

*Seventh Workshop on
Non-Linear Dynamics and
Earthquake Prediction*

29 September - 11 October 2003

(Miramare - Trieste, Italy)

The Abdus Salam International Centre for Theoretical Physics, in collaboration with the Department of Earth Sciences of the University of Trieste, will organize the Seventh Workshop on Non-Linear Dynamics and Earthquake Prediction from 29 September - 11 October 2003. The Workshop will be co-sponsored by the European Commission. It 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 Workshop is dedicated to advanced researches on the dynamics and instability of the Earth lithosphere. Earthquake prediction is an intrinsic part of the problem, pivotal for understanding the dynamics of the lithosphere, as well as for the reduction of disasters. The Workshop will be focused on the integration of three methodologies: *phenomenological analysis* of observations; *"universal models" of complex systems*, such as considered in statistical physics and nonlinear dynamics; and *Earth-specific models* of tectonic fault networks. Particular attention will be paid towards the planning of future research based on the requests received from the participants. Leading experts in geosciences and nonlinear dynamics of complex systems will be among the lecturers. A set of lectures will be delivered by winners of the Beno Gutenberg and Lewis Fry Richardson medals, established by the European Geophysical society in recognition of the scientific achievements of Beno Gutenberg and Lewis Fry Richardson. These medals are reserved for individuals for outstanding contributions to seismology and non-linear geophysics in general.

The Workshop is a continuation of the ten previous ones organized by the Trieste Science Centres (Italy) in 1983, 1988, 1991, 1993, 1995, 1997, 1999, 2001, CERESIS (Lima, Peru, 1986), and IDEA (Caracas, Venezuela, 1991). The programme of lectures and practical exercises will cover the following topics:

LITHOSPHERE AS A NONLINEAR COMPLEX DISSIPATIVE SYSTEM

- Lectures: - Chaos and self-organization in nonlinear dissipative systems; Symptoms of instability; Scaling, self similarity, fractality
- Numerical models of seismicity: "universal" models and models of lithosphere block structure dynamics; Geometric incompatibility in blocks-and-faults systems; Physical background of major regularities in earthquake occurrence, as inferred from synthetic and real earthquake sequences

Practical exercises: - Models; Analysis of earthquake sequences; Use of Global Data Banks for regional studies; Software

PATTERN RECOGNITION

Lectures: - Exploratory data analysis; Algorithms; Software; Numerical tests; Applications

Practical exercises: - Data analysis; Software

EARTHQUAKE PREDICTION

- Lectures: - Fundamentals of earthquake prediction; Premonitory phenomena in models and reality; Integration of data on different fields
- Algorithms of prediction; Evaluation of reliability of prediction methods, error diagrams; Seismic risk estimate; Interaction with practical decision-making

Practical exercises: - Diagnosis of premonitory phenomena; Reliability of prediction; Software

Several meetings are planned to discuss the studies performed within the framework of international projects. In particular, the results obtained by the NATO SfP 972266 Project "Impact of Vrancea Earthquakes on the Security of Bucharest and other Adjacent Urban Areas (Ground Motion Modelling and Intermediate-Term Prediction)" will be presented.

Scientists and students from all countries that are members of the UN, UNESCO, or IAEA may attend the Workshop. The main purpose of the Centre is to help researchers 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, and may be supported thanks to the contribution from the European Commission under the Human Potential Programme (High-level Scientific Conferences). 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 institution. Every effort should be made by candidates to secure support for their fares (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. Other support will be available from the European Commission for some participants from EU and associated States. There is no registration fee. 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.

The **Application Form** is obtainable from the ICTP WWW server: is obtainable from the ICTP WWW server: <http://agenda.ictp.trieste.it/smr.php?1519> which will be constantly up-dated) or from the activity Secretariat. It should be completed and returned before **28 May 2003** to the following address:

Seventh Workshop on Non-Linear Dynamics and Earthquake Prediction

smr1519, c/o Ms. G. De Meo

the Abdus Salam International Centre for Theoretical Physics

Strada Costiera 11, I-34014 Trieste, Italy

or

smr1519@ictp.trieste.it

Telephone: +39-040-2240355

Telefax: +39-040-2240585

E-mail: smr1519@ictp.trieste.it

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

EARTHQUAKE

PREDICTION

Co-Sponsor:

European

Commission

(Human Potential

Programme)

DIRECTORS

V.I. Keilis-Borok

*(International Institute of
Earthquake Prediction Theory
and Mathematical Geophysics,
Russian Academy of Sciences,
Moscow, Russia)*

G.F. Panza

*(Dept. of Earth Sciences,
University of Trieste/ICTP,
Italy)*

Deadline:

28 May 2003