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Development of a Rectangular Diagonal Cut-Plane BPM for the CSNS-II Injection Upgrade

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As part of the CSNS-II upgrade, an improved injection scheme will be implemented to mitigate the space charge effect. To precisely measure the transverse beam position during injection, painting, and storage in the Rapid Cycling Synchrotron (RCS), a large-aperture (260 mm × 180 mm) Beam Position Monitor (BPM) is essential. The rectangular cut-plane BPM was selected for its excellent linearity over a large area and high signal-to-noise ratio (SNR). Due to limited space in the injection section, the BPMs must be integrated into the AC steering magnet. To prevent thermal heating from eddy current flow, a rib structure has been incorporated into the BPM's outer body. The BPM was designed using numerical simulation codes and subsequently manufactured. This paper details the simulation, design, and calibration results of the diagonal cut-plane BPM.

Footnotes

Funding Agency

I have read and accept the Conference Policies

Yes

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