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## Status and upgrade of radio frequency system at Taiwan photon source

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The RF system for storage ring in TPS is adopted two sets of 500 MHz KEKB-type SRF modules, with total operating voltage of 3.2 MV. Its power is provided by two sets of klystron-type transmitters with an output power of up to 300 kW, and the RF feedback loop is controlled by analog LLRF system. Since the RF system started to operate, it has been continuously improved and introduced new technologies and functions. So far, the system is gradually stable, and the mean time between failures is gradually increasing. The construction of TPS phase III is in progress. To meet its power requirements, the third RF station was officially launched in 2018 for a period of five years. The system integration and performance testing were successfully completed in February 2022. However, the performance of the 4.5K LHe cryogenic system tends to degrade with operating time, which resulted in the newly built KEKB-type SRF module to remove from the operation. Subsequently, a scheme of combining two kinds of heterogeneous power sources to increase the operating power of two SRF modules is proposed and is in progress. TPS will be upgraded to the multi-bend achromat storage ring in the future, and the bunch length will become shorter. Thus, the design and manufacture of the third harmonic superconducting passive cavity was officially launched in 2019, and the system integration and testing are expected to be completed in 2024-2025.

### Funding Agency

### Footnotes

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Yes

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