

## Announcement of a TRR 80

### Focused Lecture

Dear fellow young researchers,

we would like to cordially invite you to our upcoming TRR 80 focused lecture. **Dr. Manuel Bibes** will give two lectures on *Oxide Spintronics*.

The Event will take place on

**November 7<sup>th</sup>, 13:30**

at

**Seminar room of the entrance building of FRM II  
("Glaspalast")**

The two lectures will be separated by a short coffee break. Video broadcast to Augsburg University will be available.

We hope that many of you take the chance to participate in this event. Please feel free to bring guests or colleagues.

## **Programme Information for the TRR 80 Focused Lecture**

### **Oxide Spintronics**

**Date: November 7<sup>th</sup>, 13:30**

**Speaker: Dr. Manuel Bibes, Thales Research and Technology**

**Location: Seminar room of the entrance building of FRM II, (“Glaspalast”)**

**Host: Prof. Dirk Grundler, TUM**

#### **Abstract**

Spintronics is a branch of electronics in which transport phenomena are dependent on the electron spin. Future spintronics devices will be built from elemental blocks allowing the electrical injection, propagation, manipulation and detection of spin-based information. Owing to their remarkable multi-functional and strongly correlated character, oxide materials already provide building blocks for charge-based devices such as ferroelectric field effect transistors (FETs), as well as for spin-based two-terminal devices such as magnetic tunnel junctions.

In this lecture, I will first present results obtained on such oxide based tunnel junctions using half-metallic electrodes of e.g. manganese perovskites. I will discuss the spin-filtering effect by which highly spin-polarized currents can be generated through tunneling across a thin ferromagnetic or ferrimagnetic insulator (EuO, BiMnO<sub>3</sub>, spinel ferrites), useable to obtain tunnel magnetoresistance. Then, I will review how oxide heterostructures can be designed to control magnetic and spin properties by an electric field, with a view towards spintronics architectures fully controlled by electrical means. Finally, I will discuss perspectives for spin injection and spin transport into non-magnetic oxide channels such as the LaAlO<sub>3</sub>-SrTiO<sub>3</sub> interface system.