Experimental Measurement of TOF Histogram in High Energy Part of the Neutron Spectrum

Djilkibaev R.M., Khliustin D.V.

Institute for Nuclear Research, Russian Academy of Sciences, Moscow, Russia

An increase of the detector's and data acquisition system's performance, made it possible for TOF spectrometer to distinguish the initial part of the histogram, corresponding to cascade and fast neutrons.

The work presents experimentally measured initial parts of TOF spectra, obtained using samples-radiators of Au-197, Ho-165, In-115 and other subjects as target materials. The possibility to reconstruct neutron target station's fast neutron spectrum, using experimental histograms, is discussed.

Measurements were carried out with a channel duration of the data acquisition system 100 nanoseconds and proton linear accelerator operating with parameters: proton energy 267 MeV, pulsed current 10 mA, proton beam duration 250 nanoseconds at half-maximum current amplitude, flash frequency 50 Hz.