

Magnetic field measurement status of magnets for the Korea-4GSR storage ring

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The 4GSR storage ring, with a 4 GeV electron energy, is designed with 28 cells based on the hybrid 7-bend achromat lattice concept. Compared to third-generation synchrotron radiation accelerators, it offers 100 times higher brightness and achieves an exceptionally low beam emittance of less than 100 pm·rad. To meet these specifications, each cell is equipped with a longitudinal gradient bend magnet (LGBM) and a reverse bend magnet (RB), with a central bend magnet (CB) located at the center for generating a harder X-ray source. This paper describes the magnetic field measurement system for the CB and LGBM used in the storage ring, along with the measurement results. The field mapping system utilizes a SENIS 3-axis hall probe sensor (I3C-03C10L-B02T0K5J) to minimize planar effects. The X, Y, and Z axis movements of the hall probe are controlled by linear and stepper motors, ensuring an accuracy within 5 μm . This system is capable of measuring the magnetic field within a 3D space of 400 mm x 200 mm x 3200 mm.

Paper submission Plan

Yes

Best Presentation

No

Contribution track

ICABU WG3. Beamline and Instrumentation

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