



TECHNISCHE
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ANGEWANDTE PHYSIK
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IAP-SEMINAR

INVITATION

Date: **Tuesday, 21.10.2014**

Time: **16:00 p.m.**

Location: **Technische Universität Wien, Institut für Angewandte Physik, E134**
yellow tower „B“, 5th floor, Seminarraum 134A (room number DB05L03)
1040 Wien, Wiedner Hauptstraße 8-10

Lecturer: **Pavel Štředa**

Institute of Physics, Academy of Sciences of the Czech Republic

Subject: **Anomalous Hall Effect**

Abstract:

The standard way of establishing conductivity is to use the Kubo formula or Boltzmann equation which represent the linear response of the system to the dynamical force, the electric field. Nearly no attention has been devoted to the response to the gradient of the chemical potential, which often leads to better understanding of the physical origin of the studied effect. Although procedures allowing the conductivity evaluation are quite different for such types of response, in order to comply with the general theory of irreversible processes they have to yield the same results.

It will be shown that the anomalous Hall conductivity of ferromagnetic systems is fully determined by the response of the orbital momentum created by the so-called free electron currents to the chemical potential gradient. For perfect Bloch systems it coincides with the well-known formula in which the conductivity is expressed in terms of the Berry phase curvature. The main effects of the two basic scattering processes, the side-jump and the skew scattering, will be described by using simple model systems, and compared with experimental observation. Close relation between anomalous and spin Hall currents will also be mentioned.

*All interested colleagues are welcome to this seminar lecture
(45 minutes presentation followed by discussion).*

*J. Redinger e.h.
(Seminar-Chairperson)*

*H. Störi e.h.
(LVA-Leiter)*