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Dynamic aperture of the RCS during bunch merges

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The Rapid Cycling Synchrotron (RCS) of the Electron Ion Collider (EIC) will be used to accelerate polarized electrons from 400 MeV to a top energy of 5, 10, or 18 GeV before injecting into the Electron Storage Ring. At 1 GeV, the RCS will perform a merge of two bunches into one, adding longitudinal dynamics that effects the dynamic aperture, depending on the merge parameters. In this paper, results for different merge models will be compared, as well as finding the relationship between the merge parameters of the RCS and its dynamic aperture.

Footnotes

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