

**PHYSICAL COLLOQUIUM
INVITATION**

Monday, 15.01.2018, 4.15 p.m., W2-1-148

speaks

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about

**Search of spin-polarized materials for spintronic applications: structure,
electronic and magnetic properties of ultrathin epitaxial oxide films**

While the functionality of electronic devices is based on the electron charge, the spin is an additional electron property central for devices developed in the field of spintronics. For instance, the effect of giant magnetic resistance is used for read out of, e.g., hard discs. Storage devices as random access memories, however, can also be based on the effect of tunnel magneto resistance combining ferromagnetic materials with tunnel barriers. In contrast to the common use of devices based on metals, we will discuss here all-oxide devices. Furthermore, ultrathin oxide films may be applied as spin filters if they show a spin dependent band gap. Therefore, we will report here on the functionality of spin-polarized oxides and we will focus on iron containing oxides as magnetite and transition metal oxides with inverse spinel structure. We will introduce the basic properties of these iron oxides and ferrites which predestinate them as important candidates for spintronic devices. We will report on techniques to grow epitaxial ultrathin films and to characterize their structural, electronic and magnetic properties. Here, we will emphasize synchrotron radiation based techniques to obtain deeper insight in these properties. Finally, we will correlate structural properties as, e.g., strain and interface structure and roughness with magnetic properties of the ultrathin films.

All interested persons are cordially invited.

Sgd. Prof. Dr. Niklas Nilius