



Stochastic processes and random matrices

July 6-31, 2015

<http://lptms.u-psud.fr/workshop/randmat/>

Organizing committee

Alexander Altland	Institut für Theoretische Physik, Universität Köln, Germany
Yan Fyodorov	School of Mathematical Sciences, Queen Mary University of London, Great-Britain
Neil O'Connell	Mathematics Institute, University of Warwick, Great-Britain
Grégory Schehr	Laboratoire de Physique Théorique et Modèles Statistiques, CNRS, Université Paris-Sud, France

Long Courses

Alexei Borodin (Massachusetts Institute of Technology)	Integrability and the Kardar-Parisi-Zhang universality class
Alice Guionnet (Massachusetts Institute of Technology)	An introduction to free probability
Pierre Le Doussal (CNRS, Ecole Normale Supérieure, Paris)	Replicas, renormalization and integrability in random systems
Satya Majumdar (CNRS, Université Paris-Sud, Orsay)	Recent applications of random matrices in statistical physics
Herbert Spohn (Universität München)	The Kardar-Parisi-Zhang equation – a statistical physics perspective
Bálint Virág (University of Toronto)	β -ensembles and random Schrödinger operators

Short Courses

Jean-Philippe Bouchaud (CFM, Ecole Polytechnique)	Random matrix theory and (big) data analysis
Alain Comtet (Université P. et M. Curie, Paris VI)	Schrödinger operators in random potentials
Bertrand Eynard (Commissariat à l'énergie atomique, Saclay)	Topological recursion in random matrices and combinatorics of maps
Jonathan Keating (School of Mathematics, University of Bristol)	Random matrix theory and number theory
Gernot Akemann (Universität Bielefeld)	Matrix models and quantum chromo-dynamics
Aris Moustakas (University of Athens)	Random matrix theory methods for telecommunication systems
Henning Schomerus (Lancaster University)	Random matrix theory approaches to open quantum systems
Vincent Vargas (CNRS, Ecole Normale Supérieure, Paris)	Gaussian multiplicative chaos and Liouville quantum gravity
Hans Weidenmüller (Universität Heidelberg)	Historical overview: random matrix theory and its applications
Anton Zabrodin (ITEP, Moscow)	Some aspects of integrability and quantum-classical correspondence

Scientific Program

The connections between stochastic processes and random matrix theory (RMT) have been a rapidly evolving subject during the last ten years where the continuous development of new tools has led to an avalanche of new results. The most emblematic example of such successful connections is provided by the theory of growth phenomena in the Kardar-Parisi-Zhang (KPZ) universality class. Other important instances include non-intersecting Brownian motions or processes governed by "1/f" noise, which are at the heart of disordered systems exhibiting a freezing transition. These breakthroughs have been made possible thanks, to a large extent, to the recent development of various new techniques in RMT. The goal of the school thus is to present the state of the art concepts of the field, with a special emphasis on the large spectrum of techniques and applications of RMT. Finally an important aspect of this school is that the topic of stochastic processes and RMT is at the interface of statistical physics and mathematics. Therefore this school aims at bringing together students (and researchers) from both communities.

Registration

Applications must reach the School before March 1, 2015 in order to be considered by the selection committee. The full cost per participant, including housing, meals and the book of lecture notes, is 1500€ (we should be able to provide financial aid to a limited number of students). All information and application form can be found directly on Les Houches website: <http://houches.ujf-grenoble.fr/>.

One can also contact the School at

ÉCOLE D'ÉTÉ DE PHYSIQUE THÉORIQUE
La Côte des Chavants
74310 LES HOUCHES, France

Director: Leticia Cugliandolo
Phone: +33 4 50 54 40 59 – Fax: +33 4 50 55 53 25
Email: houches0715@ujf-grenoble.fr

Les Houches is a village located in Chamonix valley, in the French Alps. Established in 1951, the Physics School is situated at 1150m above sea level in natural surroundings, with breathtaking view on the Mont-Blanc range. A quiet place, ideal for intellectual activity.

Les Houches Physics School is affiliated with Université Joseph Fourier and Institut National Polytechnique de Grenoble, and is supported by the Ministère de l'Éducation Nationale et de la Recherche, the Centre National de la Recherche Scientifique (CNRS), the Direction des Sciences de la Matière du Commissariat à l'Énergie Atomique (CEA/DSM).