

4th MATCOR summer school of the Graduate School **MAINZ**
and 7th International Symposium on New Materials with High Spin Polarization

“New materials for spintronics, theory and experiment”

August 11–15, 2008 in Rathen/ Dresden

This summer school assembled recent research results in the field of high-spin polarization materials, together with a selection of experimental and theoretical techniques. The participants joined us from all over the world (e.g. Canada, Japan) and we spent a nice time together in Rathen, near to Dresden.



The session was opened with the general introduction to the properties of the half metals given by G. H. Fecher. Afterwards, within the talks on the experimental methods the participants had the opportunity to acquaint themselves with such powerful experimental means of research as NMR (S. Wurmehl), time-resolved photoemission (M. Cinchetti), high-energy photoemission (A. Gloskovskyy) and Brillouin light scattering (J. Hamrle). One of the most interesting talks was given by the guest from Taiwan, Prof. Y. Hwu, who demonstrated the powerful descriptive abilities of x-ray synchrotron radiation in the characterization of nanostructures.

The subsequent focus of the conference concerned new materials possessing an unusual combination of physical properties - multiferroics and magnetoelectrics - covered by Prof. W. Kleeman. Another interesting subject was presented by Prof. B. Koopmans about the magnetoresistance in organic materials which earlier were not considered in this field at all. The properties of the double perovskites ranging from half-metals to the Mott-insulators were discussed by Prof. J. Kübler. M. Fonin gave an overview about spin polarization and magnetotransport in the epitaxial Fe- and Cr-oxide films.

A further focus of the school was devoted to theoretical methods. The introduction into the local many-body correlations and their particular consequences in the half-metallic Heusler alloys was given by S. Chadov. The recently developed program package based on the Korringa-Kohn-Rostoker method adapted for the layered systems was presented by J. Minar. Much attention was sparked by E. Engel's presentation about the treatment of the many-electron problem by means of the so-called Exact Exchange approach and was followed by long discussions. To wrap up the student targeted presentations, students and interested professors were given the opportunity to attend a half-day workshop on international patent law given by Klaus Schweitzer. The meeting concluded with two days of an international symposium for professors involved in the research cluster with emphasis on highly spin polarized materials.

Apart from the oral presentations, a comprehensive poster session with more than 20 posters was held on one of the evenings, accompanied by stimulating discussions, which continued until very late.

This report definitely could not be completed without saying few words about the wonderful picturesque nature of the place in which the summer school was organized. In order to equalize the informational saturation from the sessions with recreation, our time was naturally filled by hiking tours and beautiful sightseeing. In particular, the excursion to Dresden and the nice concert in "Zwinger" as well as a pleasant dinner under a starry sky in the "Weinstube" will be remembered fondly.

(S. Chadov, C. A. Jenkins, S. Jäger)

