



universität
wien



TECHNISCHE
UNIVERSITÄT
WIEN
Vienna University of Technology



ÖSTERREICHISCHE
AKADEMIE DER
WISSENSCHAFTEN



The **Vienna Center for Quantum Science and Technology**
(**VCQ**) invites you to a

COLLOQUIUM TALK

by

Monika Ritsch-Marte

(Medical University of Innsbruck)

Generally applicable technique for measuring optical force and torque acting on trapped particles

Optical tweezers have become so successful, because their application goes beyond simply holding or moving particles, as they provide quantitative information on the optical forces acting on the particle. It will be shown how a holographic, i.e. phase-sensitive, measurement of the light scattered by the particle interfering with the incident trapping beam directly deliver the local forces. It is possible to simultaneously measure all components of the force applied to an *individual* particle in a trapped ensemble, or to a specific site of an extended object. Here, conservation of optical momentum is exploited. The approach may also be modified to measure the optical torque, based on conservation of optical angular momentum. The torque pertaining to individual particles is accessible, as well as separate spin or orbital parts of the total torque. The examples which will be discussed feature micron-size objects in liquid solution, but the technique is not limited to this type of biomedical setting, but may also be used in vacuum.

Monday, 25th April 2022,
17:15 get-together with coffee and snacks

Main Lecture Hall at TU Wien, Atominstytut, Stadionallee 2, 1020 Vienna

The seminar talk will be preceded by a VCQ Student talk at 17:45

The Student speaker will be announced on Monday

Host: Anton Zeilinger

for further information please visit vcq.quantum.at/colloquium-ss-22