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Physikalisches Kolloquium
Einladung

Physics Colloquium
Invitation


Monday, 27 November 2023

Lecture Hall N24/H13, at 16:15
Coffee and cookies will be served in front of the lecture hall from 16:00

Probing and exploiting quantum physics with nanoscale objects

Prof. Dr. Benjamin Stickler

University Ulm, Institute for complex quantum systems

 <https://www.uni-ulm.de/nawi/institute-for-complex-quantum-systems/team/members-of-the-institute/prof-dr-benjamin-stickler/>

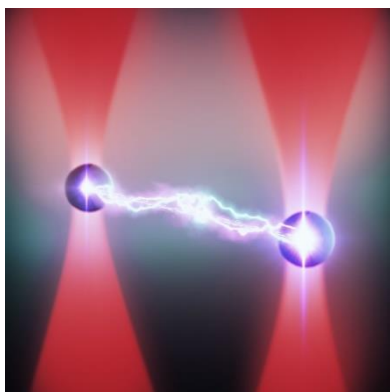


Controlling and observing the quantum mechanical motion of ever more massive objects is a prerequisite for testing the validity of quantum physics at high mass scales and it opens the door to quantum-enhanced sensing technologies. In this talk, I will first give a brief overview of my research activities and then present recent results on the quantum dynamics of optically levitated nanoparticles. I will argue that their rotational motion gives rise to pronounced quantum interference effects [1] and I will show how non-reciprocal interactions [2] and mechanical entanglement [3] between co-levitated particles can be generated via controlling the light fields suspending them.

[1] Stickler, Hornberger, and Kim, Nat. Rev. Phys. 3, 589 (2021)

[2] Rieser, Ciampini, Rudolph, Kiesel, Hornberger, Stickler, Aspelmeyer, and Delić, Science 377, 987 (2022)

[3] Rudolph, Delić, Aspelmeyer, Hornberger, and Stickler, Phys. Rev. Lett. 129, 193602 (2022)



Host: Prof. Dr. J. Ankerhold, Dr. B. Kubala, Institute for Complex Quantum System

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