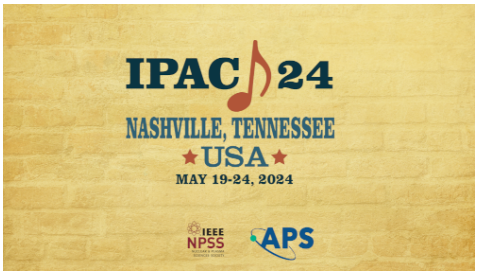

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Design of local control system for injection of fast pulse power supply for HEPS

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

The high-energy photon source (HEPS) under construction in Beijing is an excellent photon source with an emissivity better than 60pm rad. HEPS adopts on axis injection. The fast pulse power supply for booster injection adopts a topology structure of LC resonant discharge based on heavy hydrogen thyristor. The energy storage scheme of pulse capacitors adopts a design scheme of DC charging. The local control station of the fast pulse power supply for the enhancer is mainly responsible for the timing control, charging control, interlock control, protection of the kicker, and remote control. Fast pulse power supplies have high reliability, which poses challenges to the development of local control stations for fast pulse power supplies. The local control station adopts a high-performance programmable logic controller (PLC) as the control core, and applies standard modbus and ethernet for communication protocol to control equipment. A local control station prototype has been built. Through system joint testing, the designed local control station can achieve power control and protection, remote control of the local station, and interlocking protection of the magnet power supply.

Footnotes

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