



UNIVERSITÄT
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Faculty of Physics and Earth System Science

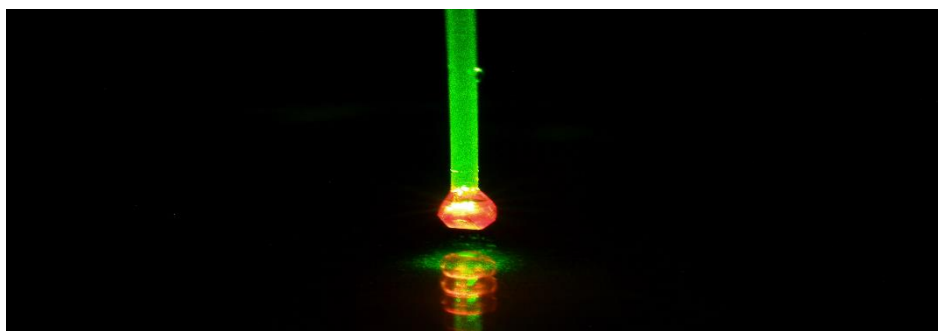
Faculty Colloquium

Tuesday, 13 May 2025 at 16:30

Inauguration Lecture: Prof. Dr. Nabeel Aslam

Quantum Sensing at the Nanoscale: From Fundamental Physics to Real-World Applications

Quantum sensors based on single spins in diamond have emerged as powerful tools for probing matter at the nanoscale. In this lecture, I will introduce the fundamental principles behind these sensors and show how they can be used to detect e.g. magnetic fields with unprecedented sensitivity and resolution. A key theme will be the interplay between quantum information and quantum sensing—how concepts like coherence, quantum memory and entanglement, extend the capabilities of spin-based sensors. The talk will highlight advances in nanoscale nuclear magnetic resonance spectroscopy and explore how these techniques are applied to different samples ranging from biological structures to quantum materials. The lecture will conclude with a perspective on how quantum sensing can act as a bridge between fundamental research and real-world applications.



Venue: Universität Leipzig, Faculty of Physics and Earth Sciences
04103 Leipzig, Linnéstraße 5, Small Lecture Hall

Everyone is welcome to a reception with coffee, drinks and cookies in the Aula following the talk.

For an up-to-date semester program, sign-up for the physics colloquium mailing list, and subscription to the digital calendars in CalDAV format, head to the colloquiums web page <https://www.physes.uni-leipzig.de/fakultaet/veranstaltungen>.

