

Workshop on the “Physics of Complex Oxides” Santorini, Greece, 14-17 June 2010

Sponsored by



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LOCATION AND TIME

The Workshop will be held from June 14 to June 17, 2010 at the "Santorini Palace" hotel, built in the capital of Santorini, Fira. The lecture room is located in the hotel. The accommodation includes buffet-breakfast.

REGISTRATION

The registration desk will be open on Sunday, June 13, 2010 from 16:00 to 19:00. From Monday, June 14 through Thursday June 17, 2010, the desk will be open from 08:00 to 11:00 a.m. There is no registration fee for participants.

TRAVEL INFORMATION

The hotel lies at a distance of 7km from the airport, and at 12km from the port of Athinios. There is a regular bus connection from the town of Fira to both destinations. Easily accessible and relatively cheap taxi transportation is also available. Renting a car in the high season costs between 40-50 EUROS per day.

Useful telephones:

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SCIENTIFIC PROGRAM

All presentations will be performed orally (25 minutes plus 5 minutes discussion). Computer projector (for Power-Point or other kind of computer presentations) will be available. The timetable given in the next pages may be subjected to small alterations.

Abstract booklet

The abstract booklet, which includes the final program, will be distributed at the conference.

SOCIAL PROGRAM

Reception

The reception (welcome party) will take place, on Sunday June 13, 2010 at 19:00. All registered persons (participants and accompanying members) are cordially invited.

Excursion

An excursion to the most important archeological places and wine tasting to the traditional wineries of Santorini will be arranged if there are an adequate number of participants.

Official Dinner

The official dinner of the Workshop will take place on Wednesday June 16, 2010 at evening, and will be free of charge for all participants and accompanying members.

Entertainment

A swimming pool facility will be available to all participants and accompanying members during the Workshop. Nice beaches for swimming are also available in 15-20 minutes driving distance (by bus or car).

GENERAL REMARKS

Refreshments

During the coffee breaks, coffee, tea and juices will be provided free to all participants.

Climate

In the middle of June the weather in Greece is usually hot and dry. The average temperatures lie between 25-30⁰C, but during night in the islands, it becomes considerably cooler and pleasant. All rooms and the lecture room are air-conditioned.

Acknowledgements

The Organizers wish to express their most cordial thanks to Mrs. V. Zatta for her good will and assistance, as well as to the graduate students of the NMR Group of NCRS "Demokritos".

TIMETABLE

Monday June 14, 2010

08:50 **Opening of the workshop**

Session 1: Oxide superconductors I

Chairman: Ole Krogh Andersen

09:00 **Antonio Bianconi**
The physical roadmap for high temperature superconductivity: misfit strain, disorder and multicomponent superconductivity in heterostructures of oxide layers at atomic limit.

09:30 **Yasutomo Uemura**
Muon spin relaxation studies of unconventional superconductors: comparisons of cuprates, ruthenates, and arsenides

10:00 **John Tranquada**
Striped Superconductivity in $\text{La}_{2-x}\text{Ba}_x\text{CuO}_4$

10:30 Coffee break

Session 2: Iron-based superconductors

Chairman: Sokrates Pantelides

11:00 **Ilya Eremin**
Superconductivity and metallic spin density waves in iron-based superconductors

11:30 **Efthimios Liarokapis**
Lattice anomalies across T_c in the $\text{NdFeAsO}_{0.85}$ superconductor

12:00 **Sergey Borisenko**
ARPES of iron pnictides

12:30 **Dimitri Argyriou**
From $(\pi, 0)$ magnetic order to superconductivity with (π, π) magnetic resonance in $\text{Fe}_{1.02}(\text{Te}_{1-x}\text{Se}_x)$

13:00 Closing

Session 3: Multiferroics I

Chairman: Paolo Radaelli

- 16:00 **Alois Loidl**
Relaxations and Excitations in Multiferroics
- 16:30 **Sylvain Petit**
Neutron scattering study of hexagonal multiferroic materials
- 17:00 **Maxim Mostovoy**
Magnetoelectric switching in multiferroic materials
- 17:30 Coffee break

Session 4: Oxide superconductors II

Chairman: Yasutomo Uemura

- 18:00 **Ali Yazdani**
Evolution of the Cuprates' Excitation Spectrum with Doping & Temperature
- 18:30 **John Hill**
Inelastic Studies of Complex Ground States: Spin, Charge, Lattice and Orbital Excitations in Novel Materials
- 19:00 **John Mitchell**
Novel Transition Metal Oxides at High Pressure
- 19:30 Closing

