



The Abdus Salam

**International Centre  
for Theoretical Physics**

[www.ictp.it](http://www.ictp.it)



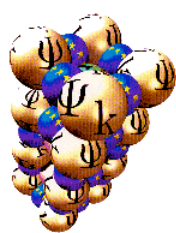
**IAEA**  
International Atomic Energy Agency

# Conference: What about U? - Effects of Hubbard Interactions and Hund's Coupling in Solids

**17 – 21 October 2016**

*(Miramare - Trieste, Italy)*

The Abdus Salam International Centre for Theoretical Physics is organizing the *Conference: What about U? - Effects of Hubbard Interactions and Hund's Coupling in Solids* to be held at ICTP, Trieste, Italy from 17 to 21 October 2016.



Psi-k

**Co-sponsors**



## Purpose and Topics

Materials with correlated electrons display an amazing variety of phenomena, ranging from Mott-Hubbard insulators to high-temperature superconductivity. So far most research in strongly correlated materials has focused on the role of the "Hubbard U" term, i.e., the repulsion between electrons on the same atom, driving the Mott localization in partially filled bands. In the last few years two new paradigms have emerged: the "Hund's metal", a highly correlated state driven by Hund's exchange coupling favoring the formation of high-spin multiplets on an atom and the "spin-orbit Mott insulator or correlated metal" where spin-orbit coupling conspires with local interactions to produce novel correlation effects.

The conference will gather the main researchers active in the field. Focussing on the effects of Hund's and spin-orbit couplings in correlated materials such as iron-based superconductors, ruthenates or iridates, and from the comparison between theoretical/computational and experimental results, it will aim at improving the conceptual understanding of the new phenomena. A specific objective of the conference will also be the further development of electronic structure methods able to capture the new paradigms and to provide a reliable description of the properties of 3d, 4d, and 5d transition metal compounds from first principles.

## Participation

Applicants from all countries that are members of the United Nations, UNESCO or IAEA may attend. As the Conference will be conducted in English, participants should have an adequate working knowledge of this language. Although the main purpose of the Centre is to help researchers from developing countries through a programme of training activities within a framework of international cooperation, a limited number of students and post-doctoral scientists from developed countries are also welcome to attend.

As a rule, travel and subsistence expenses of the participants should be borne by their home institutions. Every effort should be made by candidates to secure support for their fare (or at least half-fare). However, limited funds are available for some participants, who are nationals of, and working in, a developing country. Such support is available only to those attending the entire activity. **There is no registration fee.**

## HOW TO APPLY FOR PARTICIPATION

The Online Application can be accessed at: <http://indico.ictp.it/event/7609/>

Comprehensive instructions will guide you step-by-step on how to fill out and submit the application form. Kindly send all file attachments in Word or Acrobat format.

**Secretariat:** Ms. Rosa del Rio (smr 2827)

Telephone: +39-040-2240396 - Telefax: +39-040-22407396 - E-mail: [smr2827@ictp.it](mailto:smr2827@ictp.it)

ICTP Home Page: <http://www.ictp.it>

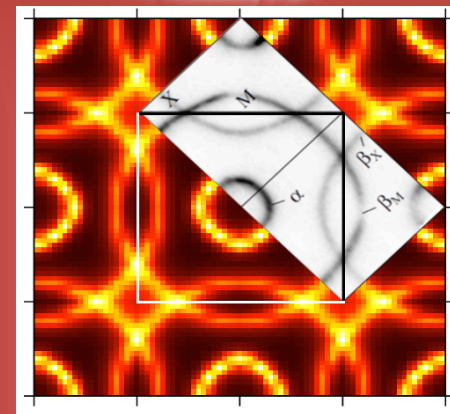
## Application DEADLINES

IF financial support OR visa required

NO financial support NOR visa required

**1 July 2016**

**1 September 2016**



## Organizers

**Silke Biermann**

CPHT, Ecole Polytechnique, Paris, France

**Massimo Capone**

SISSA, Trieste, Italy

**Hong Ding**

Chinese Academy of Sciences  
Institute of Physics, Beijing, P.R. China

**Matteo Cococcioni**

Ecole Polytechnique Fédérale de  
Lausanne, Switzerland

**David Jacob**

Max-Planck-Institut für  
Mikrostrukturphysik, Halle, Germany

## Local organizer

**Nadia Binggeli**

(ICTP, Trieste)

## Speakers

Ryotaro Arita (RIKEN, Wako)

Lilia Boeri (TU Graz)

Sergey Borisenko (IFW Dresden)

Veronique Brouet (LPS, Orsay)

Nicola Colonna (EPFL, Lausanne)

Xi Dai (Inst of Physics, CAS)

Andrea Damascelli (Univ British Columbia)

Luca de Medici (ESRF Grenoble)

Rafael Fernandes (Univ of Minnesota)

Andrea Ferretti (CNR-NANO, Modena)

Jörg Fink (IFW Dresden)

Antoine Georges (Collège de France, Paris  
and Ecole Polytechnique, Palaiseau)\*

Frederic Hardy (Karlsruhe Inst of Technology)

George Jackeli (MPI Stuttgart)

Alexander Khajetoorians (Radboud Univ)

Jan Kunes (Inst of Physics Prague)

Alexander Lichtenstein (Univ Hamburg)

Igor Mazin (NRL Washington DC)

Andrew Millis (Columbia Univ, NY)

Jernej Mravlje (Inst Jozef Stefan Ljubljana)

Pierre Richard (Inst of Physics, CAS)

Sandro Sorella (SISSA, Trieste)

Hidenori Takagi (Max Planck Inst, Stuttgart)\*

Mark Van Schilfgaarde (King's College  
London)

\* to be confirmed

Figure from Phys Rev Lett. 96 246402 and Martins et al.

