Contribution ID: **155** Type: **not specified**

Longitudinal bunch-by-bunch profile measurements at KARA based on EO sampling & developments for FCC

Thursday 1 July 2021 16:20 (20 minutes)

At the KIT the world's first electro-optical (EO) near-field monitor for a high bunch-repetition storage ring, the Karlsruhe Research Accelerator (KARA), was developed and is installed to detect longitudinal electron bunch profiles. Imprinting the longitudinal profiles onto chirped laser pulses and using the ultra-fast line-camera KALYPSO built at KIT, single-shot bunch-by-bunch measurements are achieved. Recently, we demonstrated tomographic imaging of the 2D longitudinal phase space distribution of the electron bunches at MHz-repetition rate within 61 µs. EO near-field diagnostics are a part of the distributed sensor network at KARA.
Testing prototype diagnostics at KARA addresses challenges like high repetition rates, different bunch lengths and charges, which will play an important role for diagnostics at the FCC.
This talk will give an overview of achieved results and developments for future applications at the FCC.

Author: NIEHUES, Gudrun (Karlsruhe Institute of Technology)

Presenter: NIEHUES, Gudrun (Karlsruhe Institute of Technology)

Session Classification: Technology R&D

Track Classification: Accelerators: Technology R&D