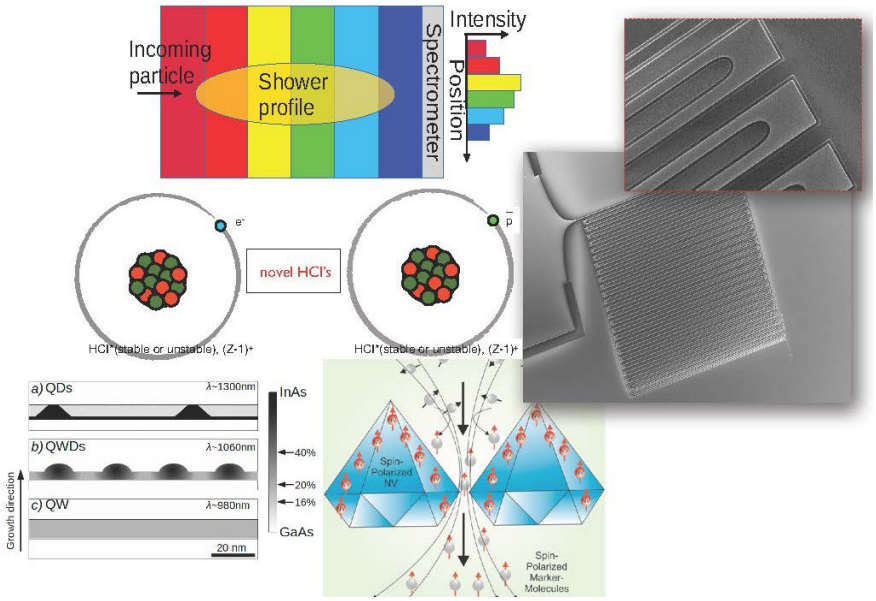
Fakultät für Mathematik und Physik
Albert-Ludwigs-Universität Freiburg
Physikalisches Institut

PHYSIKALISCHES KOLLOQUIUM

AM 15. JULI 2024 UM 17 UHR C.T.
IM GROßEN HÖRSAAL



QUANTUM SENSING FOR (LOW AND HIGH ENERGY) PARTICLE PHYSICS

MICHAEL DOSER
CERN

The seminar will provide a glimpse of some elements of the rapidly evolving field of quantum sensing, specifically focusing on particle physics. Specific approaches involving quantum systems, such as low-dimensional systems or manipulations of ensembles of quantum systems, hold great promise for improving high-energy particle physics detectors, particularly in areas like calorimetry, tracking, and timing. The use of quantum sensors for high-precision measurements, as well as the development of new quantum sensors based on superconducting circuits, ion and particle traps, crystals, and nanomaterials, are equally relevant for low energy particle physics and for fundamental physics.
However, significant advances and improvements in existing or future quantum technologies will be necessary to address such topics related to the dark universe, the detection of relic neutrinos, precision tests of symmetries and of the standard model and probing general foundational issues in physics. The seminar will thus also feature discussions of the Quantum Sensing Initiatives at CERN and the ECFA R&D Roadmap on Quantum Sensing and Advanced Technologies and will discuss options for future collaborations in the context of the imminent implementation of this roadmap.

AKTUELLE INFORMATIONEN FINDEN SIE HIER: WWW.PHYSIK.UNI-FREIBURG.DE

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