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Dynamic aperture at collision

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Dynamic aperture studies have been performed on the FCC-hh lattice at different energies to study the stability of the beam and the effect of different errors. Initial studies for the FCC-hh lattice at collision energy with errors on the triplet showed a very low dynamic aperture, most likely affected by the large integrated quadrupole length of the quadrupoles and the high beta function at its location. Several techniques were implemented to increase the dynamic aperture including: correction of the spurious dispersion, installation of non-linear correctors and changing the phase between the interaction points. The use of these techniques increased the dynamic aperture and allowed for a more comprehensive study. This work presents the last results obtained for dynamic aperture at collision energy including errors on the triplet, separation/recombination dipoles and errors in the arcs, with particular emphasis on the effect of the non-linear correctors and change of phase.

Primary author: CRUZ ALANIZ, Emilia (University of Oxford JAI)

Co-authors: SERGI, Andrei (University of Oxford (GB)); DALENA, Barbara (Université Paris-Saclay (FR)); TOMAS GARCIA, Rogelio (CERN); MARTIN, Roman (CERN)

Presenter: CRUZ ALANIZ, Emilia (University of Oxford JAI)

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