### IPAC'24 - 15th International Particle Accelerator Conference



Contribution ID: 2192 Contribution code: SUPG027

Type: Student Poster Presentation

# 3D beam tracking studies including intrabeam scattering

Sunday, 19 May 2024 14:00 (4 hours)

Particle tracking serves as a computational technique for determining the mean field of dynamically tracked charged macroparticles of a particle beam within an accelerator. Conventional solver tend to neglect collisionality, resulting in loss of relevant information (particle and momentum redistribution). In this study, macro-particle collisions are incorporated into a 3D Poisson solver. In the previous studies, identifying close particles have been performed in a static condition (IPAC23-Macroparticle collisionality in PIC solver). The requirement to uphold energy momentum within a dynamic tracking is initiated in simple lattices and the results are presented. A comparison with analytic model of the Bjorken-Mtingwa or Conte-Martini is included to verify.

#### Footnotes

**Funding Agency** 

## Paper preparation format

#### **Region represented**

Europe

Primary author: ENGEDA, Alexander (Goethe Universität Frankfurt)

Co-author: FRANCHETTI, Giuliano (GSI Helmholtzzentrum für Schwerionenforschung GmbH)

Presenter: ENGEDA, Alexander (Goethe Universität Frankfurt)

Session Classification: Student Poster Session

**Track Classification:** MC5: Beam Dynamics and EM Fields: MC5.D11 Code Developments and Simulation Techniques