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Features of the time dependence of the intensity of delayed neutrons in the range of 0.02 s in the fission 235U by thermal and fast neutrons.

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In the present work the set-up created on the basis of the accelerator Tandetron (IPPE) for the experimental studies of the time dependence of delayed neutron activity from neutron induced fission of 235U is described. Measurements were carried out with neutron beam generated by the 7Li(p,n) reaction. The lower limit of the investigated time range was governed by the proton beam switching system that was 20 ms. The neutron detector is an assembly of three SNM-18 counters (working gas: a mixture of 97% He-3 + 3% Ar, pressure of 405 kPa.) mounted in the polyethylene box. It was shown that the temporary characteristics of delayed neutrons from the fission of 235U by epithermal neutrons is consistent with the time dependence which at present is recommended as a standard. In case of the fast neutron induced fission of 235U the measured decay curve of delayed neutrons shows excess of counting rate in the time interval 0.01-0.2 s as compared with the decay curve corresponding to the recommended data. The microscopic approach using the data on the probability of emission of delayed neutrons and cumulative yields of fission products for 368 nuclei precursors also indicates the existence of short-lived component (T1/2 <0.2 s) in the decay curve of activity of delayed neutrons emitted in the fission of 235U.

Country/Int. Organization

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