

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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Use of Parametric X-ray Radiation of Electrons in Crystals to Determine the Parameters of Imaging plates

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The good agreement between the results of calculation of the yield and angular distributions of parametric X-ray radiation (PXR) of electrons in crystals in the framework of the kinematic theory with experimental data [1, 2] makes it possible to use the results of PXR measurements to determine the parameters of experimental equipment, see, for example, [3].

The most interesting is the assessment of the dependence of the sensitivity of imaging plates (IP) on the photon energy. Recently, IPs have been produced by several companies and are widely used in medicine, X-ray flaw detection, and other fields of science and technology to measure the spatial distribution of ionizing radiation beams. It should be noted that there is no information on the exact composition of the plates and their density in the literature.

The results of processing the results of measurements of the PXR angular distributions of electrons with an energy of 255 MeV in a silicon crystal using several types of RP, performed on a Saga-LS linear accelerator, are presented. The spectral dependence of the IP sensitivity is determined for the photon energies of two reflection orders and for the (111) and (110) reflecting planes. An estimate of the density of the investigated plates is made.

References

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2. Yu.A. Goponov et al. // NIM B 2015 V. 355 P.150.
3. A.V. Shchagin et al. // NIM B 2001 V. 173 P.154.

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