

# **CALCULATIONAL INVESTIGATIONS AND ANALYSIS OF CHARACTERISTICS OF RESEARCH REACTOR WWR-M AS A SOURCE OF NEUTRONS FOR SOLUTION OF SCIENTIFIC AND APPLIED TASKS**

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Calculational studies and analysis of the neutron fields of WWR-M research reactor of the Institute for Nuclear Research, National Academy of Sciences of Ukraine, as a basic nuclear facility for performing the fundamental and applied investigations and for experimental-industrial production of radioisotope products for various spheres of application are carried out. The calculations are carried out by the method of statistic tests (Monte Carlo) applying the computer program MCNP-4C. The data on the spectra and the neutron flux density values at the 10 MW reactor power for all technological facilities designed for the works with neutrons: 19 vertical experimental channels for irradiation of specimens and 10 horizontal channels for beams extraction from the reactor are obtained. The effect of the neutron traps (water cavities) mounted in the core on the characteristics of the extracted from the reactor beams is demonstrated. Recommendations associated with optimization of the reactor core are adduced for amplification of its capabilities as a neutron source in experimental researches.

*Keywords:* research nuclear reactor, calculation, Monte Carlo, neutron spectre, neutron flux.