Contribution ID: **329**　　　　　　　　　　　　　　　　　　Type: **Poster Presentation**

Preminary data analysis of the CSNS RCS IPM prototype

Tuesday 9 September 2025 16:00 (2 hours)

In the China Spallation Neutron Source (CSNS), an Ion Profile Monitor (IPM) was installed in the Rapid Cycling Synchrotron (RCS) to address challenges in measuring strong-current beam profiles and enable real-time monitoring. This study focuses on the preliminary analysis of IPM data signals, aiming to accurately extract critical beam information from the signals. Residual gas components in the vacuum chamber were identified through peak spacing calculations. Real-time beam profiles (0–20 ms, low power) were obtained, revealing the beam center and temporal evolution of rms beam size. Fast Fourier Transform (FFT) of signal peaks uncovered dynamic changes in the synchrotron tune. Single- and multi-Gaussian fitting methods were used to analyze MCP-collected charge over time and determine MCP saturation time point. The results demonstrate that IPM data analysis effectively extracts beam information, supporting real-time monitoring and optimization of CSNS RCS beam stability and quality.

Footnotes

Funding Agency

I have read and accept the Conference Policies

Yes

Author: YANG, Renjun (Institute of High Energy Physics)

Co-author: REHMAN, Muhammad Abdul (Institute of High Energy Physics)

Presenter: YANG, Renjun (Institute of High Energy Physics)

Session Classification: TUP

Track Classification: MC04: Transverse Profile and Emittance Monitors