



Contribution ID: 1374 Contribution code: WEPG51

Type: **Poster Presentation**

Resonant spin depolarization at the test facility KARA: overview of recent efforts

Wednesday, 22 May 2024 16:00 (2 hours)

The Karlsruhe research accelerator KARA offers a setup to measure the beam energy with resonant spin depolarization. The depolarization is excited by the stripline kickers of the bunch-by-bunch feedback system and the resonant frequency is measured via change in Touschek lifetime. Energy measurements with resonant spin depolarization are implemented as a standard routine in the control system and are used regularly to measure both the beam energy and the momentum compaction factor for different energies and optics regimes. Long-time experience with the setup, short polarization time, and variation options of beam energy in combination with much available beam time qualify KARA as a test facility for systematic studies. Such studies are of particular interest for future colliders designed for precision studies like FCC-ee, as resonant spin depolarization is known for its high accuracy. This contribution presents the resonant spin depolarization setup at KARA and selected results of recent measurement campaigns.

Footnotes

Funding Agency

This project has received funding from the European Union's research and innovation programmes under Grant Agreements No 101057511 (EURO-LABS) and No 951754 (FCCIS).

Paper preparation format

LaTeX

Region represented

Europe

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Session Classification: Wednesday Poster Session

Track Classification: MC6: Beam Instrumentation, Controls, Feedback, and Operational Aspects:
MC6.T03 Beam Diagnostics and Instrumentation