

JOURNÉES DE PHYSIQUE STATISTIQUE

Paris – Thursday January 25 & Friday January 26, 2024

Welcome to the 43rd 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 topics.

The duration of short talks is **5 minutes** altogether (4 minutes for the talk itself + 1 minute for questions). Please avoid presenting more than two or three slides.

The preferred language is **English**.

We thank the FRIF, the Laboratoire Interdisciplinaire de Physique, and the Université Paris-Cité for their support.

Organization team:

Camille Aron (Ens Paris / CNRS)

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

Leticia Cugliandolo (Sorbonne Université)

Vivien Lecomte (Univ. Grenoble-Alpes / CNRS)

Leonardo Mazza (Univ. Paris-Saclay)

Frédéric van Wijland (Univ. de Paris / CNRS)



Université
Paris Cité



PROGRAMME

Thursday January 25, 2024

8h45 - 9h20	Registration
9h20 - 10h30	Série A (Chairwoman: Leticia Cugliandolo)
11h30 - 11h00	Pause
11h00 - 11h30	Vincenzo Vitelli (University of Chicago) <i>Non-reciprocal dynamics: from statistical physics to social behavior</i>
11h30 - 12h00	Olivier Pouliquen (IUSTI, Université Aix-Marseille) <i>Transition from granular to Brownian suspension</i>
12h00 - 13h50	Lunch time
13h50 - 15h00	Série B (Chairwoman: Cécile Cottin-Bizonne)
15h00 - 15h30	Pause
15h30 - 16h00	Isabelle Bouchoule (LCF, Institut d'Optique, Université Paris-Saclay) <i>Probing the local rapidity distribution of a 1D Bose gas</i>
16h00 - 16h30	Andrea De Luca (LPTM, CY Cergy Paris Université) <i>Universality, quantum measurements and random matrices</i>
16h30 - 17h00	Pause
17h00 - 18h20	Série B – continued (Chairman: Frédéric van Wijland)
18h20 - 19h40	Apéritif / dinner (offered upon subscription)
19h40 - 20h10	Anne-Laure Biance (Institut Lumière Matière, Université Lyon 1) <i>Nanofluidics in soft liquid films</i>
20h10 - 21h00	Série B – night session (Chairman: Frédéric van Wijland)

Friday January 26, 2024

- 9h15 - 10h50** **Série C** (Chairman: Vivien Lecomte)
- 10h50 - 11h20** Pause
- 11h20 - 11h50** **Marylou Gabrié (CMAP, École Polytechnique)**
Using generative machine learning for sampling physical systems
- 11h50 - 12h20** **Jean-Philippe Bouchaud (CFM, Paris)**
Unlearnable Games : A simple model for a complex world
- 12h20 - 14h15** Lunch time
- 14h15 - 14h45** **Tommaso Roscilde (Laboratoire de Physique, ENS Lyon)**
Using statistical physics to probe and control many-body entanglement
- 14h45 - 15h15** Pause
- 15h15 - 16h35** **Série D** (Chairman: Leonardo Mazza)

Série A – chairwoman: Leticia Cugliandolo

Thursday January 25, 9h20 - 10h30

- **BANERJEE, Tirthankar**
DPhyMS, University of Luxembourg
Hydrodynamics of dense pulsating matter
- **FRIES, Jacques**
Phenix
Microscopic simulations of suppressed Ostwald ripening by catalytic reactions
- **BERTHIN, Roxanne**
PHENIX (UMR 8234)
Controlling microphase separation with nonequilibrium reactions: a Brownian dynamics approach
- **CAVALLERO, Simone**
Gulliver, ESPCI
Structural constraints limit the regime of optimal flux in autocatalytic reaction networks
- **HARUNARI, Pedro**
Complex systems and statistical mechanics, University of Luxembourg
Unveiling nonequilibrium from multifilar events
- **GOERLICH, Rémi**
Tel Aviv University, Roichman lab
Resetting as a swift equilibration protocol in an anharmonic potential
- **CHAIGNEAU, Adrien**
Physique de la Matière Condensée, Ecole polytechnique
Effects of target anisotropy on diffusion-controlled reactions
- **HARTMANN, Alexander**
Institute of Physics, University of Oldenburg
First-passage area distribution and optimal fluctuations of fractional Brownian motion
- **RÉGNIER, Léo**
LPTMC
Record ages of non-Markovian scale-invariant random walks
- **HORII, Hiroshi**
Institut Denis Poisson (Université d'Orléans)
Anomalous fluctuation phenomena in heavy-tailed renewal-reward processes

- **LEPRI, Stefano**
CNR-ISC
Transport in quasi-integrable chains
- **ZAHRA, Ali**
Instituto Superior Técnico
Steady-state selection in multi-species driven diffusive systems
- **BURENEV, Ivan**
LPTMS
Occupation time of a system of Brownian particles on the line with steplike initial condition

