KIDS TALK

“Spin pumping in epitaxial bilayer systems: Electrical Detection of magnetization dynamics”

Speaker: Sascha Keller, AG Hillebrands

Abstract: In Spintronics, which extend the classical electronics with the spin of electrons as additional degree of freedom, the spin current-to-charge current conversion is an important task for possible interfaces to microelectronic technologies. The spin pumping (SP) and inverse spin Hall effect (ISHE) in bilayers consisting of a ferromagnetic (FM) layer and an attached non-magnetic metal (NM) layer therefore allow for such a conversion. Both effects has been thoroughly investigated as well in non-metallic as in metallic magnetic systems. However the role of epitaxial ordered interfaces and intrinsic crystalline magnetic anisotropy has not been discussed in the topic of spin pumping, yet. We address this questions through bilayers consisting of metallic ferromagnets and non-magnetic capping layers of high epitaxial quality grown by molecular beam epitaxy (MBE). Due to the use of metallic ferromagnets spin rectification effects, like anisotropic magnetoresistance (AMR) and anomalous Hall effect (AHE), are also occurring besides ISHE and are overlapping with it. To separate those effects from each other we are employing an angular resolved spin pumping measurement setup. There the external magnetic field is rotated in-plane and the effects can be differentiated by the use of a lineshape analysis due to the different angular dependence of those effects.

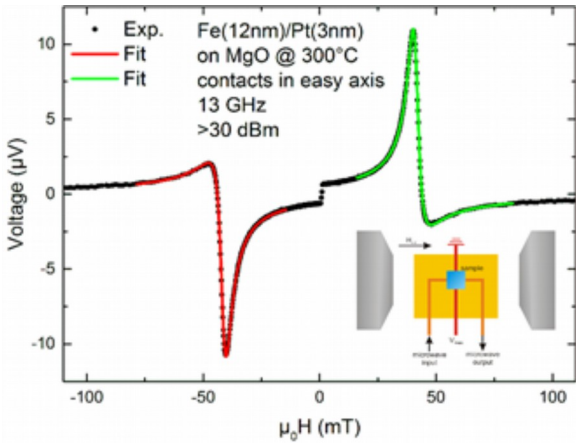

Figure 1: Measured voltage signal consisting of ISHE and rectification effects. Electrical contancts are bonded in the easy axis direction of the single crystalline Fe. Inset: Scheme of spin pumping setup.

When: Friday, January 13th 2017, **10:00 am**

Where: Room 46-387/388

All undergraduate and graduate students as well as postdocs are welcome and encouraged to join our discussion!

********** COFFEE, TEA AND COOKIES WILL BE SERVED **********

For questions, comments or suggestions: emmerich@physik.uni-kl.de

MATERIALS IN MAINZ SCIENCE

TECHNISCHE UNIVERSITÄT KAISERSLAUTERN

OPTIMAS TU Kaiserslautern