Karlsruher Institut für Technologie

Fakultät für Physik

Physikalisches Kolloquium

Ilya Agapov, DESY

»PETRA IV«

Einführung: A.S. Müller

Abstract:
PETRA IV will be a diffraction-limited 6 GeV 4th generation synchrotron radiation source at DESY, reaching unprecedented x-ray brightness via achieving an ultra-low electron emittance, and serving a large community in science and industry. The ultra-low electron emittance is achieved by employing the strongly focusing multi-bend achromat optics. The multi-bend achromat optics leads to a number of complications: strong magnets with small apertures, high sensitivity to errors, necessary high alignment precision, need for extensive numerical optimization, need for more complex beam steering and optics correction procedures. PETRA IV, similar to the existing PETRA III facility, will be built in the tunnel inherited from the high-energy collider. The large circumference and long straight sections, on the one hand, create several advantages and opportunities, on the other, make the design even more complicated compared to similar 4th generation storage rings.
The high brightness of the PETRA IV radiation will allow to significantly increase the throughput of many experiments, requiring to rethink the operation modalities. We have been exploring Artificial Intelligence and Machine Learning approaches for the future operation of the PETRA IV facility, which will also be covered in this talk.

Freitag, 30.04.2021, 16:00 Uhr,
live über Zoom.

Karlsruher Institut für Technologie (KIT)
Universitätsbereich • Campus Süd
Fakultät für Physik
76128 Karlsruhe

Telefon (07 21) 6 08 - 435 18
Telefax (07 21) 6 08 - 435 19
E-Mail: fakultaet@physik.kit.edu
www.physik.kit.edu

Besucheradresse:
Wolfgang-Gaede-Straße 1
Physik-Hochhaus, Geb. 30.23
76131 Karlsruhe