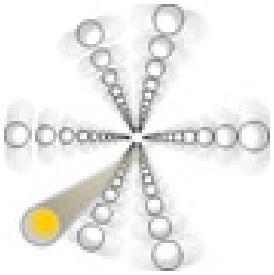

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Radiation Spectra of Electrons with Energy Two Hundred MeV Moving in Diamond and Silicon Crystals near their Axis and Planes

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In this report it is presented results of data processing and analysis on studying radiation spectra of electrons with energy ~200 MeV in a diamond and silicon crystals at orientations when the electrons move near the crystal axes and planes. Preliminary results were presented in [1].
At energies of some hundred MeV the coherent effects in radiation resulted from an electron dynamic in the crystal were not practically investigated until now. At these energies the electrons motion in the crystal can be both regular, when axial and planar channeling is possible, and chaotic, when the coherent electron interaction with single strings reveals itself. The experimental results demonstrate strong increasing of the radiation intensity in energy region less 20 MeV. The maximal enhancement at axial orientation for diamond crystal 0.1 mm thick reaches at photon energy ~2-3 MeV about ten times more than the electron radiation in the amorphous matter of the same thickness.
At increasing the angle between crystal axis and electron beam the intensity at the low energy maximum decrease and peaks from coherent bremsstrachlung are appeared.
The experimental spectra are compared with theoretical calculation based on semi-classical model developed by the Kharkov's group [2]. The experimental data show that the coherent electron interaction with single crystal strings gives the main contribution to the electron radiation.

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