Prof. Markus Krutzik

Faculty of Mathematics and Natural Sciences
Department of Physics
Experimental Physics / Joint Lab Integrated Quantum Sensors



Expertise

As part of their scientific activity Dr Markus Krutzik and the team members of the.quantum.chapter have acquired an extensive amount of expertise in developing tailored quantum sensors - from key technology to subsystem and system level. Quantum optical sensors and optical clocks are used in high-precision inertial navigation, gravimetry and gradiometry or for the synchronisation of networks. Hence, they are central for navigating GPS-free environments, for geophysics, the exploration of natural resources, the monitoring of climate change, and for addressing fundamental questions of modern physics. Central to their research are compact and robust setups for optical spectrocopy, absolute frequency references, and ultra-cold atom based inertial sensors. For this purpose, the team developed lasers and optical systems for generation and manipulation of light, as well as control software and data management platforms. Their setups are not only operated in laboratory research: They are also used as in field or even in space. In addition to development, testing and operation of atomic quantum sensors, Dr Krutzik and the team gained expert knowledge in all stages of mission and system design, ranging from mission architecture and identification of requirements to system integration and qualification, as well as development of control concepts and data analysis. In addition to Humboldt-Universität zu Berlin Dr Krutzik is also associated with Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik.

Scientific Services

- Methods for the design, development and testing of compact, robust and tailored quantum sensors - from component to system level
- Identification of critical technologies and construction of prototypes
- Workshops and seminars

Dr. Krutzik is also part of "The Quantum Chapter" team, which provides workshops, training, prototyping, and consulting around the topic of quantum technology.

Topics / Trends

Hybrid Systems
Climate / Climate Change
Laser / Laser Technology
Optics
Quantum Technology
Continuing Education / Lifelong Learning

Scientific Institution

Ferdinand-Braun-Institut gGmbH, Leibniz-Institut für Höchstfrequenztechnik

Industries

Energy, Utilities & Raw Materials
Aerospace
Mobility & Logistics
Optical Instruments & Precision Engineering
Professional Services & Consulting

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