



The Abdus Salam
**International Centre
for Theoretical Physics**
50th Anniversary 1964–2014



Joint ICTP - TWAS School on Coherent State Transforms, Time-Frequency and Time-Scale Analysis, Applications

2 - 21 June 2014
Miramare, Trieste, Italy

The Abdus Salam International Centre for Theoretical Physics, is organizing a **School on Coherent State Transforms, Time-Frequency and Time-Scale Analysis, Applications** from 2 to 21 June 2014. It will be directed by Profs. **J-P. Antoine** (IRMP, Louvain-la-Neuve, Belgium), **I. Daubechies** (Duke Univ., Durham, USA) **H Feichtinger** (Univ. of Vienna, Austria), **R. Murenzi** (TWAS, Trieste, Italy) and **B. Torr sani** (Aix- Marseille Univ., France).

Local Organizer: **S. Luzzatto** (ICTP, Italy)

The topics of this school are coherent states, wavelets and their applications (signal/image processing via Gabor and wavelet analysis, inverse problems, approximation theory), plus necessary concepts of functional analysis and group theory. Coherent states and wavelets are two topics that have undergone a tremendous development in the last years, it is an extremely active domain. They have applications in a huge number of domains of physics, mathematics and engineering. This school, that will present many of the topflight experts in the field, will enable young scientists to catch on that fascinating topic and obtain a knowledge suitable for performing top level research. We plan to go from the basic aspects to up-to-date developments and also to cover some of the most exciting applications, such as inverse problems, analysis of geophysical, astronomical or biological (genome) signals.

Coherent states and wavelets are domains where top level research can be done in small, somewhat isolated places, contray to high energy physics, for instance. They are based on beautiful (also applied) mathematics and have applications in a huge variety of domains. In addition, they allow to perform excellent research with small computing equipments, which make them suitable for researchers from developing countries.

The Main Topics

- Basic theory of coherent states, in particular the group-theoretical background
- Gabor analysis with applications
- Wavelet analysis, both continuous and discrete, with applications
- Recent developments, such as curvelets, shearlets, compressed sensing, co-orbit theory or wavelets on graphs

PARTICIPATION:

Scientists and students from all countries which are members of the United Nations, UNESCO or IAEA may attend the School. As it will be conducted in English, participants should have an adequate working knowledge of that language. Although the main purpose of the Centre is to help research workers 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 the home institution. 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, and who are not more than 45 years old. Such support is available only for those who attend the entire activity. **There is no registration fee.**

HOW TO APPLY FOR PARTICIPATION

The application form can be accessed at the activity website
<http://agenda.ictp.it/smr.php?2585>

Once in the website, comprehensive instructions will guide you step-by-step, on how to fill out and submit the application form.

Deadline for requesting participation: **2 March 2014**

ACTIVITY SECRETARIAT:

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Co-Sponsored by TWAS



Directors

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Invited Speakers

S.T. Ali
Concordia Univ., Montreal, Canada
A. Arn odo
ENS, Lyon, France
O. Christensen
Technical Univ. Lyngby, Denmark
S. Dahlke
Univ. Marburg, Germany
Chr. DeMol
ULB, Brussels, Belgium
M. Farge
ENS, Paris, France
H. F hr
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Univ. Bonn, Germany
M. Unser
EPFL, Lausanne, Switzerland
P. Vandergheynst
EPFL, Lausanne, Switzerland

DEADLINE
for requesting participation

2 March 2014