The Abdus Salam
International Centre
for Theoretical Physics

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United Nations Educational, Scientific and Cultural Organization

IAEA International Atomic Energy Agency

Advanced School/Workshop on Random Matrices and Growth Models

2 - 13 September 2013
Miramare - Trieste, Italy

The Abdus Salam International Centre for Theoretical Physics (ICTP), in collaboration with the International School for Advanced Studies (SISSA) and the National Science Foundation (NSF) is organizing an **Advanced School/Workshop on Random Matrices and Growth Models**, to be held in Trieste **from 2 to 13 September 2013**.

Random matrices were originally introduced by Eugene Wigner in the 1950s, to analyze excitation spectra of heavy nuclei. Since then, they have been linked to an astonishing number of branches of mathematics (probability theory, representation theory, operator algebra, number theory) and physics (solid state physics, statistical mechanics, quantum chaos). An explanation for the ubiquitous appearance of random matrices is given by the so called universality hypothesis, roughly stating that the local statistics of disordered or chaotic systems depend on the underlying symmetry but are independent of further details. An important class of systems to which universality is believed to apply consists of stochastically growing interfaces. Several examples of random growth models, interacting particles systems and directed polymers are expected to belong to the Kardar-Parisi-Zhang (KPZ) universality class.

The first week will be devoted to a school, giving an overview on recent mathematical progress in the study of random matrices and random growth models, with introductory courses by P. Bleher, L. Erdös, P. Ferrari, A. Its (to be confirmed), M. Krishnapur and C. Tracy.
In the second week, we will have an international conference, where leading experts will report on the newest developments in the field.
The **expected speakers** of the conference are:
Gernot Akemann, *Bielefeld University, Germany;* Jinho Baik, *University of Michigan, U.S.A.;* Marco Bertola, *Concordia University, Canada;* Pavel Bleher, *IUPUI, U.S.A.;* Charles Bordenave, *Université de Toulouse, France;* Arup Bose, *Indian Statistical Institute, India;* Alexander Bufetov, *CNRS, France;* Mireille Capitaine, *Université Paul Sabatier, France;* Sourav Chatterjee, *Courant Institute, U.S.A.*; Yang Chen, *University of Macao, P.R. of China*; Tom Clayes, *Université Catholique de Louvain, Belgium;* Friedrich Goetze, *Bielefeld University, Germany;* Patrik Ferrari, *Universität Bonn, Germany;* Igor Krasovsky, *Imperial College, U.K.;* Arno Kuijlaars, *Katholieke Universiteit Leuven, Belgium;* Ken McLaughlin, *University of Arizona, U.S.A.;* Sandrine Péché, *Université Paris Diderot, France;* Guangming Pan, *Nanyang Technological University, Singapore;* Maria Shcherbina, *Ukranian Academy of Sciences, Ukraine;* Alexander Sodin, *Princeton University, U.S.A.;* Jun Yin, *University of Wisconsin, U.S.A.;* John Warren, *Warwick University, U.K.;* Gerard Ben Arous, *Courant Institute, U.S.A.* (to be confirmed); Ivan Corwin, *Massachusetts Institute of Technology, U.S.A.* (to be confirmed); Antii Knowles, *Courant Institute, U.S.A.* (to be confirmed); Nikolai Makarov, *California Intitute of Technology, U.S.A.* (to be confirmed); Brian Charles Rider, *University of Colorado, U.S.A.* (to be confirmed); Zhidong Bai, *KLASMOE and Northeast Normal University, P.R. of China* (to be confirmed); Herbert Spohn, *M5 Technische Universität, Germany* (to be confirmed); Ivan Corwin, *Massachusetts Institute of Technology, U.S.A.* (to be confirmed).

MAIN TOPICS covered at the school and at the conference:

- Universality of local statistics of random matrices.
- KPZ universality of random growth models.
- Central limit type-theorem and large deviations for random matrices.
- Spectral outliers and finite rank deformations of random matrices.
- Statistics of extremal spacings.
- Non-asymptotic random matrix theory.
- Limiting laws for non-commutative polynomials of random matrices.
- Spectral properties of patterned random matrices.

PARTICIPATION
Applicants from all countries that are members of the United Nations, UNESCO or IAEA may attend.
As the School 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. Forthermore, funds from SISSA will be available to support some participants, with priority given to those based in Europe. 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://agenda.ictp.it/smr.php?2481

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 15 April 2013**.
Recommendation letters are not mandatory, but may help you in the admission process.

Secretariat: Ms. Federica Delconte

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School's web page: http://agenda.ictp.it/smr.php?2481 ICTP Home Page: www.ictp.it

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in collaboration with:

ma per seguir virtute e canoscenza
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International School for Advanced Studies

NSF
National Science Foundation

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DEADLINE
for submitting applications
15 APRIL 2013