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Faculty of Physics

Invitation to a talk

Gate defined quantum dots in bilayer graphene & synthetic flat bands in hybrid Josephson junction arrays

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Termin: **Monday, April 29, 2024, 14:45**

Ort: **Lise-Meitner-Lecture Hall**
9. Boltzmanngasse 5

Abstract:

I will present results from two different research directions. First, I will focus on gate defined quantum dots in bilayer graphene, which are promising hosts for spin and valley qubits.
I will discuss the single particle spectrum, spin and valley relaxation times, and how the electron-hole symmetry leads to a protected spin and valley blockade allowing for readout of spin and valley states.
The second part will focus on Josephson junction arrays (JJAs) based on a superconductor/semiconductor hybrid material.
Magnetic fields induce frustration, leading to complex ground states such as vortex lattices and liquids, depending on the lattice geometry.
I will present our efforts to map out the phase diagram of JJAs with dice lattice geometry, which are predicted to host flat bands when fully frustrated.

As part of the presentation, there will be a teaching demonstration on the topic "Perfect conductors vs. superconductors".