The estimation of the angle of fission axis rotation in binary fission of ^{235}U induced by polarized neutrons with energies 60 meV and 270 meV

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After discovery the T-odd effects in the ternary fission [1-3] the analogous effects for gammas and neutrons in fission of ^{235}U and ^{233}U was also observed [3-6]. It is predicted that the change in the magnitude of the ROT effect depending on the energy of the incident neutrons, considering likewise proportionality of these effects to the effective angular velocity of the compound nucleus at the moment of scission. Moreover, it is interesting performing the experiment by polarized neutrons with energies, in which only one spin state of the compound nucleus is dominated. So, the effects depend on spin states of the compound nucleus and their projects on the fission axis. Our team continues to carry out a series of experiments by polarized neutrons with different energies. Recently, our group obtained the ROT effect results measured in the angular distribution of gamma quanta from fission of ^{235}U by polarized "warm" (60 meV) and "hot" neutrons (270 meV) at the POLI facility of the FRM II reactor in Garching. Experimental dependencies of γ-quanta versus the angle of their emission was measured in the experiments in order to determine the coefficient of angular anisotropy A from which it is estimated the angle of fission axis rotation. The coeffcient of angular anisotropy A was found to be equal to $A=0.1570 \pm 0.0053$ for the prompt γ-rays from binary fission of ^{235}U by "warm" (60 meV) neutrons, while this value in case of "hot" neutron equal to $A=0.1632 \pm 0.0129$. The appropriated angle of fission axis rotation was determined to be equal to $\delta_{FF} = 0.069 \pm 0.008$ deg and $\delta_{FF} = 0.021 \pm 0.009$ deg, respectively.

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