

Measurement of Fission Cross Section and Angular Distribution of Fission Fragments from Neutron-Induced Fission of ^{242}Pu in the Energy Range 1–500 MeV

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The fission cross section and angular distribution of fission fragments from the neutron-induced fission of ^{242}Pu were measured in the energy range 1–500 MeV using the GNEIS neutron time-of-flight spectrometer and the pulsed neutron source based on the 1 GeV proton synchrotron of the NRC KI - PNPI (Gatchina). A description of the original experimental setup, consisting of two MWPC counters with ^{242}Pu and ^{235}U targets, is given, as well as some basic details of the experimental data processing.

The fission cross section of ^{242}Pu is determined by the ratio method using ^{235}U as a reference. Of particular interest is the angular distribution of fission fragments in the energy range 1–500 MeV. There are currently no other experimental data in this field, despite growing interest stimulated by the development of new nuclear technologies. This measurement is a part of our investigations of neutron-induced fission of the plutonium isotopes ^{239}Pu , ^{240}Pu and ^{242}Pu at intermediate energies.