

# Study of the break-up of fission fragments in solid-state foils using double-hit experimental approach

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In our previous publications [1-4], we discussed various manifestations of the decay channel of low excited heavy nuclei, called collinear cluster tri-partition (CCT). The break-up of the fission fragment was observed while the fragment passes a solid-state foil. The bulk of the results were obtained in the framework of the so-called missing mass method when only two fragments are directly detected, and a deficit between their total mass and the mass of the mother system serves as a sign of a multibody decay. In order to increase reliability of identification of such events so called "double-hit" experimental approach was applied in our recent experiments at the COMETA setup in FLNR (JINR). COMETA is a double-armed mosaic time-of-flight spectrometer of fission fragments [2]. Digital images of all the signals from PIN diodes and micro-channel plates based "start" detector were obtained using multichannel fast flash-digitizer. Off-line processing of the recorded data allowed us to select the decay events where two fragments were detected in the same PIN diode ("double-hit" event) during the time-selection gate of 200ns. For the selected events, the precission configuration of the mother nucleus seems to be a chain which includes different magic nuclei.

## References

1. Yu.V. Pyatkov et al., Eur. Phys. J. A 45, 29 (2010).
2. Yu.V. Pyatkov et al., Eur. Phys. J. A 48, 94 (2012).
3. Yu.V. Pyatkov et al., Phys. Rev. C 96 (2017) 064606.
4. Yu.V. Pyatkov et al., Eurasian Journal of Physics and Functional Materials v.4 №1 (2020) 13-18

## Section

Experimental and theoretical studies of nuclear reactions

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