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# Dynamic aperture studies for the EIC electron storage ring

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The electron-ion collider (EIC), under design at Brookhaven National Laboratory, will consist of two storage rings for collisions of polarized electron and hadron beams. A sufficiently large dynamic aperture (DA) is required in the electron storage ring (ESR) at different energies (5-18 GeV) to ensure an adequate beam lifetime. The DA is limited by the effects of non-linear field and magnet errors in a strong optics with low-beta interaction regions. This paper presents the ESR DA studies for the latest estimates of magnet field quality, particularly, in dipole magnets. Impact of the dipole multipoles is analyzed taking into account the large sagitta orbit and the fringe field. Multipole tolerances are determined based on this analysis.

## Footnotes

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