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# Transverse 4D phase space reconstruction using wire scanner measurements at the CSNS Linac

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The characterization of particle distribution in phase space and its evolution along the beamline is fundamental for accelerator beam commissioning and analysis. While numerical simulations enable straightforward tracking in phase space, experimental reconstruction of phase space distributions remains challenging, particularly for hadron beams where space-charge effects are unavoidable. This paper presents a method to reconstruct the transverse 4D phase space using a particle tracking code and beam profile data from multiple wire scanners. By integrating numerical modeling with experimental measurements at the China Spallation Neutron Source (CSNS) linac, detailed discussions on the reconstruction process and the results for beam dynamics optimization are presented.

## Footnotes

## Funding Agency

## I have read and accept the Privacy Policy Statement

Yes

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