Contribution ID: **2455** Contribution code: **SUPM006** Type: **Student Poster Presentation**

Comparison of Xsuite simulations with measured backgrounds at SuperKEKB

Sunday 1 June 2025 14:00 (2 hours)

Xsuite is a collection of packages developed to simulate beam dynamics in particle accelerators. It includes Python modules (Xobjects, Xpart, Xtrack, Xcoll, Xfields, Xdeps) that can be seamlessly integrated with one another and with both accelerator-specific and general-purpose Python tools, enabling the study of complex simulation scenarios. The Xcoll module, developed for collimation studies, allows the integration of beam-matter interaction simulations in the tracking through different available scattering models, including those in the BDSIM/Geant4 toolkit. Originally developed for the Future Circular e+e- Collider (FCC-ee) collimation simulation needs, the Xsuite-BDSIM/Geant4 interface is now deployed in full production for FCC-ee collimation studies. A key aspect of such studies relying on complex simulations is their benchmarking against measured data. This paper presents a first comparison of Xsuite collimation simulation results with measured data at the SuperKEKB e+e- collider.

Footnotes

Paper preparation format

LaTeX

Region represented

Europe

Funding Agency

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Session Classification: Student Poster

Track Classification: MC1 :Colliders and Related Accelerators: MC1.A02 Lepton Circular Colliders