



UNIVERSITÄT  
LEIPZIG

Fakultät für Physik und  
Geowissenschaften

Prof. Dr. J. Deiglmayr  
Prof. Dr. J. Vollmer

# Physics Colloquium

Tuesday, 8 June 2021 at 17:00

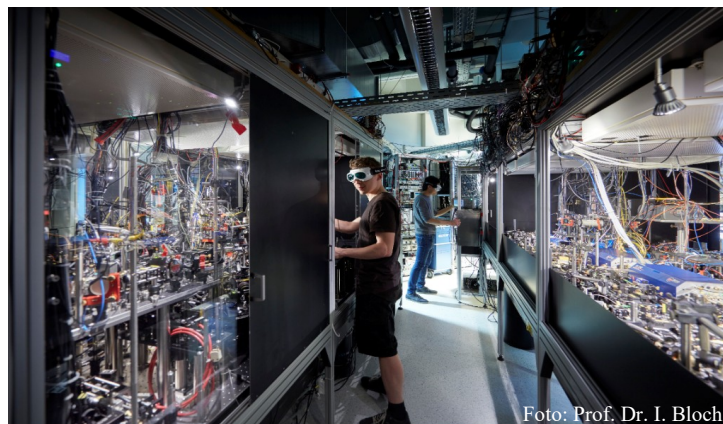
**Prof. Dr. Immanuel Bloch**

Max-Planck Institute of Quantum Optics /  
Ludwig-Maximilians-University, Munich

## Probing Quantum Matter on a Large Scale Atomic Quantum Simulator

More than 30 years ago, Richard Feynman outlined his vision of a quantum simulator for carrying out complex calculations on physical problems. Today, his dream has become a reality in laboratories around the world.

Ultracold atoms trapped in optical lattices provide a particular intriguing setting for realising such quantum simulators with the possibility to control and detect the systems down to the level of single atoms on single lattice sites. In my talk, I will discuss select applications for such



neutral atom quantum simulators to probe quantum phases of strongly interacting electronic systems, including hidden magnetic order, topological phases as well as non-equilibrium dynamics that provide new paradigms for statistical physics. I will discuss the status of the field and give an outlook on future scalability of the systems.

Online Colloquium broadcasted by BigBlueButton at

<https://lecture.uni-leipzig.de/b/vol-qad-yhg-c2k>

