

Optimization of the non-destructive method for diagnosing heavy ion beam losses based on neutron registration

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The previously developed non-destructive method for diagnosing heavy ion beam losses, based on neutron registration, has undergone significant optimization. The main goal of this work was to address identified issues and improve the sensitivity and reliability of the system. During the optimization process, key tasks were solved, including adjusting the operating voltages to enhance detector sensitivity and determining optimal conditions for neutron registration at different beam energies. These measures significantly improved the accuracy and speed of measurements, which is especially important when working with increasing beam energies and intensities.

Additionally, the implementation of continuous monitoring helped minimize data loss and provided more efficient control over beam losses. Experiments conducted at the FLNR accelerator complex confirmed the effectiveness of the improved method, which remains non-destructive—crucial for enhancing the safety of physical installations and improving data quality.

Thus, the optimized diagnostic method has demonstrated its suitability for widespread use in scientific research, including tasks in radiobiology and radiation effect studies, where precise and timely diagnostics are of critical importance.

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