



Münchner Physik- Kolloquium

at home!
Winter
2020/21

Dieses Semester findet das Kolloquium online statt: <https://tum-conf.zoom.us/j/93234766313>

Nucleon and nuclear structure from measurements in muonic and normal atoms

Prof. Dr. Randolph Pohl, *Johannes-Gutenberg-Universität Mainz*

Monday, 9 November 2020, 17:15 h

<https://tum-conf.zoom.us/j/93234766313> Meeting-ID: 932 3476 6313 Password: Kolloquium

Please install the software in advance.

Laser spectroscopy of simple atoms is sensitive to properties of the atomic nucleus, such as its charge and magnetization distribution, or its polarizability. This allows determining the nuclear parameters from atomic spectroscopy, but also limits the attainable precision for the determination of fundamental constants or the test of QED and the Standard Model.

In light muonic atoms and ions, one negative muon replaces all atomic electrons, resulting in a calculable hydrogen-like system. Due to the muon's large mass (200 times the electron mass), the muon orbits the nucleus on a 200 times smaller Bohr radius, increasing the sensitivity of muonic atoms to nuclear properties by $200^3 = 10$ million.

This has resulted in a 10fold increase in the precision of the charge radius of the proton, deuteron, and the stable helium nuclei. The consequences for atomic and nuclear physics, the determination of fundamental constants, and the test of QED and the Standard Model are discussed.

Student event: Meet the speaker

We invite you to a **student-only** discussion-round with Prof. Dr. Randolph Pohl before his Munich Physics Colloquium talk.

Be curious and feel free to ask any question.

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more information: <https://www.moodle.tum.de/course/view.php?id=57309>

