Contribution ID: **455** Contribution code: **THPC64**   Type: **Poster Presentation**

Impedance model for the Fermilab Recycler ring

Thursday, 23 May 2024 16:00 (2 hours)

We present an impedance model of the Fermilab Recycler ring using PyHEADTAIL. The model is constructed by incorporating analytical expressions for the wakefields of beamline components that contribute significantly to impedance. The effects of indirect space charge are included as an inductive impedance. Benchmarking against measured coherent Betatron tune shifts, the impedance model is found to capture 73.4% of observed tune shifts. Our findings serve as a stepping stone for the development of a realistic impedance model crucial for studying impedance-driven instabilities at higher intensity.

Footnotes

Funding Agency

Paper preparation format

Region represented

Europe

Primary author: GLADWYN, Benjamin (University of Cambridge)

Co-authors: BOSSARD, Mary (University of Chicago); MOHSEN, Osama (Argonne National Laboratory); AINSWORTH, Robert (Fermi National Accelerator Laboratory)

Presenter: BOSSARD, Mary (University of Chicago)

Session Classification: Thursday Poster Session

Track Classification: MC5: Beam Dynamics and EM Fields: MC5.D04 Beam Coupling Impedance Theory, Simulations, Measurements, Code Development