



Advanced School and Workshop on Random Matrices and Growth Models

Organizer(s): T. Grava (SISSA), B. Schlein (Germany), A. Soshnikov (USA). Local Organizer: R. Ramakrishnan
Trieste - Italy, 02 - 13 September 2013

Venue: Leonardo da Vinci Building Main Lecture Hall

Final programme

Monday 2 September 2013 (Room:Leonardo da Vinci Building Main Lecture Hall)

2 September 2013

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| 08:00 - 09:30 | (Room: Leonardo da Vinci Building, Lobby)
--- Registration / Administrative Formalities --- |
| 09:30 - 09:35 | Professor Ramadas Ramakrishnan / ICTP
Opening Remarks |
| 09:35 - 11:00 | Craig Tracy / University of California at Davis, USA
Three examples of integrable models in statistical physics: 2D Ising model, distribution of largest eigenvalue in random matrix models and the asymmetric simple exclusion process, Part I |
| 11:00 - 11:30 | (Room: Leonardo da Vinci Building, Lobby)
--- Coffee Break --- |
| 11:30 - 13:00 | Laszlo Erdos / IST Austria and University of Munich, Germany
Universality for random matrices and log-gases, Part I |
| 13:00 - 14:30 | --- Lunch Break --- |
| 14:30 - 16:00 | Krishnapur Manjunath / Indian Institute of Science (IIT), India
Zeros of random polynomials and analytic functions, Part I |
| 16:00 - 16:30 | --- Break --- |

16:30 - 18:00 **Patrik Ferrari** / *Universitaet Bonn, Germany*
Why random matrices share universal processes with interacting particle systems? Part I

Tuesday 3 September 2013 (Room:Leonardo da Vinci Building Main Lecture Hall)

3 September 2013

09:30 - 11:00 **Krishnapur Manjunath** / *Indian Institute of Science (IIT), India*
Zeros of random polynomials and analytic functions, Part II

11:00 - 11:30 (Room: Leonardo da Vinci Building, Lobby)
 --- Coffee Break ---

11:30 - 13:00 **Patrik Ferrari** / *Universitaet Bonn, Germany*
Why random matrices share universal processes with interacting particle systems? Part II

13:00 - 14:30 --- Lunch Break ---

14:30 - 16:00 **Craig Tracy** / *University of California at Davis, USA*
Three examples of integrable models in statistical physics: 2D Ising model, distribution of largest eigenvalue in random matrix models and the asymmetric simple exclusion process, Part II

16:00 - 16:30 --- Break ---

16:30 - 18:00 **Laszlo Erdos** / *IST Austria and University of Munich, Germany*
Universality for random matrices and log-gases, Part II

Welcome Reception (Room:Leonardo da Vinci Building Cafeteria)

Wednesday 4 September 2013 (Room:Leonardo da Vinci Building Main Lecture Hall)

4 September 2013

09:30 - 11:00 **Laszlo Erdos** / *IST Austria and University of Munich, Germany*
Universality for random matrices and log-gases, Part III

11:00 - 11:30 (Room: Leonardo da Vinci Building, Lobby)
 --- Coffee Break ---

11:30 - 13:00 **Pavel Bleher** / *Indiana University - Purdue University Indianapolis (IUPUI), USA*
Random matrices and the six-vertex model, Part I

13:00 - 14:30 --- Lunch Break ---

14:30 - 16:00 **Craig Tracy** / *University of California at Davis, USA*
Three examples of integrable models in statistical physics: 2D Ising model, distribution of largest eigenvalue in random matrix models and the asymmetric simple exclusion process, Part III

16:00 - 16:30 --- Break ---

16:30 - 18:00 **Alexander Its** / *Indiana University - Purdue University Indianapolis (IUPUI), USA*
The Riemann Hilbert method, Part I

Thursday 5 September 2013 (Room:Leonardo da Vinci Building Main Lecture Hall)

