



Contribution ID: 514 Contribution code: WEPL078

Type: Poster Presentation

Analyzing and optimizing dynamic aperture based on minimizing the fluctuation of resonance driving terms

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

Minimizing resonance driving terms (RDTs) is a traditional approach to enlarge the dynamic aperture (DA) of a storage ring. However, small RDTs can not guarantee a large DA. In this paper, the fluctuation of RDTs along the ring is taken into consideration. A large number of nonlinear lattice solutions based on one double-bend achromat lattice are analyzed. The results show that minimizing the RDT fluctuations can more effectively enlarge the DA area than minimizing the commonly used one-turn RDTs. Also, reducing the third-order RDT fluctuations is beneficial for controlling the fourth-order RDTs and ADTS terms. Then we use it as an objective to optimize the nonlinear dynamics and good results are obtained.

Funding Agency

Footnotes

I have read and accept the Privacy Policy Statement

Yes

Primary authors: WEI, Bingfeng (University of Science and Technology of China); BAI, Zhenghe (University of Science and Technology of China); FENG, Guangyao (University of Science and Technology of China); TAN, Jiajie (University of Science and Technology of China)

Presenter: WEI, Bingfeng (University of Science and Technology of China)

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