Tuesday June 15, 2010

Session 5: Manganites

Chairman: Dimitri Argyriou

- 09:00 **Martine Hennion**
The inhomogeneous ferromagnetic and metallic state of $\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$ probed by spin waves
- 09:30 **Jing Tao**
Direct Imaging of Nanoscale Phase Separation in Colossal Magnetoresistive $\text{La}_{1-x}\text{Ca}_x\text{MnO}_3$
- 10:00 **Michael Pissas**
Experimental evidences for charge and spin density waves in $\text{La}_{1-x}\text{Ca}_x\text{MnO}_3$ for $0.5 < x < 0.7$

10:30 Coffee Break

Session 6: Superconductivity beyond cuprates

Chairman: Marcus Braden

- 11:00 **Michael Norman**
Iridates – The New Frontier
- 11:30 **Ole Krogh Andersen**
Speculations about making nickelate high-temperature superconductors
- 12:00 **Henri Alloul**
Co charge disproportionation induced by Na order in Na_xCoO_2 .
Incidence on the electronic properties of the Co planes
- 12:30 Closing

Session 7: Complex Ground States in Oxides

Chairman: Jean Mark Triscone

- 16:00 **Marcus Braden**
Coupling of spin charge and orbital order in selected transition-metal oxides
- 16:30 **Giniyat Khaliullin**
Mott insulators in the strong spin-orbit coupling limit
- 17:00 **Francoise Damay**
Staggered magnetic chirality along zig-zag ladders in $\beta\text{-CaCr}_2\text{O}_4$
- 17:30 Coffee break

Session 8: Oxide heterostructures and interfaces I

Chairman: Claude Berthier

- 18:00 **Satoshi Okamoto**
Theoretical study of strongly correlated heterostructures
- 18:30 **Steven Pennycook**
Tracking polarization, strain and octahedral tilts at ferroelectric interfaces

- 19:00 **Jean Mark Triscone**
 Tuning Normal State and Superconducting Properties at the
 LaAlO₃/SrTiO₃ Interface
- 19:30 Closing

Wednesday June 16, 2010

Session 9: Quantum Criticality and Quantum Spin Systems

Chairman: Daniel Komskii

- 09:00 **Claude Berthier**
 High Field NMR in Quantum Spin Systems: Bose-Einstein
 Condensation versus Wigner Crystallization
- 09:30 **Vladimir Dobrosavljevic**
 Quantum Critical Transport Near Interaction – Driven Metal-Insulator
 Transitions
- 10:00 **George Varelogiannis**
 Domes of patterns of coexisting condensates preventing quantum
 criticality
- 10:30 Coffee Break

Session 10: Physical properties of oxides

Chairman: Steven Pennycook

- 11:00 **Steven Louie**
 Quasiparticle Excitations, Charge Transition Levels, and Optical
 Response of Defects in Oxides
- 11:30 **Popi Trohidou**
 Correlation between the structure and the magnetic properties of
 complex metal oxide based nanocomposites
- 12:00 **Patrick Rinke**
 Challenges in Computational Material Science – f - electron systems and
 defects in oxides
- 12:30 **Marcello Rozenberg**
 Mechanism for resistive switching in transition metal oxides
- 13:00 Closing

Session 11: Novel Magnetic States

Chairman: Henri Alloul

- 16:00 **Claudio Castelnovo**
Manifestations of monopole physics in spin ice materials
- 16:30 **Radu Coldea**
Orbital degeneracy charge order and frustrated magnetism on a triangular lattice, AgNiO₂
- 17:00 **Daniel Khomskii**
Novel states in oxides close to Mott transitions
- 17:30 Coffee break

Session 12: Oxide heterostructures and interfaces II

Chairman: Efthimios Liarokapis

- 18:00 **Jacobo Santamaria**
Induced magnetism at complex oxide interfaces
- 18:30 **Christos Christides**
X-ray natural linear dichroism (XNLD) in Mn K-edge of [La_{2/3}Ca_{1/3}MnO₃/ La_{1/3}Ca_{2/3}MnO₃]₁₅ multilayers
- 19:00 **Maria Varela**
Atomic resolution direct imaging of O distortions across complex oxide interfaces
- 19:30 Closing

Thursday June 17, 2010

Session 13: Multiferroics II

Chairman: Alois Loidl

- 09:00 **Paolo Radaelli**
More than one twist: multiferroics beyond the cycloidal mechanism
- 09:30 **Desmond McMorrow**
X-ray imaging of the electric field control of multiferroic domains
- 10:00 **Eugen Weschke**

Manipulation and imaging of multiferroic domains in rare-earth manganites by soft x-rays

10:30 Coffee Break

Session 14: Weak vs. Strong Electron Correlations

Chairman: Steven Louie

11:00 **Sokrates Pantelides**
Electron correlations in TM oxides: Are they really strong?

11:30 **Georgios Papavassiliou**
Phase Solitons in the Spin Ground State of Overdoped Manganites.
Direct NMR Evidence

12:00 **End of workshop**