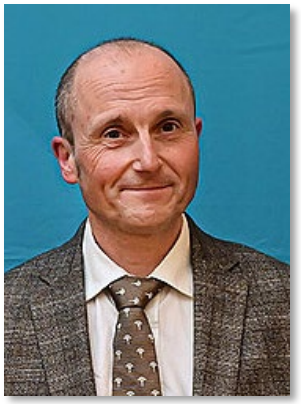
Universität Münster

Fachbereich Physik

Allgemeines Physikalisches Kolloquium

Donnerstag, 20.06.2024 - 16 Uhr c.t.



Prof. Jörg Kröger

Technische Universität Ilmenau

Exploring quantum excitations and interactions with scanning probe methods

The scanning tunneling and atomic force microscope represent suitable tools for the manipulation of matter at the atomic scale, which relies on the interaction between the microscope probe and the manipulated object. The colloquium presents the electrical-field control of the chemical-bond strength in a two-atom contact, the force involved in a single-molecule metalation reaction and the identification of chemically reactive sites. Besides mastering matter atom by atom, spatially resolved spectroscopy is a fascinating capability of scanning probe methods. The talk shows how inelastic electron tunneling is used to excite and measure quantum vibrations of tautomerized isomers as well as phonons of a two-dimensional lattice. The combination of experimental and simulated data highlights the role of matching orbital and vibrational symmetries as well as the importance of electronic resonances for effective quantum excitation.

wissen.leben

Kolloquiums-Kaffee ab 16 Uhr vor dem Hörsaal

Institutsgruppe 1 – HS 2
Wilhelm-Klemm-Str. 10