



# EINLADUNG zum IFP-SEMINAR

Thema: **Competition between Kondo Screening and Magnetic Polarization in SrTiO<sub>3</sub>/LaAlO<sub>3</sub> heterostructures**

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Ort: Institut für Festkörperphysik, TU Wien  
Wiedner Hauptstraße 8-10, 1040 Wien  
Seminarraum 138B, 7. OG (rote Leitfarbe)

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## Abstract:

The SrTiO<sub>3</sub>/LaAlO<sub>3</sub> heterostructure hosts a two-dimensional electron gas in proximity to local magnetic moments. How do these two components affect each other? To study this question we construct a microscopic model including the itinerant bands and the localized magnetic moments. We show that the multi-orbital nature of the itinerant electrons gives rise to a competition between ferro and antiferromagnetic coupling to the local moment spins. Using mean-field and renormalization group techniques we show that this competition can lead to a first order transition between Kondo screening and magnetic polarization of the moments in a magnetic field. The results of our calculation fit recent magneto transport data well if the density of local moments at the interface is of the order or smaller than the itinerant electron density. The much larger number of localized electrons needed to resolve the "polar catastrophe" may sit away from the interface with negligible coupling to the itinerant electrons.