

Conference on Computational Magnetism and Spintronics
25. Sept. - 27. Sept. 2006
Forschungszentrum Jülich, Germany

Organizers

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Motivation and objectives

Magnetism, in general, spintronics, magnetoelectronics and nanomagnetism, in particular, are currently among of the most active research fields in condensed matter physics. These fields are progressing very fast and continue branching into an increasingly wider area of research. This involves strongly correlated electron systems such as Kondo impurities or spin liquids, semiconductor physics in terms of diluted magnetic semiconductors, organic and inorganic molecules in terms of molecular magnets, carbon nano-tubes in the field of nano-spintronics or even ferro-electric materials like multiferroics. Moreover, it is widely recognized that first-principles calculations give important clues in understanding properties of magnetic materials and have a remarkable impact both from fundamental as well as from technological point of view.

In fact, while many conferences focusing on magnetism and spintronics are being regularly organized and held all over the world, we feel that the opportunity to exchange ideas on several issues specifically related to ab-initio calculations is currently lacking. The urgent need to respond to the rapid development of the field motivated us to organize regularly small conferences and workshops. Since, in parallel with progresses and novelties in experimental magnetism, first-principles calculations

on magnetism are booming, and the community is continuously growing, such a series of conferences is particularly timely.

The working groups Magneto-electronics and Complex Magnetism of the Psi-k Network initiate to organize over the next years a regular series of conferences and workshops, which will be integrated within the new cooperation between Psi-k, CECAM (Centre European de Calcul Atomique et Moléculaire) in Lyon, France, and the Research Center Jülich. Every second year we are going to have a conference with about 60 participants on a broader scope of content and every other year we think of a more focused Psi-k/CECAM-workshop (or two of them). The scheduled venue of the conferences is Jülich (or the vicinity of Jülich), while the workshops should be held at CECAM in Lyon.

Topics, format and invited speakers

The main objective of the Jülich conferences is to bring together leading scientists in Europe, while inviting also guests from USA and Japan, being active on different fields of magnetism, in particular, by using state-of-the-art first principles methods. In general, we want to discuss issues such as accuracy and limits of the density functional theory for novel magnetic materials, methods development, specific computational problems, etc., overview recent results, as well as consult about common progresses for the future.

For this upcoming first meeting, the scope of the conference will cover those fields that have been gaining increasing importance during the last few years in the magnetism area. In particular, we shall focus on Diluted Magnetic Semiconductors, Half-Metals, Spin-dependent Transport, Correlations, Multiferroics, Molecular Magnetism and Nanomagnetism. A tentative list of invited speakers includes:

Josef Kudrnovsky (Prague) *	Diluted Magnetic Semiconductors
Mark van Schilfgaarde (Tempe)	Diluted Magnetic Semiconductors
Iosif Galanakis (Patras) *	Half-metallic Heusler Alloys
Paul J. Kelly (Twente)	Spintransport
Balazs L. Györfy (Bristol)	Spin Dynamics
David Singh (Oak Ridge) *	Electron Correlation
Tamio Oguchi (Hiroshima) *	Multiferroics
Olle Eriksson (Uppsala) *	Finite Temperature Magnetism

(Speakers denoted with asterisks have already confirmed their participation.)

In addition, we plan at least 20 contributed talks and a poster session. 30 minutes are saved for every invited talk followed by 10 minutes of discussion, 15 minutes for every contributed talk followed by 5 minutes of discussion and 3 hours for the poster session. In total, we plan ten sessions over two and half days with 13:20 hours scheduled for talks.

Exchange of ideas, experience sharing and conversations will be strongly encouraged by placing several opportunities into the conference program when participants can freely discuss. We propose that the organizers of the next CompMag2008 conference will be elected and the plans of the CECAM workshops for the year 2007 will be discussed during this conference.

Preliminary program

*** Monday (September 25th)

9:30 - 9:50 (Welcome address)

9:50 - 11:10 SESSION I: OVERVIEW ON MAGNETISM FROM FIRST PRINCIPLES

9:50 - 10:30 O. Eriksson (Uppsala)

"Prediction of Curie temperatures"

10:30 - 11:10 2 contributed talks

11:10 - 11:40 Coffee

11:40 - 13:00 SESSION II: DILUTED MAGNETIC SEMICONDUCTORS (I)

11:40 - 12:20 J. Kudrnovsky (Prague)

"Diluted magnetic semiconductors:
electronic and magnetic properties"

12:20 - 13:00 2 contributed talks

13:00 - 14:30 Lunch

14:30 - 15:50 SESSION III: ELECTRON CORRELATIONS (I)

14:30 - 15:10 D. J. Singh (Oak Ridge),

"Correlation effects in oxides"

15:10 - 15:50 2 contributed talks

15:50 - 16:20 Coffee

16:20 - 17:00 SESSION IV: ELECTRON CORRELATIONS (II)

16:20 - 17:00 2 contributed talks

17:00 - 20:00 Poster session (with Beer and Food)

(4:40 hours for talks)

*** Tuesday (September 26th)

9:30 - 11:10 SESSION V: HALF METALS

9:30 - 10:10 I. Galanakis (Patras)

"Origin of the gap, magnetism and spinpolarization
in the half-metallic Heusler alloys"

10:10 - 11:10 3 contributed talks

11:10 - 11:40 Coffee

11:40 - 13:00 SESSION VI: DILUTED MAGNETIC SEMICONDUCTORS (II)

11:40 - 12:20 M. Van Schilfgaarde (ASU)

"Exchange interactions in DMS"

12:20 - 13:00 2 contributed talks

13:00 - 14:30 Lunch

14:30 - 15:50 SESSION VII: SPIN-TRANSPORT

14:30 - 15:10 P. Kelly (Twente)

TO BE ANNOUNCED

15:10 - 15:50 2 contributed talks

15:50 - 16:20 Coffee

16:20 - 18:00 SESSION VIII: MULTIFERROICS

16:20 - 17:00 T. Oguchi (Hiroshima)

"HiLAPW: Application to Multiferroics"

17:00 - 18:00 3 contributed talks

(6:00 hours for talks)

19:00-23:00 Social Dinner

*** Wednesday (September 27th)

9:30 - 11:10 SESSION IX: SPIN DYNAMICS

9:30 - 10:10 B.L. Gyorffy (Bristol)

TO BE ANNOUNCED

10:10 - 11:10 3 contributed talks

11:10 - 11:40 Coffee

11:40 - 13:00 SESSION X: CHALLENGES AND PERSPECTIVES

2 invited talks to be announced or round table

OR

11:40 - 13:00 SESSION X: METHODS DEVELOPMENT

11:40 - 12:20 invited talk

12:20 - 13:00 3 contributed talks

13:00 - 14:30 Lunch

(2:40 hours for talks)

Funding

The total cost of the conference is scheduled to be 24.000 Euro. This covers the local costs, as to hire the conference hall, bus transfer to hotels, payment for the accommodation and meals for all participants etc. as well as some travel expenses (see below). From this, 10.000 Euro will be provided by FZJ, 4.000 Euro by CECAM, and **here we apply to the ESF Psi-k Network for funding 10.000 Euro.**

Conference Budget:

60 participants for 3 days at 80 Euro	14.400
bus transfer to hotels	1.500
conference hall in TZJ 3 days	1.500
travel for oversea participants	2.500
travel for some EU participants	2.300
conference dinner (+ beer for poster session)	1.800

	24.000 Euro
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