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3Qy resonance correction at LHC injection

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Compensation of the 3Qy resonance at injection energy in the LHC is of significant interest, given its potential to degrade the lifetime of high-intensity beams. In the absence of dedicated corrector circuits for the 3Qy compensation of each beam at low energy, an alternative approach is needed. Using skew-sextupoles in the four common experimental insertions it has been possible to develop a scheme to independently control the 3Qy resonance of the two LHC beams. Beam-based measurements and corrections of the 3Qy resonance at injection were performed, with beneficial impacts on lifetime and emittance growth observed.

Footnotes

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