



Contribution ID: 189

Type: Talk

T-odd effects in the binary fission of uranium induced by polarized neutrons

Tuesday, December 8, 2020 2:05 PM (25 minutes)

T-odd effects in the fission of heavy nuclei have been extensively studied during more than a decade in order to study the dynamics of the process. A collaboration of Russian and European institutes discovered the effects in the ternary fission in a series of experiments performed at the ILL reactor [1-2] and the effects were carefully measured for a number of fissioning nuclei. The analogous effects for gammas and neutrons in fission of ^{235}U and ^{233}U was also measured [2-5] after the observation of T-odd effects for ternary particles accompanying the reaction $^{235}\text{U}(n,f)$ induced by cold polarized neutrons. All experiments up to now were performed with cold polarized neutrons, which suggests a mixture of several spin states of the compound nucleus, the relative contributions of which are not well known. The measurements of gamma and neutron asymmetries in an isolated resonance of uranium is important in order to get “clean” data. The present work describes a number of our team’s measurements that include the results of T-odd effects in the fission of uranium isotopes by polarized neutrons with different energies at the POLI facility and the MEPHISTO beamline of the FRM2 reactor in Garching.

- [1] P.Jesinger et al., Phys.At.Nucl. 62, 1608 (1999)
- [2] Y.Kopatch et. al., EPJ Web of Conf. 169, 00010 (2018)
- [3] G.Danilyan et al., Phys.At.Nucl. 72, 1812 (2009)
- [4] G.Danilyan et al., Phys. At. Nucl. 74, 671 (2011)
- [5] G.Danilyan et al., Phys.At.Nucl. 74, 671 (2011)

Primary authors: Mr AHMADOV, Gadir (Joint Institute for Nuclear Research, 141980 Dubna, Russia, National Nuclear Research Centre, Baku, Azerbaijan); BERIKOV, Daniyar; Mr KOPATCH, Yuri (Joint Institute for Nuclear Research, 141980 Dubna, Russia); Mr NOVITSKY, Vadim (Joint Institute for Nuclear Research, 141980 Dubna, Russia, Institute for Theoretical and Experimental Physics of National Research Centre “Kurchatov Institute”, 117218 Moscow, Russia); Mr GAGARSKY, Alexei (Petersburg Nuclear Physics Institute of National Research Centre “Kurchatov Institute”, 188300 Gatchina, Russia); Prof. DANILYAN, Gevorg (Joint Institute for Nuclear Research, 141980 Dubna, Russia, Institute for Theoretical and Experimental Physics of National Research Centre “Kurchatov Institute”, 117218 Moscow, Russia); HUTANU, Vladimir; KLENKE, Jens (FRM II); MASALOVICH, Sergey; DENG, Hao

Presenter: Mr AHMADOV, Gadir (Joint Institute for Nuclear Research, 141980 Dubna, Russia, National Nuclear Research Centre, Baku, Azerbaijan)

Session Classification: MLZ Users 2020 - Nuclear, Particle, and Astrophysics

Track Classification: UM: Nuclear, Particle, and Astrophysics