

JOURNÉES DE PHYSIQUE STATISTIQUE

Paris – Thursday January 30 & Friday January 31, 2020

Welcome to the 40th edition of the “Journées de Physique Statistique”.

Registration: fill in the form only if you have not already registered electronically and remember to wear your badge.

Communications were, as far as possible, grouped by thematics. Their order is largely due to chance and schedule constraints.

The duration of short talks is **5 minutes** sharp (brief questions included). Please avoid presenting more than two or three slides.

To allow for a better understanding, preferred language is **English**.

We thank the physics department of ENS Paris for its financial and logistic support.

Organization team:

Cécile Cottin-Bizonne (Univ. Lyon I / CNRS)

Vivien Lecomte (Univ. Grenoble-Alpes / CNRS)

Rémi Monasson (Ens Paris / CNRS)

Emmanuel Trizac (Univ. Paris-Saclay / CNRS)

Francesco Zamponi (Ens Paris / CNRS)



Département
de Physique
—
École normale
supérieure

PROGRAMME

Thursday January 30, 2020

9h00 - 9h30	Registration
9h30 - 11h00	Série A (Chairman: Rémi Monasson)
11h00 - 11h30	Pause
11h30 - 12h00	Anne-Laure Dalibard (Sorbonne Université / CNRS) <i>Recent advances in fluid boundary layer theory</i>
12h00 - 12h30	Levent Sagun (Facebook) <i>The role of over-parametrisation in neural networks</i>
12h30 - 14h15	Lunch
14h15 - 14h45	Lucile Savary (ENS Lyon / CNRS) <i>Thermal conductivity in quantum magnets</i>
14h45 - 15h15	Massimo Vergassola (PSL / CNRS) <i>Speed-accuracy limits in biological decisions</i>
15h15 - 15h45	Pause
15h45 - 16h45	Série B (Chairman: Vivien Lecomte)
16h45 - 17h00	Pause
17h00 - 18h00	Série B – continued

Friday January 31, 2020

9h00 - 10h30	Série C (Chairman: Francesco Zamponi)
10h30 - 11h00	Pause
11h00 - 11h30	Laura Filion (Utrecht University) <i>Machine learning local structure in colloidal systems</i>
11h30 - 12h00	Eric Clément (Sorbonne Université / ESPCI / CNRS) <i>Spontaneous and driven active matter flows</i>
12h00 - 13h45	Lunch
13h45 - 14h15	Manon Michel (Université Clermont-Auvergne / CNRS) <i>Exploring energy landscapes by non-reversible Markov processes through symmetry hunting</i>
14h15 - 14h45	Baruch Meerson (Hebrew University of Jerusalem) <i>Geometrical optics of Brownian motion</i>
14h45 - 15h15	Pause
15h15 - 16h15	Série D (Chairwoman: Cécile Cottin-Bizonne)

Série A – chairman: Rémi Monasson

Thursday January 30, 9h30 - 11h00

- **CABALLERO, Nirvana**

University of Geneva, Department of Quantum Matter Physics

Interfaces beyond the elastic approximation

- **LE PRIOL, Clément**

LPENS - Paris

Universal scaling of the velocity field in crack front propagation

- **TER BURG, Cathelijne**

LPENS - Paris

A model for bounded disorder

- **IKEDA, Harukuni**

LPENS - Paris

Jamming aspherical cows

- **OZAWA, Misaki**

LPENS - Paris

Random critical point separates brittle and ductile yielding transitions in amorphous materials

- **BARBOT, Armand**

PMMH - ESPCI

Understanding shear bands characteristics and formation in model glasses through the measure of the local yield stress

- **GUISELIN, Benjamin**

Laboratoire Charles Coulomb (Montpellier)

Random-field ising model criticality in glass-forming liquids from computer simulations

- **KUMAR, Dheeraj**

PMMH - ESPCI

Many-body chaos in a thermalised fluid

- **PARET, Joris**

Laboratoire Charles Coulomb (Université de Montpellier)

Structural communities in supercooled liquids

- **HERRMANN, Hans**

PMMH, ESPCI Paris

On the shortest path of percolation clusters

- **HARTMANN, Alexander**

Institute of Physics, University of Oldenburg, Germany

Shape of profiles for the KPZ equation in the rare-event limit

- **PONCET, Alexis**

Laboratoire de physique théorique de la matière condensée

Cooperativity and competition in single-file systems

- **VIOT, Pascal**

LPTMC

Synchronized states of one dimensional self-gravitating system induced by inelastic collisions

- **GUIOTH, Jules**

Department of Applied Mathematics and Theoretical Physics, University of Cambridge

Activity biased trajectories in simple Ising models

- **SMITH, Naftali**

LPTMS

Large deviations in Brownian motion

Série B – chairman: Vivien Lecomte

Thursday January 30, 15h45 - 18h00

- **MONEMVASSITIS, Athina**

Laboratoire de mathématiques Blaise Pascal, Université Clermont-Auvergne

Characterization of event-chain Monte Carlo algorithms as piecewise deterministic Markov processes in multiparticle systems

- **LI, Botao**

LPENS

Parallel implementation of event-driven Monte Carlo algorithm

- **MICHEL, Manon**

Laboratoire de mathématiques Blaise Pascal, CNRS, Université Clermont-Auvergne

Theoretical and numerical unification of graph representations of the Potts model

