



## **Sonderforschungsbereich TRR 160**

Kohärente Manipulation wechselwirkender Spinanregungen  
in maßgeschneiderten Halbleitern

# **Seminarankündigung**

**Donnerstag, 01.07.2021, 12:00 Uhr**  
**- online -**

## **“Ionic-based gate control of quantum phase transitions in low-dimensional materials”**

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### **Abstract:**

Ionic-based field-effect transistors have recently been extensively exploited as powerful platforms to dope various low-dimensional materials and control the quantum phase transitions, including metal-insulator transition and gate-induced superconductivity. The highly efficient ionic-based gating has a doping capability of up to  $10^{15}$  electrons or holes/cm<sup>2</sup>, implemented by forming an electric-double-layer (EDL) at the interface between the ions and channel materials. The electric field formed in the EDL may further break the inversion symmetry at the interface and realize novel quantum states. In this talk, I will first give an overview on ionic-based gating and discuss how it realizes the quantum phase control. Then I will present some recent experimental efforts using ionic-gating to tune superconductivity in semiconducting transition metal dichalcogenides, as well as magnetism in layered frustrated magnets.