and compared with the values for the ternary fission.