

WP3 Secondment Task 3.1

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- **Research Period:** 2025/11/07 – 2025/11/28
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Overview of your research

- Study beam-induced backgrounds in the FCC-ee, such as beam losses during injection and fast instabilities.
- Evaluate collimation system performance using multi-turn tracking with Monte Carlo particle-matter simulations (Xsuite/BDSIM).
- Assess detector impact from nearby collimator hits and simulate resulting backgrounds with detector simulation tools.
- Plan to benchmark the full simulation chain against measured injection backgrounds at SuperKEKB to reduce prediction uncertainties.

Research Plan

- Measurement of Belle-II backgrounds induced by the injection top-up process for different collimators.
- Participation to planned collimator alignment on LER.
- Goal is to quantify their impact on detector performance and investigate possible mitigation strategies.
- Benchmarking injection simulations with Xsuite, using SuperKEKB data to validate the approach and demonstrate applicability for FCC-ee.