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Methods of the data analysis and preliminary results in the MONUMENT experiment

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Search for the neutrinoless double beta decay ($0\nu\beta\beta$) is one of the priority tasks of modern physics. Its discovery would play a fundamental role not only for neutrino physics itself, but also for particle physics and cosmology. To determine the effective mass of the Majorana neutrino from the measured probabilities of $0\nu\beta\beta$ decay, it is necessary to know the value of the corresponding nuclear matrix element (NME) with sufficient accuracy. Up to date, theoretical NME calculations give results that vary by a factor of 2–3, depending on the shell model used in evaluation. The obtained results in our project would be drastically important for checking the accuracy of theoretical calculations of NME.

Since 2021, a large amount of data has been collected using different isotopes (daughters of $0\nu 2\beta$) as a target. This poster will present the main methods of data selection and identification used in our analysis in order to obtain partial muon capture rates in different isotopes. The Multi-detector data acquisition system together with an independent monitoring system allowed us to qualitatively differentiate the events recorded by our setup. The obtained preliminary results will be presented as well.

Consent

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