



Contribution ID: 1257 Contribution code: TUPM082

Type: **Poster Presentation**

Rotational invariance and IBS in circular modes

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

Flat beams are preferred at high energies due to their ability to achieve high intensity and luminosity, as one of the transverse emittances is smaller. However, at low energies, collective effect such as space charge becomes dominant in the smaller dimension. Intra-beam scattering (IBS) effect is dominant when local beam density is high, from medium to high energies. Circular mode beams, which have equal beam sizes in both planes and are intrinsically flat, can help mitigate these effects while maintaining intrinsic flatness. Circular mode beams can be transformed from and to flat beams, enabling the beam to bypass collective effects while maintaining the intrinsic flat beam state. Angular momentum conservation is crucial for maintaining the circular mode, and we will present rotation-invariant systems that can conserve angular momentum. Additionally, we will investigate the effects of IBS on circular modes and different beams.

Funding Agency

Footnotes

This work was supported by the U.S. Department of Energy, under Contract No. DE-AC02-06CH11357

I have read and accept the Privacy Policy Statement

Yes

Primary author: GILANLIOGULLARI, Onur (Illinois Institute of Technology)

Co-authors: MUSTAPHA, Brahim (Argonne National Laboratory); SNOPOK, Pavel (Illinois Institute of Technology)

Presenter: GILANLIOGULLARI, Onur (Illinois Institute of Technology)

Session Classification: Tuesday Poster Session

Track Classification: MC4: Hadron Accelerators: MC4.A24: Accelerators and Storage Rings, Other