WP3 Secondment Task 3.1

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- **Research Period:** 2025/10/25 – 2025/11/25 (TBD)
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Overview of your research

PhD title: *Development of Interaction Point Feedback Systems for CERN's Future Circular Lepton Collider*

Key aspects:

- Development of analytic IP feedback models addressing PID control at multiple IP colliders
- Analysis of IP feedback system at SuperKEKB [see https://meow.elettra.eu/81/pdf/THPS011.pdf]
- Simulation of IP feedback of SuperKEKB (including Xsuite lattice development) [see https://meow.elettra.eu/81/pdf/MOPM034.pdf]
- Simulation of IP feedback requirements, and operation at FCC-ee [see https://meow.elettra.eu/81/pdf/THPS012.pdf]
- Supporting this work has included the development of a SAD to Xsuite converter

WP3 Secondment Task 1.2

Research Plan

Building on the developments of my previous successful secondments to KEK:

1: Partaking in the collision tuning commissioning

   Gain insights into the operational aspects of this process

   Further information on the iBump Feedback System

   TBD: perhaps dither feedback studies

2: Support BTE/BTP Simulations in Xsuite

   Recently converted SuperKEKB BTE and BTP lines to Xsuite

   Support development of simulation tools in Xsuite for analysis

3: Continue development of SuperKEKB Lattice models in Xsuite

   Conversion of new lattices required for studies on backgrounds

   Further developments to the IR model

   Continued simulation of the iBump feedback simulation in Xsuite

(4: Continue development of J-PARC MR Lattice models in Xsuite)

   Continue collaboration with J-PARC optics teams

   Look at space charge and collimation simulation options