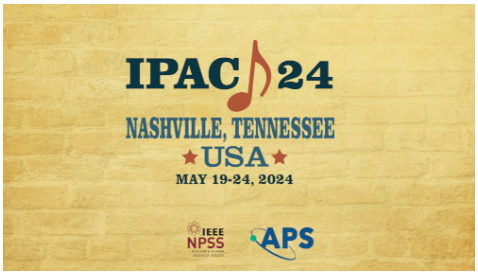

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SSRF superconducting wiggler coil voltage monitoring system and quench monitoring results

Thursday, 23 May 2024 16:00 (2 hours)

The SSRF (Shanghai Synchrotron Radiation Facility) superconducting wiggler consists of three parts: a superconducting multipole magnet, a cryostat system and magnet power & control system. Superconducting multipole magnets can generate a strong magnetic field with a peak of 4.2 T, and the generated magnetic field alternates positively and negatively along the direction of electron motion in the storage ring. The superconducting wiggler is installed in the BL12 unit of the SSRF Storage Ring. The voltage monitoring system can monitor the voltage of each part of the coil of the superconducting multipole magnet through the voltage sense leads, thereby obtaining the voltage trends of each part of the coil when the coil quench occurs. The voltage monitoring system collects the voltage data of each coils through a Siemens S7-1512 PLC analog input modules which is an innovative method. And the system realizes the quench detection by recording the voltage cycle by cycle and judge by a delay threshold. Based on the PLC system both the equipment monitoring function and the voltage monitoring function are achieved. The quench voltage of each coil is captured and analyzed.

Footnotes

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Primary author: MENG, Tianya (Shanghai Advanced Research Institute)

Co-author: DING, Yi (Shanghai Advanced Research Institute)

Presenter: MENG, Tianya (Shanghai Advanced Research Institute)

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