



Contribution ID: 1622 Contribution code: WEPL088

Type: **Poster Presentation**

## The impact of magnetic errors on the electron ion collider rapid cycling synchrotron

*Wednesday, 10 May 2023 16:30 (2 hours)*

The Rapid Cycling Synchrotron (RCS) of the Electron Ion Collider (EIC) is the injector of the Electron Storage Ring (ESR). The dynamic range of the RCS is from 0.4 GeV to 18 GeV. The RCS will use normal conducting dipoles, quadrupoles, and sextupoles. With errors to the main dipole field and misalignment to the elements included in the model, an orbit correction scheme has been developed. These magnet to magnet variations to the main field of the elements were studied as well as the effects of the multipole field errors. The impact of these errors and misalignments on the dynamic aperture will be presented.

### Funding Agency

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

### Footnotes

### I have read and accept the Privacy Policy Statement

Yes

**Primary author:** LOVELACE III, Henry (Brookhaven National Laboratory)

**Co-authors:** LIN, Fanglei (Oak Ridge National Laboratory); MONTAG, Christoph (Brookhaven National Laboratory); RANJBAR, Vahid (Brookhaven National Laboratory)

**Presenters:** LOVELACE III, Henry (Brookhaven National Laboratory); LIN, Fanglei (Oak Ridge National Laboratory); MONTAG, Christoph (Brookhaven National Laboratory); RANJBAR, Vahid (Brookhaven National Laboratory)

**Session Classification:** Wednesday Poster Session

**Track Classification:** MC5: Beam Dynamics and EM Fields: MC5.D02: Non linear Single Particle Dynamics Resonances, Tracking, Higher Order, Dynamic Aperture, Code Deve