Contribution ID: **120**   Type: **Talk**

【386】 Simulation Tools for Future Colliders

Thursday 7 September 2023 15:15 (15 minutes)

As colliders become more complex, it is crucial to consider physical phenomena in simulations including complex effects such as radiation, beam-beam, and impedance. However, existing simulation tools are often outdated or focus on single aspects. To address this, the CHART collaboration is developing a software framework integrating existing tools and actively contributing to new simulation tools in collaboration with external colleagues. The project's main focus is the Future Circular Collider, for which the tools enable studies of beam stability, luminosity, and lifetime, incorporating multiple effects simultaneously. We will provide an overview of the collaboration's work on simulation tools and present beam dynamics studies for the FCC obtained using these tools.

Theoretical Work

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Session Classification: Accelerator Science and Technology

Track Classification: Accelerator Science and Technology