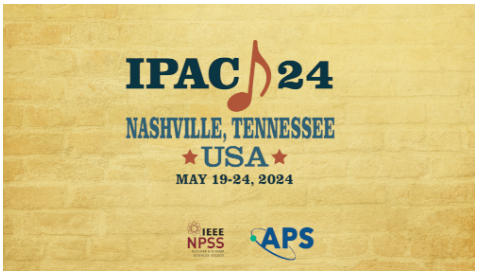

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Measurements and simulations of the e-cooling performance in ELENA

Monday, 20 May 2024 16:00 (2 hours)

Understanding and optimizing the electron cooling performance is essential to ensure high-brightness antiproton beams at the Extra Low Energy Antiproton (ELENA) ring at CERN. This paper presents measurements and simulations of the electron cooling performance in ELENA. The simulations are obtained using the Parkhomchuk model for electron cooling recently implemented in the Xsuite simulation framework. The studies focus on the impact of the electron-beam current, electron-beam size, magnetic field quality, and electron-/pbar-beam trajectory overlap on cooling performance. Notably, the results indicate the maximum magnetic field imperfection that would still provide adequate cooling in ELENA.

Footnotes

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