



Contribution ID: 2433 Contribution code: MOPA048

Type: **Poster Presentation**

Dynamic aperture studies for the EIC electron storage ring

Monday, 8 May 2023 16:30 (2 hours)

The Electron-Ion Collider (EIC) will be constructed at Brookhaven National Laboratory with the goal of providing high luminosity, high average beam polarization, and a wide range of colliding beam energies. One critical requirement is a large dynamic aperture (DA) of the collider rings, in both transverse and momentum dimensions. The ring lattices have been continually optimized to improve the geometric and optics conditions. This paper presents results of the DA studies for the recent lattices of the Electron Storage Ring at different energies, including non-linear chromaticity correction, effects of errors, magnet field quality, and orbit correction options.

Funding Agency

Work supported by Brookhaven Science Associates, LLC under Contract No. DE-SC0012704, and by the U.S. Department of Energy under Contract No. DE-AC02-76SF00515.

Footnotes

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Primary author: NOSOCHKOV, Yuri (SLAC National Accelerator Laboratory)

Co-authors: MONTAG, Christoph (Brookhaven National Laboratory); MARX, Daniel (Brookhaven National Laboratory); HOFFSTAETTER, Georg (Cornell University (CLASSE)); WITTE, Holger (Brookhaven National Laboratory); BERG, J. (Brookhaven National Laboratory); UNGER, Jonathan (Cornell University (CLASSE)); KEWISCH, Jorg (Brookhaven National Laboratory); PEGGS, Steve (Brookhaven National Laboratory); TEPIKIAN, Steven (Brookhaven National Laboratory); LI, Yongjun (Brookhaven National Laboratory); CAI, Yunhai (SLAC National Accelerator Laboratory)

Presenter: BERG, J. (Brookhaven National Laboratory)

Session Classification: Monday Poster Session

Track Classification: MC1: Colliders and other Particle Physics Accelerators: MC1.A19: Electron-Hadron Colliders