



e-conversion



Seminarankündigung

**Dienstag, 20. April 2021
17:00 Uhr**

ONLINE via ZOOM

“Quantum-Hall physics in three dimensions”

The discovery of the quantum Hall effect (QHE) in 1980 marked a turning point in condensed matter physics. The measurement of the Hall conductivity of a two-dimensional electron system showed that electrical conduction can be precisely defined only in terms of fundamental constants. But, what happens to the QHE in three dimensions? At a first glance, the answer seems straightforward and sobering: The quantization of the Hall conductivity gets destroyed. This has led to the general conjecture that quantum-Hall physics is exclusive to two dimensions. However, we show that the Hall effect of genuine three-dimensional (3D) metals is actually deeply related to the QHE and can be understood from quantum Hall physics. We propose that - as a general rule - plateau-like features in the Hall conductivity of 3D electron systems are precisely given by the conductance quantum, scaled by the Fermi wave vector of the electrons along the magnetic field direction

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