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Design status of RF system for the Korea 4th generation storage ring

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A new fourth-generation synchrotron radiation source(4GSR) will be built in Ochang, South Korea by 2027. A technical design review for the Korea 4GSR is currently in progress and is expected to be completed in mid-2023.

The storage ring has a circumference of 800 m. It has been designed for a maximum current of 400 mA at 4 GeV electron beam energy. A target emittance is 58 pm-rad, 100 times less than PLS-II that is 3rd generation light source in Korea.

The RF system for the Korea 4GSR consists of 10 or more normal conducting cavities, a low-level RF(LLRF) system, a high-power RF(HPRF) system and so on. In order for the beam stability highly-HOM damped cavities will be indispensable. Subsidiary the feedback system such as a longitudinal feedback system(LFS) and transverse feedback system(TFS) will be installed in the storage ring. Additionally we are planning to install harmonic cavities for Landau damping, on the other hand for improving of beam life time and less wake field. In case of the LLRF, we would try to apply new digital feedback control scheme. And the HPRF is taking account of solid state RF power amplifier.

This presentation shows the current status and plans of the RF system for the Korea 4GSR.

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Footnotes

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