

Technical Design Considerations on the Low Level RF System for KOREA 4-GSR

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The 4th Generation storage Ring (4GSR) as the second large synchrotron light source in Korea was launched from 2021. It features < 100 pm rad emittance, about 800 m circumference, 4 GeV electron-beam energy, full energy booster injection, and more than 40 beamlines.

The booster synchrotron RF system will be designed and manufactured so that up to 1nC charge per bunch injected from the linear accelerator are stably incident on the storage ring every 0.5 seconds by increasing the energy from 200MeV to 4GeV. The performance goals for the booster are derived from the beam acceptance requirements for the storage ring including an RF acceptance of 4.051%

We discuss the techniques and design of what is considered the booster synchrotron low-level RF system, including cavity field control, data acquisition, diagnostics, etc., to reliably and efficiently accelerate electron beams from 200MeV to 4GeV. In this report, the design study of the Low Level RF system is presented along with the technical proposals and design summary to be applied to the manufacture of the booster low-level RF system.

Keyword

RF booster field control

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