



CRC 1227  
Designed Quantum States of Matter



## GUEST LECTURE

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(Guest of Prof. P. Schmidt und Prof. K. Hammerer)

Leibniz Universität Hannover  
DQ-mat Colloquium  
**27 January 2022, 3.00 pm**  
(via Zoom-Meeting)

### **"Accurate determination of the fine structure constant using atom interferometry"**

Quantum sensors based on light-pulse atomic interferometers enable the precise measurement of a variety of physical quantities. They have a huge potential for testing the fundamental laws of modern physics and for the accurate determination of fundamental constants of physics. Among them is the fine structure constant, whose accurate knowledge of its numerical value is crucial for testing, through low-energy experiments, the calculations of quantum electrodynamics and some predictions of the standard model of particle physics.

In this talk, I will present the Paris experiment that recently led to a new determination of the fine structure constant with a relative uncertainty of  $8.1 \times 10^{-11}$  and discuss the impact of this new result on the Standard Model tests based on the electron magnetic moment anomaly.

**All DQ-mat members and all interested are cordially invited to attend.**