5 September 2013

- 09:30 - 11:00** **Patrik Ferrari** / *Universitaet Bonn, Germany*
Why random matrices share universal processes with interacting particle systems? Part III
- 11:00 - 11:30** (Room: Leonardo da Vinci Building, Lobby)
--- Coffee Break ---
- 11:30 - 13:00** **Alexander Its** / *Indiana University - Purdue University Indianapolis (IUPUI), USA*
The Riemann Hilbert method, Part II
- 13:00 - 14:30** --- Lunch Break ---
- 14:30 - 16:00** **Krishnapur Manjunath** / *Indian Institute of Science (IIT), India*
Zeros of random polynomials and analytic functions, Part III
- 16:00 - 16:30** --- Break ---
- 16:30 - 18:00** **Pavel Bleher** / *Indiana University - Purdue University Indianapolis (IUPUI), USA*
Random matrices and the six-vertex model, Part II

Friday 6 September 2013 (Room:Leonardo da Vinci Building Main Lecture Hall)

6 September 2013

- 09:30 - 11:00** **Alexander Its** / *Indiana University - Purdue University Indianapolis (IUPUI), USA*
The Riemann Hilbert method, Part III
- 11:00 - 11:30** (Room: Leonardo da Vinci Building, Lobby)
--- Coffee Break ---
- 11:30 - 13:00** **Pavel Bleher** / *Indiana University - Purdue University Indianapolis (IUPUI), USA*
Random matrices and the six-vertex model, Part III

Monday 9 September 2013 (Room:Leonardo da Vinci Building Main Lecture Hall)

9 September 2013

- 08:30 - 09:30** (Room: Leonardo da Vinci Building, Lobby)
--- Registration and Administrative Formalities ---
- 09:30 - 10:20** **Friedrich Goetze** / *Bielefeld University, Germany*
Spectral Distribution of Random Matrices and Free Probability
- 10:20 - 11:10** **Mireille Capitaine** / *Institut de Mathématiques de Toulouse, France*
A unified approach to the problems of outliers and related eigenvectors for spiked additive or multiplicative deformations of classical random matrices as well as Information-Plus-Noise type models, through free subordination properties
- 11:10 - 11:40** (Room: Leonardo da Vinci Building, Lobby)
--- Coffee Break ---

- 11:40 - 12:30** **Nikolai Makarov** / *California Institute of Technology, USA*
The distribution of eigenvalues near a regular boundary point in random normal matrix ensembles
- 12:30 - 14:30** --- Lunch Break ---
- 14:30 - 15:20** **Zdzislaw Burda** / *Jagellonian University, Poland*
Products of free non-Hermitian random matrices
- 15:20 - 16:10** **Jun Yin** / *University of Wisconsin, USA*
Local Circular Law for Random Matrices
- 16:10 - 16:40** (Room: Leonardo da Vinci Building, Lobby)
--- Coffee Break ---
- 16:40 - 17:30** **David Renfrew** / *UCLA, USA*
Finite rank perturbations to non-Hermitian matrices

Tuesday 10 September 2013 (Room:Leonardo da Vinci Building Main Lecture Hall)

10 September 2013

- 09:30 - 10:20** **Jonathan Warren** / *Warwick University, UK*
A Multi-layer extension of the KPZ equation
- 10:20 - 11:10** **Patrik Ferrari** / *Universitaet Bonn, Germany*
Anomalous shock fluctuations in TASEP and last passage percolation models
- 11:10 - 11:40** (Room: Leonardo da Vinci Building, Lobby)
--- Coffee Break ---
- 11:40 - 12:30** **Balint Veto** / *Universitaet Bonn, Germany*
Height fluctuations for the stationary KPZ equation
- 12:30 - 14:30** --- Lunch Break ---
- 14:30 - 15:20** **Charles Bordenave** / *Université de Toulouse, France*
Mean quantum percolation
- 15:20 - 16:10** **Yang Chen** / *University of Macao, China*
Large Hankel determinants; difference equations, and Painleve VI
- 16:10 - 16:30** --- Break ---
- 16:30 - 18:30** (Room: Leonardo da Vinci Building Terrace)
Poster Session and Get-together drink
A get-together drink will be served during the Poster Session

