

ORBITAL ANGULAR MOMENTUM OF CHANNELING RADIATION FROM RELATIVISTIC ELECTRONS

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Electromagnetic field is proven [1] to possess an intrinsic angular momentum. Using the developed code BCM-1 [2] the orbital and spin angular momentum of the channeling radiation (CR) from positrons in the thin Si crystal was considered in [3] in the frame of classical approach. The Mathematica [2] code developed by the authors enables calculating the trajectories and CR spectra of both planar and axial channeled electrons as well as positrons in crystals.

Here we consider the orbital angular momentum (OAM) of the radiation from electrons at (110) planar and $\langle 100 \rangle$ axial channeling in the thin 0,7 and 20 B \times m Si crystal. The angular-of-incidence dependence of total CR OAM and the influence of the crystal thickness are investigated. The energy of electrons is chosen to be 255 MeV in accordance with the experimental setup at linear accelerator at SAGA-LS (Japan) [4]. The possibility of experimental detection of such properties of channeling radiation is discussed.

References

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