- **TANIS, Ioannis**

CEA

Molecular dynamics simulation of the capillary leveling of a glass-forming liquid

- **GREBENKOV, Denis**

PMC, CNRS - Ecole Polytechnique

A probabilistic approach to surface reaction mechanisms

- **JAVERZAT, Nina**

LPTMS

Conformal field theory on the torus & two-dimensional critical percolation

- **DORNIC, Ivan**

SPEC, CEA Saclay

Universal Painlevé VI persistence scaling function

- **KÜHN, Tobias**

LPTENS and INM-6, Research Centre Jülich (Germany)

Diagrammatic expansion of the effective action around non-Gaussian theories

- **SARAO MANNELLI, Stefano**

IPhT CEA Saclay

Thresholds of descending algorithms in inference problems

- **FANTHOMME, Arnaud**

LPENS

Integrating with recurrent neural networks

- **AL HYDER, Ragheed**
Laboratoire Kastler Brossel
Exploring the polaron trimer transition
- **LEYRONAS, Xavier**
LPENS
Three-body contact of the resonant Fermi gas
- **CASTIN, Yvan**
Laboratoire Kastler Brossel
Brouillage de phase anormal dun condensat de paires de fermions
- **LOVERDO, Claude**
Laboratoire Jean Perrin
Interactions of antibodies and bacteria in the digestive tract
- **MARCHI, Jacopo**
LPENS
Size and structure of the sequence space of repeat proteins
- **LAURENT, Gabin**
Gulliver, ESPCI
Survival of self-replicating molecules under transient compartmentalization with natural selection
- **LUPO, Cosimo**
LPENS
V-gene insertions and deletions during the affinity maturation process in BCR repertoires
- **DURAND, Marc**
Matière et Systèmes Complexes
Melting of two-dimensional soft cellular systems
- **KANG, Ling**
Ecole Normale Supérieure - Department of Physics
Remote synchronization in human cerebral cortex network with identical oscillators
- **FLEURY, Vincent**
Laboratoire Matière et Systèmes Complexes
A second-order division in sectors drives the formation of sensory organs in vertebrate embryos

Série C – chairman: Francesco Zamponi

Friday January 31, 9h00 - 10h30

- **LENZ, Martin**
LPTMS & PMMH
Three unexpectedly stable active matter systems
- **MARTIN, David**
Matière et Systèmes Complexes
Topological interactions lead to discontinuous transition to collective motion
- **ARNOULX de PIREY, Thibaut**
Matière et Systèmes Complexes
Active hard-spheres in infinitely many dimensions
- **O'BYRNE, Jérémy**
Matière et Systèmes Complexes
Mapping chemotactic active matter onto brownian colloids
- **URRA, Hector Ignacio**
PMMH - ESPCI
Bacteria swimming in complex fluids monitoring the building of a bio-barrier
- **BACONNIER, Paul**
Gulliver ESPCI
Active elastic materials: from collective motion to selective actuation
- **DAUCHOT, Olivier**
Gulliver ESPCI
Hamiltonian flocks
- **HIDALGO-CABALLERO, Samuel**
Gulliver ESPCI
Programmable active matter for transport optimization
- **DORÉ, Claire**
Gulliver ESPCI
Taming active flows through confinement

- **REYSSAT, Mathilde**
Gulliver ESPCI
Swimming droplets in 1D capillaries: from swimming to splitting
- **BERTIN, Vincent**
Gulliver ESPCI
Swimming droplets in 1D capillaries : revisiting Bretherton laws in the active world
- **WEI, MENGSHI**
Gulliver ESPCI
Active colloidal gels
- **BEN ZION, Matan**
Gulliver ESPCI
Finite size effects in swarm robotic
- **LIPPERA, Kevin**
LadHyx
Collisions and rebounds of active droplets
- **JHA, Aditya**
PMMH-ESPCI
Bouncing drops
- **BIELINSKI, Clément**
Biomechanics and Bioengineering Laboratory
Capsules passing through a microfluidic constriction

Série D – chairman: Cécile Cottin-Bizonne

Friday January 31, 15h15 - 16h15

- **TERZI, Mert**
LPTMS
Elastic frustration in self-assembly
- **BILLON, Alice**
Gulliver, ESPCI
Rheology of colloidal suspensions at the thermal crossover
- **GOY, Nicolas-Alexandre**
Laboratoire Ondes et Matière d'Aquitaine
Particles' transport and deposition driven by laser heating of evaporating drops
- **GENTHON, Arthur**
Gulliver, ESPCI
Linking lineage and population observable in biological branching processes
- **LAKHAL, Samy**
Chair of Econophysics & Complex Systems, École polytechnique
Beauty and structural complexity
- **FOSSET, Antoine**
Ladhyx, Ecole Polytechnique
Complex dynamics of fishing areas
- **VODRET, Michele**
Chair of Econophysics & Complex Systems, École polytechnique
Interplay between order flow and prices in financial markets
- **MORELLI, Federico**
LPTMC / LADHYX
Confidence collapse in DSGE model
- **CRÉPIN, Pierre-Philippe**
Chair of Econophysics & Complex Systems, École polytechnique
Time-reversal symmetry breaking in stock price jumps