

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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Application of optical Cherenkov radiation for ion beam diagnostics

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In this report, we present the theoretical background of the planned experimental investigation of optical Cherenkov radiation generated by moderately relativistic ion beam in target with frequency dispersion. The target material is a CVD-diamond. It is planned to conduct experiments on the basis of MARUSYA facility in the SPD test zone of the NICA accelerator complex. The available ion energy range is 1-4.5 GeV/n. The results obtained in the course of these studies will allow to evaluate the possibility and efficiency of using this effect as a tool for ion beam diagnostics. The analysis of the simulation results for experimental conditions was carried out. Test measurements have been carried out during the Nuclotron run in 2022-2023. The experimental setup has been prepared for experimental investigation of this effect during the nearest upcoming run of the LHEP accelerator complex.

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