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Doughnut Scattering of 255 MeV Electrons at $\langle 100 \rangle$ Axial Channeling in Thin Si Crystal

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The properties of both angular and spatial distribution of 255 MeV electrons at $\langle 100 \rangle$ axial channeling in thin silicon crystal has been investigated experimentally at the linac injector of SAGA light source and by computer simulations using a computer code "Basic Channeling with Mathematica®"BCM-1.0 developed by the authors. Comparison of the experimental and theoretical results shows a good agreement. Both experimental data and simulations show the brilliant effect of so-called "doughnut scattering" that can be used for the diagnostics of the incident beam angular divergence.

The spatial distributions of electrons penetrating through the thin Si crystal at (220) alignment are also studied. The results are compared with DS at $\langle 100 \rangle$ axial channeling

Further perspectives of experimental studies of electrons scattering in crystal at SAGA LS are discussed.

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