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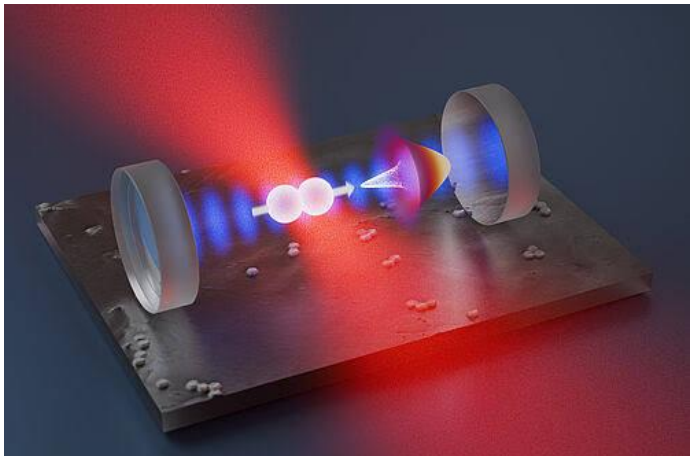
Prof. Dr. Benjamin Stickler

Heisenberg Professor of the German Research Foundation (DFG), Ulm University

Quantum control of levitated nanorotors

Levitating small particles in ultra-high vacuum provides a promising platform to control their rotational and translational motion at the quantum level [1]. In this talk I will discuss how nanoscale quantum rotations give rise to novel interference phenomena [2,3] and how light scattering between co-levitated nanoparticles induces non-reciprocal interactions [4,5]. These examples illustrate the potential of levitated mechanical quantum systems for force and torque sensing and for high-mass tests of quantum physics.

[1] Troyer, Fechtel, Hummer, Rudolph, Stickler, Delić, and Arndt, Nat. Phys. 22 584 (2026)
[2] Stickler, Hornberger, and Kim, Nat. Rev. Phys. 3, 589 (2021)
[3] Wachter, Kusminskiy, Hétet, and Stickler, Phys. Rev. Lett. 136, 073604 (2026)
[4] Reisenbauer, Rudolph, Egyed, Hornberger, Zasedatelev, Abuzarli, Stickler, and Delić, Nat. Phys. 20, 1629 (2024)
[5] Rudolph, Delić, Hornberger, and Stickler, Phys. Rev. Lett. 133, 233603 (2024)



Date: Tuesday, 17 November, 4:15 p.m.

Lecture: Lecture Hall 05.01, ground floor, Universitaetsplatz 5, Institute of Physics, University of Graz

Host: Ulrich Hohenester

For a regularly updated colloquium program see: Physics Colloquium