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RF-driven H- ion source and beam transport optimization for CSNS-II

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The RF-driven H^- ion source has accumulated 1200 days of service time on the accelerator of the China Spallation Neutron Source (CSNS) over the last 4 run cycles. It operates unattended with nearly 100% availability. To achieve the goal of delivering 500 kW beam power to the spallation target, as required by CSNS-II, the beam current from the ion source must be increased while minimizing beam emittance. Research on beam intensity, space charge compensation, and stripped proton beam elimination has been conducted on the ion source test bench with a newly designed Low Energy Beam Transport (LEBT). This report presents the latest experimental results from these studies, along with issues encountered during commissioning. The influence of the chopper structure on beam emittance growth and the systematic error caused by the double-slit scanner are also discussed.

Paper submission Plan

Yes

Best Presentation

No

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