

INHOMOGENEOUS RANDOM SYSTEMS

Systèmes Aléatoires Inhomogènes

January 25-26, 2022

Institut Curie & Institut Henri Poincaré (also online)
11-13 rue Pierre et Marie Curie, Paris

Tuesday 25 January:

Statistical mechanics and data science.

Moderator: **G erard Ben Arous (New York)**

- 9h00 – 9h10 : Opening
- 9h10 – 9h30 : **G erard Ben Arous (New York)**: *Introduction.*
- 9h35 – 10h20 : **Giulio Biroli (Paris)**: *Renormalization Group Theory and Machine Learning.*
- 10h20 – 10h40 : Coffee Break
- 10h40 – 11h25 : **Eric Vanden-Eijnden (New York)**: *Scientific Computing in the Age of Machine Learning.*
- 11h30 – 12h15 : **Marylou Gabri e (Palaiseau)**: *Enhancing Sampling with Learning: Adaptive Monte Carlo with Normalizing Flows.*
- 12h15 – 13h30 : Lunch Break
- 13h30 – 14h15 : **Florent Krzakala (Lausanne)**: *Generalization in Machine Learning: Insights from Statistical Mechanics Models.*
- 14h20 – 15h05 : **Aukosh Jagannath (Waterloo)**: *Online SGD on non-convex losses from high-dimensional inference.*
- 15h05 – 15h25 : Coffee Break
- 15h25 – 16h10 : **Afonso Bandeira (Z urich)**: *Noncommutative matrix concentration inequalities.*
- 16h15 – 17h00 : **Andrea Montanari (Stanford)**: *Exact asymptotics and universality for gradient flows and empirical risk minimizers.*

Wednesday 26 January:

(Non-)Gaussian fluctuations of the order $N^{\neq \frac{1}{2}}$

Moderator: **Senya Shlosman (Moscow & Marseille)**

- 9h00 – 9h10 : Opening
- 9h10 – 9h30 : **Senya Shlosman (Moscow & Marseille)**: *Introduction.*
- 9h35 – 10h20 : **Yvan Velenik (Gen ve)**: *1/3 – 2/3 scaling in the Ising model.*
- 10h20 – 10h40 : Coffee Break
- 10h40 – 11h25 : **Patrik Ferrari (Bonn)**: *Fluctuations of shocks in the asymmetric simple exclusion process.*
- 11h30 – 12h15 : **Alexey Bufetov (Leipzig)**: *Asymptotics of multi-species ASEP.*
- 12h15 – 13h30 : Lunch Break
- 13h30 – 14h15 : **Bernard Derrida (Paris)**: *Renormalization and disorder: a simple toy model.*
- 14h20 – 14h45 : **Senya Shlosman (Moscow & Marseille)**: *A tribute to Dima Ioffe.*
- 14h50 – 15h15 : **Alexandre Gaudili re (Marseille)**: *A tribute to Francesca Nardi.*
- 15h15 – 15h35 : Coffee Break
- 15h35 – 16h20 : **Guillaume Barraquand (Paris)**: *KPZ equation on the positive real line: invariant measures and fluctuations.*
- 16h25 – 17h10 : **Sergei Nechaev (Moscow)**: *Stretching of a fractal polymer near a disc reveals KPZ-like statistics.*

Informations and abstracts at: <http://irs.math.cnrs.fr>

Registration:

The conference is free and open to all.

To facilitate local organization and to receive a connection link, please register in advance by sending an e-mail **before January 18** with your name, affiliation, mail address and your choice to be on site or online, to:

inter@math.cnrs.fr with subject: **IRS 2022**

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