

Design Status of Vacuum System for the Korea-4GSR

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The 4th generation storage ring project in Korea (Korea-4GSR) has begun in 2021 and is scheduled to be completed in 2027. The 800-meter long storage ring is designed to store 62-pm rad emittance electron beam with numbers of strong magnets, resulting in spatial restriction for the vacuum system. To overcome the low gas conductance of the vacuum chamber, the main idea we have employed is to use aluminum extruded chambers having slots for the 'pill-type' getters as a distributed pumping system. This concept has been used in the PLS-II storage ring without any operational problems during the last 10 years. $\Phi 10$ mm ST2002 getters from SAES company is being tested for this purpose. The pumping speed of the getters has been measured before and after being inserted into the slots of the chamber. Two cartridge heaters will be installed in the grooves on both sides of the aluminum chambers to make possible in-situ activation of the getters in the tunnel at 180°C for 24 h. Besides the aluminum extruded chambers, several types of chambers constructing a super-period such as beamline branch chambers, fast corrector chambers, BPMs, RF-shielded bellows, pumping tees and photon mask chambers, have been also designed. It will be presented the overall design status of the vacuum system for the Korea-4GSR and the measurement results of vacuum performance of some prototype chambers.

Summary

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