



Contribution ID: 2658 Contribution code: TUPM026

Type: **Poster Presentation**

Incoherent dynamics of intense proton beams under electron cooling

Tuesday, 9 May 2023 16:30 (2 hours)

The minimum emittance of ion beams achieved using electron cooling is limited by the heating processes of Intra Beam Scattering and diffusion driven by resonance crossing of particles due to space-charge. We describe a new experiment to explore the intense space-charge regime with a transverse tune shift approaching -0.5 using 2.5 MeV protons at the Integrable Optics Test Accelerator (IOTA) at Fermilab. We also report on the results from PyORBIT simulations incorporating transverse space-charge and electron cooling with emphasis on the incoherent dynamics of the particles.

Funding Agency

This manuscript has been authored by Fermi Research Alliance, LLC under Contract No. DE-AC02-07CH11359 with the U.S. Department of Energy, Office of Science, Office of High Energy Physics.

Footnotes

I have read and accept the Privacy Policy Statement

Yes

Primary author: BANERJEE, Nilanjan (Enrico Fermi Institute)

Co-authors: BOSSARD, Mary (University of Chicago); BRANDT, John (Enrico Fermi Institute); CATHEY, Brandon (Fermi National Accelerator Laboratory); KIM, Young-Kee (University of Chicago); KLADOV, Sergei (The University of Chicago); NAGAITSEV, Sergei (Fermi National Accelerator Laboratory); STANCARI, Giulio (Fermi National Accelerator Laboratory)

Presenter: BANERJEE, Nilanjan (Enrico Fermi Institute)

Session Classification: Tuesday Poster Session

Track Classification: MC4: Hadron Accelerators: MC4.A11: Beam Cooling