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Electron and Laser Cooling of Stored Ion Beams at CERN: XSuite Simulations and Measurements

Tuesday 28 October 2025 16:00 (30 minutes)

Electron and laser cooling are key techniques for improving the quality of stored ion beams in synchrotrons. This work presents simulations performed with XSuite to study electron and laser cooling in various CERN machines. The electron cooling simulations, based on the Parkhomchuk model recently implemented in XSuite, are benchmarked against existing codes. The laser cooling studies investigate the feasibility of implementing this technique in the CERN SPS, either to enhance ion beam brightness or as a step toward a potential Gamma Factory in the LHC. Additionally, an overview of experimental electron cooling measurements from various CERN facilities is presented, providing insights into the agreement between model predictions and observed cooling performance.

Footnotes

Funding Agency

I have read and accept the Privacy Policy Statement

Yes

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