



Contribution ID: 1380 Contribution code: MOPS039

Type: **Poster Presentation**

Direct MOGA optimization of Touschek lifetime and dynamic aperture using fast Touschek tracking

Monday 2 June 2025 16:00 (2 hours)

A large momentum acceptance (MA) in 4th generation storage ring light sources is paramount to obtaining a long Touschek lifetime. However, the calculation of MA typically requires computationally expensive tracking simulations thereby complicating, or even disabling, the direct optimization of Touschek lifetime using numerical optimization algorithms. Our recent development of Fast Touschek Tracking allows obtaining the MA two orders of magnitude faster than standard MA tracking, thereby enabling direct optimization of Touschek lifetime. We present an example of a Multi-Objective Genetic Algorithm (MOGA) optimization of both on-energy dynamic aperture and direct Touschek lifetime using Fast Touschek Tracking for a 4th generation storage ring.

Footnotes

Paper preparation format

LaTeX

Region represented

Europe

Funding Agency

Author: KALLESTRUP, Jonas (Paul Scherrer Institut)

Presenter: KALLESTRUP, Jonas (Paul Scherrer Institut)

Session Classification: Monday Poster Session

Track Classification: MC2: Photon Sources and Electron Accelerators: MC2.A04 Circular Accelerators