

ADVANCED SCHOOL AND WORKSHOP ON SINGULARITIES IN GEOMETRY AND TOPOLOGY

15 August - 3 September 2005

ICTP, Miramare - Trieste, Italy

The Abdus Salam International Centre for Theoretical Physics (ICTP) is organizing an Advanced School and Workshop on Singularities in Geometry and Topology from 15 August to 3 September 2005. It will be directed by J.P. Brasselet (Institut de Mathématiques de Luminy, CNRS, Marseille, France), M. Lejeune-Jalabert (Université de Versailles, France), J. Damon (University of North Carolina, USA) and M. Oka (Tokyo Metropolitan University, Tokyo, Japan).

Singularity theory appears in numerous branches of mathematics, as well as in many emerging areas such as robotics, control theory, imaging, and various evolving areas in physics... The purpose of this event is to cover recent developments in singularity theory and to introduce young researchers from developing countries to singularities in geometry and topology.

The school and workshop will concern singularities in both complex and real geometry. As such, they provide a natural continuation of the previous school on singularities held at ICTP (1991), which has been recognized as having had a major influence in the field.

The themes will be geometry and topology of singularities, analytic sets, and real and complex singularities. The specific topics will emphasize both the local and global study of singularities and will include: characteristic classes, Thom polynomials, topology of complements of hypersurfaces, lagrangian and legendrian singularities, resolution of singularities, and symbolic computational methods applied to singularities.

The first week (15 to 20 August) will be organized into elementary lecture courses on the following topics :

Geometry and Topology of Singularities- Lê Dung Trang, David Massey

Poincaré-Hopf type theorems - Jean-Paul Brasselet

Introduction to complex geometry - Tatsuo Suwa

Introduction to real geometry -

Toric geometry - Shihoko Ishii

The second week (22 to 27 August) will be organized into advanced lecture courses on the following

topics:

Topology of complements of hypersurfaces - Anatoly Libgober, Mutsuo Oka

Lagrangian and Legendrian singularities - Vladimir Zakalyukin

Deformation of singularities -

Characteristic classes and Thom polynomials - Jean-Paul Brasselet

Characteristic p, Valuations -

Constructive approach to resolution of singularities - Herwig Hauser

Computational approach to singularities -

Configuration spaces -

Blow analytic theory -

Whitney equisingularity -

Arc analytic equivalence - François Loeser

A conference with renown experts will be held during the third week (29 August - 3 September). Details of the event will be available at the end of January 2005.

The School is intended for advanced undergraduate students, graduate students, and young researchers. Participants should be familiar with basic methods in algebraic topology as well as with elementary algebraic geometry. Besides the lectures, there will also be organized afternoon and evening exercise and example sessions, and some time will be devoted to applying symbolic computation programs such that « Singular » to problems in singularities.

Mathematicians from all countries that are members of the UN, UNESCO or IAEA can attend the activity. The main purpose of the Centre is to help researchers from developing countries within the framework of international cooperation. However, scientists from developed countries are most welcome to attend. As the activity will be conducted in English, participants must have an adequate working knowledge of that language.

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

The closing date for the receipt of requests for participation is 15 March 2005

Candidates should complete, sign and return the **Application Form** obtainable through the ICTP WWW Server from the activity's WEB Page, which will be constantly updated:

<http://agenda.ictp.trieste.it/agenda/current/fullAgenda.php?ida=a04204>

The Application form should be sent to:

the Abdus Salam International Centre for Theoretical Physics
Advanced School and Workshop on Singularities in Geometry and Topology (smr1671)

c/o Ms. A. Bergamo

Strada Costiera 11

I-34014 Trieste, Italy

Telephone: +39-040-2240201

Telefax: +39-040-2240490

E-mail: smr1671@ictp.trieste.it

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

Trieste, October 2004

ORGANIZERS

J.P. Brasselet
Marseille, France

J. Damon
North Carolina, U.S.A.

M. Lejeune-Jalabert
Versaille, France

M. Oka
Tokyo, Japan

LECTURERS

will include

J.P. Brasselet
Marseille, France

H. Hauser
Innsbruck, Austria

S. Ishii
Tokyo, Japan

Lê D.T.
Trieste, Italy

A. Libgober
Chicago, USA

F. Loeser
Paris, France

D. Massey
Boston, U.S.A.

M. Oka
Tokyo, Japan

T. Suwa
Sapporo, Japan

V. Zakalyukin
Moscow, Russia

DEADLINE

for receipt of applications:

15 March 2005