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Method of events selection in measurements of the reaction of stopped pion absorption

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The method of selection of useful events in the stopped pion absorption reactions has been developed. The method is based on the use the system of monitor semiconductor detectors calibrated using registration of pion stops in the “living” target (a silicium detector). The monitor system energy threshold values are determined that allow to reach the maximum efficiency (˜ 90%) of the selection of pion stops in the targets.

The method was tested on the experimental data obtained on targets 6,7Li, 9Be, 10,11B, 12C, 28Si, 40Ca, 59Co, 93Nb, 114,117,120,124Sn, 169Tm, 181Ta, 209Bi. It is shown based on the analysis of the systematical errors that the absolute normalization precision of spectra with the method is 8%. This precision is significantly better than the results obtained with other methods.

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