



Contribution ID: 1298 Contribution code: WEPM014

Type: **Poster Presentation**

Development and progress of the high-power solid-state amplifiers for HEPS

Wednesday, 10 May 2023 16:30 (2 hours)

The radio frequency system of High Energy Photon Source adopts a double-frequency design with a main frequency of 166.6 MHz and a third harmonic frequency of 499.8 MHz. There are six normal-conducting cavities on the booster, and each cavity will be driven by a 500-MHz 100-kW solid-state amplifier (SSA) with high modularity, high efficiency and sufficient redundancy. Five 166.6-MHz and two 499.8-MHz superconducting RF cavities will be installed on the storage ring, and each cavity will be driven by a 260-kW high-power SSA. All SSAs use cabinet design, where all amplifier modules and AC-DC converters are pluggable and installed inside the cabinets. The total RF power of the SSAs will reach 2.4 MW at HEPS. With the successful development of two SSA prototypes in 2021, and after a long operation period for various high-power tests, the high stability and high reliability of SSAs have been examined. Series production of all remaining SSAs as well as the subsequent performance tests are underway. Five sets of 500-MHz 100-kW SSAs and two sets of 500-MHz 260-kW SSAs have completed the factory acceptance tests and are ready to be installed at HEPS. The development and progress of the SSAs at HEPS are presented in this paper.

Funding Agency

This work was supported in part by High Energy Photon Source, a major national science and technology infrastructure in China and in part by the Chinese Academy of Sciences.

Footnotes

I have read and accept the Privacy Policy Statement

Yes

Primary author: LUO, Yuanli (Institute of High Energy Physics)

Co-authors: LI, Dongbing (Institute of High Energy Physics); LI, Jian (Institute of High Energy Physics); LIN, Haiying (Institute of High Energy Physics); WANG, Qunyao (Chinese Academy of Sciences); ZHANG, Pei (Institute of High Energy Physics); ZHAO, Facheng (Institute of High Energy Physics)

Presenter: LUO, Yuanli (Institute of High Energy Physics)

Session Classification: Wednesday Poster Session

Track Classification: MC7: Accelerator Technology and Sustainability; MC7.T08: RF Power Sources