



Contribution ID: 1158 Contribution code: WEPL102

Type: **Poster Presentation**

Dynamic aperture studies for the first run of High Luminosity LHC

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

Dynamic Aperture (DA) studies based on single-particle tracking simulations have proven to be a powerful tool for optimizing the performance of the Large Hadron Collider (LHC), as well as its future High-Luminosity upgrade (HL-LHC). The present paper presents the studies performed for the first year of HL-LHC operation at the beginning of the fourth operational run of the LHC. The main focus lies on the exploration of new optics scenarios such as flat optics, where the transverse beam sizes at the high-luminosity interactions points are not equal. Multi-parametric DA studies and Frequency Map Analysis are deployed to derive the best parameters for operation for the start and end of the luminosity leveling with flat optics.

Funding Agency

Footnotes

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Yes

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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