



Universidad
Complutense
Madrid



MONCLOA
campus de
Excelencia
Internacional



II Workshop on the Physics of Complex Oxides

2 - 5 October 2012,

Carretera de Alcudia - Pto. de Pollensa, km. 2 - 07400 Alcudia, Mallorca, Spain



International Organizing Committee

Dimitri Argyriou, European Spallation Source, Sweden, and Helmholtz-Zentrum Berlin, Germany

Elbio Dagotto, University of Tennessee and Oak Ridge National Laboratory, USA

Sadamichi Maekawa, Advanced Science Research Center, Japan

Sokrates Pantelides, Vanderbilt University Nashville and Oak Ridge National Laboratory, USA

Georgios Papavassiliou, Institute of Materials Science, NSRF "Demokritos"

Jacobo Santamaria, Universidad Complutense Madrid, Spain

Local Organizing Committee

Carlos León, Norbert Nemes, Zouhair Sefrioui, Maria Varela

Grupo de Física de Materiales Complejos (www.ucm.es/info/gfmc)

Departamento de Física Aplicada III (U.C.M.)

LOCATION AND DATES

II International Workshop on Complex Oxides (Santorini II in Mallorca) will be held from October 2nd to October 5th, 2012 at "Club Pollentia Resort" hotel, situated in the north of Mallorca, on the seafront in Pollensa Bay, and close to Can Cap de Bou Beach. Puerto Pollensa and the village of Alcudia are both within 5 km.

SCOPE

The aim of the workshop is to bring together distinguished experts working on the physics of complex oxides to discuss recent developments and future trends in this field. Topics include complex phases in transition metal oxides, such as multiferroics and manganites, novel ordering phenomena, new oxides and novel magnetic states, latest developments in superconductivity, the physics of oxide interfaces and heterostructures, the role of electron correlations, etc.

REGISTRATION

The registration desk will be open on Monday, October 1st, from 17:00 to 19:00. From Tuesday 2nd to Thursday 4th the desk will be open from 8:50 to 9:30 in the morning.

TRAVEL INFORMATION

Mallorca is linked to the rest of the world through Son Sant Joan airport, which is 60 km away from Alcúdia (about 50 minutes by car). It is one of the busiest airports in Europe, with more than 20 different airlines flying here.

Once at the airport the easiest way to reach the conference venue is by taxi (about 65-75 EUR), although you may want to rent a car at the airport terminal.

If you wish to RENT A CAR, we recommend to contact and reserve with FORMENTOR RENT A CAR that offers special rates for the attendants to the Workshop. You can arrange with them to get the car at Palma Airport. For information on the rates and conditions please check their web page (www.rentacarformentor.com) indicating the ref. "DIPLOMATIC" on the Comment section, or send your request by email to the booking department (reservas@rentacarformentor.com) using as subject "To the attention of ANTONIA" , indicating always the ref. "DIPLOMATIC" .

Useful telephones

Club Pollentia Resort - (+34) 971 546 996

Esperanza Escandell (Diplomatic Services Travel Agency) - (+34) 971 221 004

Jacobo Santamaria – (+34) 629 175 988

Norbert Nemes – (+34) 610 057 606

For any questions please do not hesitate to contact us by email at:

“Jacobo Santamaria” jacsan@fis.ucm.es

“Norbert Nemes” nmnemes@fis.ucm.es

SOCIAL PROGRAM

A conference dinner will be organized and the details will be announced during the conference.

SCIENTIFIC PROGRAM

All presentations will be oral (25 minutes + 5 minutes for discussion). Please note that the timetable in the following pages may be subjected to small changes.

An abstract booklet with the final program will be distributed at the conference registration desk.

Tuesday 2 October 2012

8:50 Opening

Session 1 - Hidden orders in oxides: manganites (Chair: Maria Varela)

9:00 - 9:30: **Markus Braden** Stripe-like ordering of charges, orbitals and spins in layered manganites

9:30 – 10:00 **Michalis Pissas** A neutron diffraction study of $\text{TbMn}_{1-x}\text{Fe}_x\text{O}_3$ compound

10:00 – 10:30 **Maxim Mostovoy** Landau theory of topological defects in hexagonal manganites

10:30 – 11:00: COFFEE BREAK

Session 2 - Ferroic orders and magnetoelectric coupling (Chair: Jacobo Santamaria)

11:00 – 11:30 **Silvia Picozzi** First-principles approach to multiferroics and magnetoelectrics

11:30 – 12:00 **Javier Junquera** Metal-induced gap states in ferroelectric capacitor and its relationship with complex band structures

12:00 – 12:30 **Sohrab Ismail-Beigi** Ferroelectric/manganite interfaces from first principles: charge modulation, magnetic transitions, and flippable orbital polarization

12:30 – 13:00 **Manuel Bibes** Giant tunnel electroresistance in ferroelectric tunnel junctions

13:00 – 16:00 LUNCH

Session 3 - Magnetism in oxides I (Chair: Carlos León)

16:00 – 16:30 **Tomasz Dietl** Nitride vs. Oxide Dilute Magnetic Semiconductors

16:30 – 17:00 **Maria Varela** Studies of magnetism in complex oxides by aberration corrected STEM-EELS

17:00 – 17:30 COFFEE BREAK

Session 4 - Iron based superconductors I (Chair: Maria José Calderón)

