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Troubleshooting the Ionization Profile Monitor (IPM) for CSNS's 1.6 GeV RCS

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Non-invasive and turn-by-turn beam transverse profile monitoring is essential for the tuning and operating CSNS 1.6 GeV Rapid Cyclic Synchrotron. A residual gas Ionization Profile Monitor (IPM) was designed and installed in RCS for horizontal beam profile measurement. However, several challenges related to electromagnetic interference (EMI), vacuum, and MCP operation in the IPM were identified. The EMI is induced by the beam itself and further accelerator components. An improved Faraday cage was implemented to counteract the EMI issues. In order to achieve the desired MCP gain, a suitable pull-down resistor was incorporated into the MCP power supply circuit. After these improvements, the IPM was commissioned successfully. This paper will describe the challenges of IPM and early beam commissioning results.

Footnotes

Funding Agency

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Yes

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