

Room: Media Room (Staudinger Weg 7: 03 – 431)

Time: Talk 11:15 st

Date: 09.09.2015

New insights in heterostructures with magnetic ions

Prof. Gerrit Bauer

Institute for Materials Research
Tohoku University Sendai, Japan
e-mail: g.e.w.bauer@imr.tohoku.ac.jp

The spintronics based on magnetic and non-magnetic elemental metals and their alloys has been very successful in the last decade. Discoveries such as the giant magnetoresistance, tunnel magnetoresistance, spin-transfer torque, (inverse) spin Hall effect, spin-orbit torques etc. not only lead to fundamental new physical insights, but also to functionalities that are employed in new nanoscale devices such as switches, memories, and sensors.

Another class of materials are magnetic insulators, which are very versatile materials of great technological importance and central to the research in magnetism up to the 80's of the last century, but after that largely forgotten. The most important of them is arguably the man-made yttrium iron garnets, ferrimagnets with Curie transitions far above room temperature and record magnetic quality. In recent years, magnetic insulators have attracted much interest from the spintronics community, because K. Uchida, E. Saitoh c.s., demonstrated that they can be actuated thermally and electrically and thereby integrated into conventional electronics and thermoelectric devices. The discovery of entirely new phenomena, such as the spin Seebeck effect, raises the hope for a new and green spintronics.

In this talk I will present a selection of recent and partly unpublished progress in the theoretical spin(calori)tronics of YIG and its heterostructures with normal metals.

All interested are cordially welcome!

Dr. Frederick Casper
Tel.: 06131/39-24403
Email: spinnet@uni-mainz.de