17:30 – 18:00 **Adriana Moreo** Transport Anisotropy in the Pnictides

18:00 – 18:30 **Maria Daghofer** Topologically nontrivial states in strongly correlated multiorbital systems

18:30 – 19:00 **Ilya Eremin** Magnetism in iron-based superconductors: interplay of magnetic, orbital, and structural transitions

Wednesday 3 October 2012

Session 5 - Hidden orders in oxides: cuprates and ruthenates (Chair: Norbert Nemes)

9:00 - 9:30: **Vlad Dobrosavljevic** Pseudogap transport and charge ordering in complex oxides

9:30 – 10:00 **Yasutomo Uemura** Unexpected Phase Diagrams of MnSi, (Mn,Fe)Si, and (Sr,Ca)RuO₃

10:00 – 10:30 **Javier Garcia-Barriocanal** The Superconductor Insulator Transition in Electrostatically Doped La₂CuO_{4+δ}

10:30 – 11:00: COFFEE BREAK

Session 6 - Magnetism in oxides II (Chair: Zouhair Sefrioui)

11:00 – 11:30 **Despina Louca** Possible link of a structurally driven spin flip transition and the insulator-metal transition in Cobaltites

11:30 – 12:00 **Ricardo Ibarra** Functional magnetic oxides nanostructures

Session 7 - Complex oxide interfaces I (Chair: Georgios Pavassiliou)

12:00 – 12:30 **Sokrates Pantelides** Oxygen vacancies in transition-metal oxides

12:30 – 13:00 **Risto Nieminen** Ferromagnetic interfaces between non-magnetic perovskites

13:00 – 16:00 LUNCH

Session 7 - Complex oxide interfaces I (continued) (Chair: Georgios Pavassiliou)

16:00 – 16:30 **George Sawatzky** Magnetism based on Surfaces, Interfaces and Point Defects

16:30 – 17:00 **Xavier Obradors** Bottom-up approach to epitaxial complex oxide nanostructures and thin films with outstanding magnetic, superconducting and electronic properties

Session 8 - Iron based superconductors II (Chair: Adriana Moreo)

17:00 – 17:30 **Maria Jose Calderon** The role of orbital differentiation in the magnetic state of iron superconductors

17:30 – 18:00 **Bernd Buchner** Phase diagrams of Fe based superconductors

20:00 CONFERENCE DINNER

Thursday 4 October 2012

Session 9 - Complex oxide interfaces II (Chair: Jacobo Santamaria)

9:00 - 9:30: **Jean Marc Triscone** Tunable electronic properties at the LaAlO₃/SrTiO₃ interface

9:30 – 10:00 **Ariando** Two dimensional electron gases at polar/nonpolar oxide interfaces for various polar systems and crystallographic orientation

10:00 – 10:30 **Anderson Janotti** Bulk and interface properties from first-principles

10:30 – 11:00: COFFEE BREAK

Session 10 - Complex oxide interfaces III (Chair: Sokrates Pantelides)

11:00 – 11:30 **Steve Pennycook** Understanding functionality in complex oxides with aberration corrected scanning transmission electron microscopy

11:30 – 12:00 **Marcello Rozenberg** Mechanism of resistive switching in bipolar transition metal oxides

12:00 – 12:30 **Rossitza Pentcheva** Confinement effects and metal-to-insulator transition in oxide superlattices and thin films

12:30 – 13:00 **Popi Trohidou** Interface and surface effects on magnetic oxide systems

13:00 – 16:00 LUNCH

Session 11 - Coupled orders in oxides (Chair: Norbert Nemes)

16:00 – 16:30 **Dimitri Argyriou** Solitonic lattice and Yukawa forces in the rare earth orthoferrite TbFeO₃

16:30 – 17:00 **Georgios Pavassiliou** NMR Studies of stripe-like charge and spin order in hole doped Transition Metal Oxides

17:00 – 17:30 **Laurent Chapon** Type II multiferroics with large electric polarisations

17:30 – 18:00 COFFEE BREAK

Session 12 - Oxides/semiconductors (Chair: Dimitri Argyriou)

18:00 – 18:30 **Alex Demkov** Physics of oxide/semiconductor epitaxy

18:30 – 19:00 **Richard Haglund** All-optical switching in Si modulators using the phase transition in vanadium dioxide

Friday 5 October 2012

Session 13 - Proximity effects in hybrid oxides (Chair: Zouhair Sefrioui)

9:00 - 9:30: **Christian Bernhard** Study of the magnetic proximity effect in cuprate-manganite multilayers

9:30 – 10:00 **Javier Villegas** Long-range Penetration of Superconducting Correlations into a Half-metal Manganite in Proximity with a Cuprate Superconductor

10:00 – 10:30 **Norbert Nemes** Explanation of the anomalous inverse spin switch behaviour in superconducting LCMO/YBCO/LCMO trilayers

10:30 – 11:00: COFFEE BREAK

Session 14 - Spin transport (Chair: Jacobo Santamaria)

11:00 – 11:30 **Sadamichi Maekawa** Spin Hall effect

11:30 – 12:00 **Juan Salafranca** Spatially resolved electronic structure of cuprate-manganite heterostructures.

12:00 – 12:30 **Zouhair Sefrioui** Electrically Controlled Magnetic Coupling in Manganite / Cuprate / Manganite Tunnel Junctions

12:30 – 13:00

13:00 **Closing**

13:00 – 16:00 LUNCH