

Studying neutron spectrum of photoneutron source of INR RAS

Wednesday, 13 July 2022 15:00 (20 minutes)

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 into photoneutron source chamber 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.

This work also presents the results of measurements of the neutron flux by various methods, as well as their comparison.

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.

The speaker is a student or young scientist

No

Section

1. Synchrotron and neutron radiation sources and their use in scientific and applied fields

Primary author: AFONIN, Alexey (INR RAS)

Co-authors: KASPAROV, Aleksandr (INR RAS); Dr MORDOVSKOY, Mikhail (INR RAS); POTASHEV, Stanislav (Institute for Nuclear Research of Russian Academy of Sciences)

Presenter: AFONIN, Alexey (INR RAS)

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