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Extracting symplectic maps for space charge dominated beams

Tuesday 12 August 2025 16:00 (2 hours)

Symplecticity of transfer maps is important for reliable evaluation of space-charge dominated beams in accelerators. Unfortunately, most simulation codes that include collective effects, such as space charge, do not use canonical phase-space variables and therefore are not symplectic in the presence of electromagnetic fields. In this paper, we present a numerical method to extract symplectic transfer maps using particle tracking simulation code IMPACT-T for space-charge dominated beams. We demonstrate this method by obtaining symplectic transfer maps in the photo-injector (113 MHz SRF gun) section of the Coherent electron Cooling (CeC) Proof of Principle (POP) experiment.

Please consider my poster for contributed oral presentation

No

Would you like to submit this poster in student poster session on Sunday (August 10th)

Yes

Footnotes

Funding Agency

I have read and accept the Privacy Policy Statement

Yes

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