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Design of dipole magnet integral measurement system for HTPTF

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A new proton therapy facility (HTPTF) is under construction in Wuhan, China. The dipole magnet integral measurement system was designed for the beam transport system of the HTPTF. The design goal is to build a reliable, precise, automatic measurement system, and it is accurate enough to characterize the magnetic field quality of the dipole magnets in the beam transport system. The integral measurement system consists of a long coil, precision motion stages, data acquisition and control system. The design of the whole system and the measurement method is described in this paper. The design and fabrication of the long coil are also discussed, and the errors from the geometric frame of coil and electronic equipment are analyzed.

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