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Observation of a new effect in the ternary fission of $^{252}\text{Cf}(\text{sf})$ with the emission of alpha particles

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The mass distributions of $^{252}\text{Cf}(\text{sf})$ ternary fission fragments with the emission of a light charged particle are measured. The experiment was carried out on a modernized COMETA time-of-flight spectrometer consisting of 28 silicon pin diodes with a thin input window and a starting detector based on microchannel plates. The threshold for the measured particle energy was ~ 1 MeV. The mass resolution for alpha particles was ~ 0.34 amu. It was found for the first time that in fission events with alpha particles emitted at an angle close to 90° to the fission axis, a fragment passing through the emitting foil of the starting detector loses mass up to 16 amu. decay [1-4]. Yu.V. Pyatkov et al., Eur. Phys. J. A. 45, 29 (2010). Yu.V. Pyatkov et al., Eur. Phys. J. A. 48, 94 (2012). D.V. Kamanin and Yu.V. Pyatkov, Clusters in Nuclei, Lecture Notes in Physics. 875, 183 (2013). Yu.V. Pyatkov et al., Phys. Rev. C. 96, 064606 (2017).

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