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Thu-Mo-Po.09-05: Design and development of a pulsed magnetic field measurement system of CSNS

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The BUMP magnet is an important part of a high intensity proton accelerator. In CSNS II, to achieve high injection power and improve injection efficiency, the magnetic field of the BUMP magnet would be increased to 0.55 T with a faster ramping rate of 3500T/s. Considering the limitation of the saturation magnetic field of soft ferrite, a 0.15 mm silicon steel sheet is adopted. At this time, the eddy current effect cannot be ignored, it is necessary to achieve the dynamic magnetic field measurement of the fast BUMP magnet. The paper introduce the design and development of a plused magnetic field measurement system of CSNS. In order to realize the uniformity measurement in the process of fast excitation, a PCB array scheme is adopted. Considering the rapid rate of the BUMP magnet, a novel design of an active RC integrator is introduced. Finally the measurement results of leakage field in injection line is also discussed. The measurement results show high measurement accuracy and repeatability.

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