SOFTWARE FOR SUPERVISORY CONTROL OF THE TRIM COIL POWER SUPPLIES OF THE KOLKATA SUPERCONDUCTING CYCLOTRON

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Abstract

The K-500 Superconducting Cyclotron at Kolkata has 18 trim coils. Each of these coils is energized to a different level using a current-regulated precision power supply to produce the desired magnetic field profile for proper beam dynamics. Supervisory software, with elaborate GUI, has been developed for remote operation and monitoring of the power supplies. It has also been interfaced with four current-setting knobs on the control console to provide the operators with a facility of "analog tuning" in a digital setup. Each of these knobs may be assigned to a power supply on-the-fly and the setting of the power supply changed by turning it. Provision also exists to invert the polarity of a power supply using GUI. The software can be operated in two modes: one, in which, the power supplies are operated independently; and the other, in which, as many as three power supplies may be grouped together, to bring about equal changes in current settings of the grouped power supplies simultaneously using keyboard-mouse combination and/or a knob. The power supplies, having RS-485 interface, are operated and monitored over the control network using Ethernet-to-Serial (RS-485) data converter.

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