



Contribution ID: 129

Type: **Speed talk**

Development of an electro-optical longitudinal bunch profile monitor at KARA towards a beam diagnostics tool for FCC-ee

Thursday 8 September 2022 10:26 (3 minutes)

The Karlsruhe Research Accelerator (KARA) at KIT features an electro-optical (EO) near-field diagnostics setup to conduct turn-by-turn longitudinal bunch profile measurements in the storage ring using electro-optical spectral decoding (EOSD). Within the Future Circular Collider Innovation Study (FCCIS) an EO monitor using the same technique is being conceived to measure the longitudinal profile and center-of-charge of the bunches in the future electron-positron collider FCC-ee. This contribution provides an overview of the EO near-field diagnostics at KARA and discusses the development and its challenges towards an effective beam diagnostics concept for the FCC-ee.

Summary

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Session Classification: Session 2: Beam Diagnostics

Track Classification: ST - Diagnostics