

Automatization of gamma-spectrometry diagnostics on accelerator neutron source for BNCT

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The Budker Institute of Nuclear Physics is developing a neutron source based on accelerator for BNCT. One of the methods for determining the parameters of neutron beam is activation analysis. To accurately determine the neutron spectrum, you need a large number of different foils. Manual measurement of foils activation is not safe because it takes a lot of time. This work is about automatization of the measurement foils. A 2d movable table was purchased, which can move along specified coordinates. The gamma-spectrum is measured using a High Pure Germanium Spectrometer. Combining these two devices under the control of one program allowed us to measure each foil automatically. We also created scanning gamma diagnostics, when the sample is measured by coordinates. We made a map of gamma-radiation of a lithium target after it was irradiated with neutrons. Using this system, it is possible to measure irradiated targets, various boron deliverers for BNCT or event laboratory animals. Also, foil activation measurement has become automatic. The user can quickly place samples and start the measurement program, which can take a lot of time, and then leave the room for safety.

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