Sixth Workshop on Three-Dimensional Modelling of Seismic Waves Generation, Propagation and their Inversion

30 September - 12 October 2002

Miramare - Trieste, Italy

The Abdus Salam International Centre for Theoretical Physics (ICTP), in collaboration with the Department of Earth Sciences of the University of Trieste, will organize the Sixth Workshop on studies of seismic wave propagation in realistic three-dimensional Earth models and on methods for inversion of seismic data. The Workshop will take place from **30** *September to* **12** *October* **2002** and will be directed by Professors B.G. Bukchin (International Institute of Earthquake Prediction Theory and Mathematical Geophysics, Moscow, Russian Federation), and G.F. Panza (Department of the Earth Sciences, University of Trieste/ICTP, Italy). The Workshop will be co-sponsored by the Training and Mobility Researchers Programme of the European Commission. It is 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), who will be represented by one of its members.

PURPOSE AND NATURE

The Workshop will provide training in advanced methodologies of R&D in fundamental studies of the Earth's evolution and dynamics, and in numerous applied problems, such as prospecting for mineral resources, estimation and mitigation of possible seismic hazard etc. These methodologies are based on a deep understanding of physics of seismic wave generation by natural and artificial sources, and the propagation of these waves through complicated Earth structures.

Several quite new efficient computational approaches were recently developed for seismic waves 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. The Workshop will cover practically all aspects of these mentioned problems, including the theory of propagation, simulation techniques and methods of inversion of seismic waves generated by natural and artificial sources in realistic Earth structures.

Among the many important geophysical applications of the 3-D modelling and inversion, most important are:

- Global, regional and local studies of the Earth's structure for different scientific and applied purposes;

- The search for sedimentary basins, which may be related to hydrocarbon fields, particularly those in not easily accessible regions, e.g. continental shelves;

- Detailed investigations of earthquake-prone areas, including major faulting zones and studies of the nature of seismic sources;
- Monitoring of seismicity and stress fields in active seismic and volcanic zones;
- The simulation of strong motion for estimating possible seismic risk and preventing seismic hazards;

Lectures by most distinguished leaders in the different disciplines will be concentrated mainly on the theory of seismic wave propagation and modelling, seismic sources, state of the Earth's stress, structural studies, seismic hazards and general problems.

A set of lectures will be delivered by winner of the Beno Gutenberg medal, established by the European Geophysical Society in recognition of the scientific achievements of Beno Gutenberg. The medal is reserved for individuals in recognition of their outstanding contributions to Seismology.

Students will be able to become closely acquainted 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.

The topics of these exercises will be:

- Frequency-time analysis of seismic records;
- Modelling of seismic responses of layered media;
- Determination of seismic source characteristics by analysis of seismic waves records;
- 2D and 3D seismic tomography;
- Monitoring of Earth's seismicity;
- Seismological databases;
- *Receiver function study.*

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

The Workshop will provide excellent opportunities for the participants to improve their academic standards and update their knowledge of modern techniques for seismic wave modelling, analysis and interpretation. One of the greatest benefits to be derived from these activities will be the close personal contact between lecturers, who are leading figures in their fields of interest, and the participants.

The Workshop is open to scholars from all countries that are members of the UN, UNESCO or IAEA. The main purpose of the ICTP is to help research workers from developing countries through a programme of training activities within a framework of international co-operation. However, students and post-doctoral scientists from developed countries are also welcome to attend provided space is available. As the Workshop will be conducted in English, participants should have an adequate working knowledge of that language. 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 covered by the home institutions. However, limited funds are available for some research workers from developing countries. Some funds will also be available for participants from European countries, with support from the European Commission's Training and Mobility Researchers Programme. As scarcity of funds allows travel to be granted only in a few exceptional cases, every effort should be made by candidates to secure support for their fares (or at least half-fare) from their home country. It is stressed that participants whose travel expenses are paid by the ICTP are required to attend the entire Workshop. For logistic reasons, connected with the number of Personal Computers available, the total number of participants in the Workshop is limited. There is no registration fee for attending the Workshop.

Those wishing to participate should complete and return the request for participation form, to be found at the back of Bulletin No. 1, (also obtainable via e-mail: *smr1429@ictp.trieste.it*, by typing on the subject line: *get index*, or via WWW server: *http://www.ictp.trieste.it/*), before <u>31 May 2002</u> to the below address. If sending an application by e-mail, please save and send file attachments in RTF format.

the Abdus Salam International Centre for Theoretical Physics Sixth Workshop on Three-Dimensional Modelling of Seismic Waves

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