

OBSERVATION OF THE SHAPE ISOMER STATES IN FISSION FRAGMENTS FROM (γ , f) REACTIONS

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The experiments were performed at the beam of the MT-25 microtron, FLNR, JINR, using VEGA (V-E Guide based Array) setup. Fission fragments (FFs) from the $^{235,238}\text{U}(\gamma, f)$ reactions are captured by the electrostatic guide system (EGS). The EGS constitutes a cylindrical capacitor of four meters long with a thin wire as a central electrode. Some part of the ions emitted from the target at one end of the guide can be involved in the spiral-like movement along the guide axis [1]. By this way the FFs are transported to the time-of-flight mass-spectrometer consisted of the microchannel-plates based timing detector and the mosaic of four PIN diodes. The mean time-of-flight of the FFs in the EGS exceeds 400 ns.

The peculiarities of the two dimensional FFs mass correlation distributions observed let us to suppose the following nature of such peculiarities (linear structures) [2]. Very deformed FF from binary (γ, f) reaction undergoes a break-up crossing the Lexan foil of the timing detector due to inelastic Coulomb scattering. It is possible if the fragment was born in the shape isomer state with a typical life time of more than 400 ns. Earlier, manifestations of similar process in $^{252}\text{Cf}(sf)$ and $^{235}\text{U}(n_{th}, f)$ we discussed in Ref. [3].

The speaker is a student or young scientist

No

Section

1. Experimental and theoretical studies of nuclear reactions

Primary author: KAMANIN, Dmitry (JINR)

Co-authors: PYATKOV, Yuri (JINR); Mr SOLODOV, Alexey (Joint Institute for Nuclear Research); Mr STREKALOVSKY, Alexander (Joint Institute for Nuclear Research); Dr ZHUCHKO, Vladimir (Joint Institute for Nuclear Research); Mrs GORYAINOVA, Zoya (Joint Institute for Nuclear Research); Dr MALAZA, Vusi (University of Stellenbosch, Faculty of Military Science, Military Academy); Dr STREKALOVSKY, Oleg (Dubna State University & JINR); Mrs KUZNETSOVA, Elena (Joint Institute for Nuclear Research)

Presenter: KAMANIN, Dmitry (JINR)

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