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Investigation project: studying of fission fragment's brake-up while passing through solid state foils using Timepix3 detector

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The goal of the project is to investigate the new effect consisting in fission fragment's brake-up while passing the solid-state foil. According to the previous experiments [1-3], it is expected that masses of some brake-up residuals correspond to magic nuclei, such as 128,132Sn, 144Ba. The project aims to detect all products of the fragment's brake-up in coincidence using the latest generation of hybrid particle pixel detector Timepix3 with the «Katherine» readout device [4]. It permits simultaneous determination of (x, y) coordinates of the detected products with ⊠m resolution as well as their energy and time-of-flight, which provides their angular and mass correlations with high resolution. Long-term measurements of angular and mass correlations of the products will be performed at FLNR (JINR) with ultra-thin sources of 252Cf. Some test experiments with the Timepix3 detector are also planned to be performed at the IC-100 accelerator. The first results of using such detectors in FLNR will be presented.

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