



The Abdus Salam  
**International Centre  
for Theoretical Physics**  
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## Advanced School and Workshop on Geometry of Discrete Actions

24 August - 4 September 2015  
Miramare - Trieste, Italy

The Abdus Salam International Centre for Theoretical Physics (ICTP) is organizing an **Advanced School and Workshop on Geometry of Discrete Actions**, which will be held at the ICTP, Trieste, Italy, **from 24 August to 4 September 2015**.

The study of discrete actions of groups and semi-groups plays a central role in geometry. This originates in the pioneering work of H. Poincaré over a century ago, studying solutions of certain differential equations on the complex line. This led to the concept of Fuchsian and Kleinian groups: these are discrete groups of automorphisms of the Riemann sphere. They turn out to be closely related to hyperbolic geometry, where Fuchsian and Kleinian groups are groups of isometries of hyperbolic two and three-dimensional spaces. The study of these types of discrete group actions, and their generalizations to higher dimensions and to other geometries, plays a major role in complex geometry and in holomorphic dynamics. There is a vast field of research waiting to be explored, as for instance in complex hyperbolic geometry, holomorphic dynamics in several complex variables, Lorentzian geometry, etc.

The aim of this School and Workshop is to introduce young mathematicians to the foundations of the field, some of its major developments and tools used for its study. The meeting will start with courses to provide the foundations of the theory. Then an advanced workshop will lead the participants to some of the important areas of current research in the topic in the areas of complex and Lorentzian geometry, Teichmüller theory, moduli spaces and holomorphic dynamics.

### MAIN TOPICS:

- Real hyperbolic geometry
- Complex hyperbolic geometry
- Kleinian groups
- Discrete group actions on complex manifolds
- Complex affine geometry
- Lorentzian geometry
- Holomorphic dynamics
- Endomorphisms of projective spaces. Fatou sets
- Complex representations of fundamental groups
- Moduli spaces of dynamical systems and representations
- Topology and dynamics of character varieties
- Teichmüller theory

### COURSES (24-28 August):

Bertrand Deroin (*ENS Paris, France*): Complex Dynamics and Character varieties

Todd Drumm (*Howard University, U.S.A.*): Lorentzian geometry

Romain Dujardin (*Université Paris Est Marne la Vallée, France*): Introduction to holomorphic dynamics

François Guéritaud (*Laboratoire Paul-Painlevé, France*): Hyperbolic surfaces and Teichmüller theory

John Parker (*Durham University, U.K.*): Complex hyperbolic geometry

José Seade (*Universidad Nacional Autónoma de México, Mexico*): Limit sets of discrete groups

The tentative list of **invited speakers** for the Workshop includes:

J. Athreya (University of Illinois at Urbana-Champaign, U.S.A.); Sh. Baba (University of Heidelberg, Germany); C. Cabrera (UNAM, Cuernavaca, Mexico); A. Cano (UNAM, Cuernavaca, Mexico); V. Charette (Université de Sherbrooke, Canada); M. Deraux (Fourier Institut, Grenoble, France); D. Dumas (University of Illinois at Chicago, U.S.A.); E. Falbel (Université Pierre et Marie Curie, Paris, France); W. Goldman (University of Maryland, U.S.A.); K. Gongopadhyay (IISER Mohali, India); A. Guillot (UNAM, Cuernavaca, Mexico); N. Gusevskii (UFMG, Belo Horizonte, Brazil); F. Kassel (Université Lille, France); R. Kellerhals (University of Fribourg, Switzerland); R. Kulkarni (IIT Mumbai, India); C. Leininger (University of Illinois at Urbana-Champaign, U.S.A.); Mahan Mj (RKM Vivekananda University, India); S.P. Tan (National University of Singapore, Singapore); C. Series (University of Warwick, U.K.); N. Tholozan (University of Luxembourg, Luxembourg); A. Verjovsky (UNAM, Cuernavaca, Mexico); T. Ward (Durham University, U.K.); P. Will (Fourier Institut, Grenoble, France).

### PARTICIPATION

Applicants from all countries that are members of the United Nations, UNESCO or IAEA may attend.

As the School and Workshop will be conducted in English, participants should have an adequate working knowledge of this 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 from developed countries are also welcome to attend.

As a rule, travel and subsistence expenses of the participants should be supported by their home Institutions. 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. Such supports are available only to those attending the entire activity. **There is no registration fee.**

### HOW TO APPLY

The application form can be accessed at the activity website:

<http://indico.ictp.it/event/a14294/>

Once in the website, comprehensive instructions will guide you step by step, on how to fill out and submit online the application form **not later than 30 April 2015**.

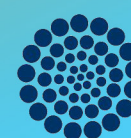
Recommendation letters are not mandatory, but may help you in the admission process.

**Secretariat:** Ms. Margherita Di Giovannantonio

e-mail: [smr2750@ictp.it](mailto:smr2750@ictp.it) phone: +39-040-2240-551; fax: +39-040-2240-7551

School's web page: <http://indico.ictp.it/event/a14294/> ICTP Home Page: <http://www.ictp.it>

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### LOCAL ORGANIZER

**LOTHAR GÖTTSCHE**  
(*ICTP, Italy*)

**DEADLINE**  
for submitting applications

**30 APRIL 2015**

