



The Abdus Salam International Centre for Theoretical Physics



Advanced School on Direct and Inverse Problems of Seismology

27 September – 9 October 2010
(Miramare – Trieste, Italy)

The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy, in collaboration with the Department of Geosciences of the University of Trieste, will organize the **"Advanced School on Direct and Inverse Problems of Seismology"**, from **27 September - 9 October 2010**. The School is also endorsed by the Commission on Earthquake Hazard, Risk and Strong Motion of the International Association for Seismology and Physics of the Earth Interior (Chair, Wu Zhongliang, Beijing), which will be represented by one of its members.

The School will provide training in advanced methodologies of R&D in fundamental studies of the Earth's structure, evolution and dynamics. Numerous applied problems, such as prospecting for mineral resources, estimation and mitigation of possible seismic hazard will also be treated. The theoretical grounds include the theory of seismic wave propagation in realistic Earth models, simulation techniques and methods of inversion of seismic wavefields generated by natural and artificial sources. Lectures will focus both on the methodology and recent results of interpretation of seismic observations, for instance, the contribution of global Earth models to unresolved problems in plate tectonics as kinematic reconstructions, plate driving forces, and plate boundary interactions.

An essential part of the programme will be devoted to new computational approaches for seismic wave fields numerical simulation and for processing, management and interpretation of large volume observations. These new techniques are extensively used in modern methods for solving inverse seismological problems: reconstruction of three-dimensional Earth structure and seismic sources generating observed wave fields. These methods include event detection, location and identification, enhancement of wanted seismic signals, parameter measurements, computer simulation of wave fields and iterative model-building by different optimization methods.

A set of lectures will be delivered by winners of the European Union of Geosciences Beno Gutenberg medal, the most prestigious award worldwide for outstanding contributions to Seismology.

Students will be able to have a close acquaintance with the newest developments in all these directions, not only by listening to the intensive lecture courses, but also by active participation in computer demonstrations and exercises.

Main topics of the exercises will be:

- **Frequency-time analysis**
- **Source mechanism interpretation using surface wave and body wave data**
- **2D and 3D Seismic Tomography**
- **Seismological databases**

Students are encouraged to make presentations of their recent results related to the school programme.

PARTICIPATION

Scientists and students from all countries which are members of the United Nations, UNESCO or IAEA may attend the School subject to approval by the Course Directors. As the School 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. A degree in Physics, Mathematics, Geophysics (theoretical or computational), Computer Science and/or similar disciplines is required.

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?2167>

Once in the website, comprehensive instructions will guide you step-by-step, on how to fill out and submit the application form. Closing date for receipt of the applications is: **30 May 2010**.

ACTIVITY SECRETARIAT:

Telephone: +39-040-2240-355 Telefax: +39-040-2240-585

E-mail: smr2167@ictp.it

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

Deadline
for requesting participation:

30 May 2010