Wednesday 11 September 2013 (Room:Leonardo da Vinci Building Main Lecture Hall)

11 September 2013

- 09:30 - 10:20** **Igor Krasovsky** / *Imperial College of London, UK*
Double-scaling asymptotics for Toeplitz determinants

10:20 - 11:10	Tom Claeys / Université Catholique de Louvain, Belgium Painlevé asymptotics for Toeplitz determinants with merging singularities
11:10 - 11:40	(Room: Leonardo da Vinci Building, Lobby) --- Coffee Break ---
11:40 - 12:30	Arno Kuijlaars / Katholieke Universiteit Leuven, Belgium Singular values of products of Ginibre random matrices, multiple orthogonal polynomials and hard edge scaling limits
12:30 - 14:30	--- Lunch Break ---
14:30 - 15:20	Ken McLaughlin / University of Arizona, USA Asymptotic analysis of a class of 2D orthogonal polynomials, with applications to the Normal Random Matrix Model
15:20 - 16:10	Marco Bertola / Concordia University, Canada The scaling limit of the Laguerre-Cauchy Matrix model and the Meijer-G random point field
16:10 - 16:40	(Room: Leonardo da Vinci Building, Lobby) --- Coffee Break ---
16:40 - 17:30	Pavel Bleher / IUPUI, USA Calculation of the constant factor in the six-vertex model
19:00 - 21:00	(Room: Adriatico Guest House (Terrace)) --- Conference Dinner ---

Thursday 12 September 2013 (Room:Leonardo da Vinci Building Main Lecture Hall)

12 September 2013

09:30 - 10:20	Arup Bose / Indian Statistical Institute, India Limiting spectral distribution of patterned random matrices
10:20 - 11:10	Antti Knowles / Courant Institute of Mathematical Sciences, USA The Altshuler-Shklovskii Formulas for Random Band Matrices
11:10 - 11:40	(Room: Leonardo da Vinci Building, Lobby) --- Coffee Break ---
11:40 - 12:30	Alexander Tikhomirov / Komi Science Center, Russian Academy of Sciences, Russian Federation The Rate of Convergence to the Semi-Circular Law and to the Marchenko ? Pastur Law
12:30 - 14:30	--- Lunch Break ---
14:30 - 15:20	Mariya Shcherbina / Institute for Low Temperature Physics, Ukranian Academy of Sciences, Ukraine Change of variables as a universal approach to local and global regimes for β matrix models
15:20 - 16:10	Gernot Akemann / Bielefeld University, Germany Products of Random Matrices: Exact Results for Eigen- and Singular Values
16:10 - 16:40	(Room: Leonardo da Vinci Building, Lobby) --- Coffee Break ---
16:40 - 17:30	Jinho Baik / University of Michigan, USA Circular unitary ensembles with highly oscillatory potential

Friday 13 September 2013 (Room:Leonardo da Vinci Building Main Lecture Hall)

13 September 2013

- 09:30 - 10:20** **Ke Wang** / *Institute for Mathematics and its Applications, USA*
Random weighted projections, random quadratic forms and random eigenvectors
- 10:20 - 11:10** **Alexander Bufetov** / *Steklov Mathematical Institute of the Russian Academy of Sciences, Russian Federation*
Infinite Determinantal Measures
- 11:10 - 11:40** (Room: Leonardo da Vinci Building, Lobby)
--- Coffee Break ---
- 11:40 - 12:30** **Guangming Pan** / *Nanyang Technological University, Singapore*
CLT of Large Sample Covariance Matrices