



Contribution ID: 2105 Contribution code: SUPC023

Type: Student Poster Presentation

Beam correction for multi-pass arcs in FFA@CEBAF: status update

Sunday, 19 May 2024 16:00 (2 hours)

This work examines the multi-pass steering of six electron beams in an FFA arc ranging from approximately 10.5 GeV to 22 GeV. Shown here is an algorithm based on singular value decomposition (SVD) to successfully steer all six beams through the arc given precise knowledge of all beam positions at each of one hundred and one diagnostic locations with one hundred individual corrector magnets: that is successive application of SVD to different 100×101 response matrices—one for each beam energy. Further, a machine learning scheme is developed which only requires knowledge of the energy-averaged beam position at each location to provide equivalent steering. Extension of this scheme to other beam optics quantities as well as transverse and longitudinal coupling is explored.

Footnotes

I would like to present my poster at the student session if and only if I'm able to personally attend: if one of my colleagues ends up presenting the poster it should not be in the student session.

Funding Agency

Paper preparation format

LaTeX

Region represented

North America

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Session Classification: Student Poster Session

Track Classification: MC1: Colliders and other Particle and Nuclear and Physics Accelerators:
MC1.A12 FFA