

Radiation from Relativistic Electrons in Periodic Structures "RREPS-23" & Electron, Positron, Neutron and X-ray Scattering under External Influences "Meghri-23"



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Characteristics of a neutron source based on an electron accelerator LINAC-200

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As part of the commissioning work at the linear electron accelerator LINAC-200 (JINR), we conducted experiments to study the characteristics of a pulsed neutron source obtained by irradiating a converter target with a 140 MeV electron beam. We performed numerical simulations to estimate the parameters of the neutron source and the energy spectra of neutrons in lead and tungsten targets of different sizes. We also made estimations for measuring the target dimensions in the generated neutron fields. Additionally, we conducted experiments to measure the energy spectrum of neutron and gamma radiation using the high-resolution time-of-flight method. It has been found that the ratio of integral estimates for tungsten and lead targets between the calculated and average measured yields does not exceed ~ 30%. The fluence of resonant and thermal neutrons in the target is estimated at $\sim 2.8 \cdot 10^{13}$ neutrons/s, which corresponds to the requirements for modern pulsed neutron sources.

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