

Studying neutron spectrum of photoneutron source of INR RAS

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A W-Be-photoneutron neutron source IN-LUE based on a linear electron accelerator was created and installed at the Institute for Nuclear Research of RAS [1]. The shape of the neutron spectrum and flux estimation was obtained earlier as a result of simulation [2]. Due to the impossibility of measuring the neutron spectrum in a wide range of energies within the source, various methods of spectrum unfolding based on the solution of the inverse problem are usually used.

In this work, the results of unfolding the neutron spectrum of the source are presented. As experimental data for unfolding, we used the data of neutron activation analysis of samples irradiated in the source (Ag, Mg, Mn, Sb, Ti, etc.).

To unfold the spectrum, a number of well-known Nuclear Energy Agency (NEA) programs were used [3], which implement various algorithms for solving the inverse problem. Algorithms and results of using the author's method of spectrum unfolding are also presented. The results of unfolding both test and real spectra are considered.

1. A.V.Andreev et al. // Bull. Russ. Acad. Sci.: Phys., 2017, V. 81, P. 748.
2. N.Sobolevsky // Fifth Int. Conf. on Nucl. Fragm. (NUFRA2015). Kemer. Oct. 2015.
3. OECD Nuclear Energy Agency (NEA) Data Bank. Computer program services.

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