Série B – chairwoman: Cécile Cottin-Bizonne

Thursday January 25. 13h50 - 15h00

- **LACHEREZ, Juliette**
Laboratoire Ondes et Matière d'Aquitaine
Numerical simulations of Brownian motions in complex environments
- **SIMON, Romain**
Laboratoire Charles Coulomb
Equilibrating molecular supercooled liquids down to the glass transition temperature
- **CASTEDO, Sebastian**
LPENS
Analysis of Coupled Magneto-Mechanical Langevin Equations
- **GHIMENTI, Federico**
Laboratoire Matière et Systèmes Complexes (UMR 7057 CNRS & Université Paris Cité)
Sampling efficiency of transverse forces in dense liquids
- **ALFARO MIRANDA, Greivin**
Laboratoire de Physique Théorique et Hautes Energies
SWAP algorithm for lattice spin models
- **AGRAWAL, Ramgopal**
LPTHE - CNRS, Paris
Critical dynamics of the $\pm J$ Ising model

- **SEKIMOTO, Ken**
Gulliver & MSC
Langevin function pops up in Langevin equation through martingale
- **YE, Yilin**
Laboratoire de Physique de la Matière Condensée (UMR 7643)
Encounter-based approach for diffusion-mediated surface phenomena
- **GRABSCH, Aurélien**
LPTMC
Tracer diffusion beyond the Gaussian behaviour: explicit results for general single-file systems
- **MAGGS, Anthony**
Gulliver
Non-reversible Monte Carlo: An example of "true" self-repelling motion
- **VENTURELLI, Davide**
LPTMC (Sorbonne, Jussieu)
Probing the fractal phase of a random matrix using replicas
- **BARON, Joseph William**
LPENS
A perturbative approach to sparse non-Hermitian random matrices
- **LECOMTE, Vivien**
LIPhy / CNRS / Université Grenoble Alpes
Using hyperplane arrangements to map thermodynamically feasible states of cells

Série B – Continued

chair: Frédéric van Wijland

Thursday January 25, 17h00 - 18h20

- **CHARRY, Angelo**

Jean Perrin

Deciphering Protein Functional Landscapes: A Statistical Physics Approach to Biophysical Properties Inference

- **CHAUVEAU Marion**

Gulliver

Overcoming undersampling-induced biases in generative models of protein sequences

- **ROUVIERE, Eric**

Unifying Allosteric Mechanisms in Proteins

Gulliver Lab ESPCI / University of Chicago

- **LENZ, Martin**

LPTMS/PMMH

Transient contacts between filaments bestow its elasticity to branched actin

- **RIVOIRE, Olivier**

Gulliver

Statistical physics of catalysis

- **ROMEO, Nicolas**

University of Chicago

Scaling behavior and control of nuclear wrinkling

- **VICTOR, Jean-Marc**

LPTMC

A simple theory of complex diseases

- **DINIS, Luis**

Universidad Complutense de Madrid now currently at Laboratoire Gulliver ESPCI

Biofilm growth and rheology on different hydrodynamic conditions

- **FLEURY, Vincent**

Laboratoire Matière et Systèmes Complexes

A biaxial radial/orthoradial texture of cell collars and blood vessels constrains head development and evolution

- **GÓMEZ-NAVA, Luis**

Laboratoire Matière et Systèmes Complexes

Instability of the interface of two cellular tissues with cellular division and apoptosis

- **JHA, Aditya**

LOMA

Taylor's Swimming Sheet near a Soft Wall

- **PUGLISI, Andrea**

CNR-ISC

Thermodynamic limits of sperm swimming precision

- **MARMOTTANT, Philippe**

Laboratoire Interdisciplinaire de Physique

Effect of turgor pressure on the elasticity of plants

- **KÜHN, Tobias**

Institut de la Vision

Shared information with dynamical stimuli

- **GARCIA LORENZANA, Giulia**

LPENS, MSC

Emergent Bistability and Mutualistic Behavior: How Interactions and Disorder Rescue Diverse Ecosystems from Extinction

- **PHAM, Tuan**

Niels Bohr Institute

Theory for Adaptive Systems: Collective Robustness of Genotype-Phenotype Evolution

Série B – night session

chairman: Frédéric van Wijland

Thursday January 25, 20h10 - 21h00

- **AKARAPIATTANA, Pawat**
LPTMS
1-d self-assembly of complex elastic particles
- **KÜRTEEN, Lars**
Gulliver, ESPCI
The Hard Sphere Nucleation Discrepancy
- **PLATI, Andrea**
Laboratoire de physique des solides (LPS)
From thermal to athermal self-assembly: crystals and quasi-crystals in vibrated granular matter
- **ANDRADE, Klebber**
Surface du Verre et Interfaces, CNRS/SAINT-GOBAIN
Dispersion in a 2D granular system
- **MAIRE, Raphaël**
LPS Saclay
Interplay between an absorbing phase transition and synchronization in a granular system
- **VANI, Nathan**
PMMH, ESPCI
Clogging of suspensions: role of the angle of constriction
- **GOVORUN, Elena**
Gulliver, ESPCI
Interdiffusion-controlled growth of membranes formed by associating polymers
- **KUDRYAVTSEV, Yaroslav**
Gulliver
Effect of in-plane electric field on the microphase separation in block copolymer thin films

- **SEARA, Daniel**

University of Chicago

Sociohydrodynamics: data-driven modelling of social behavior

- **NAERT, Antoine**

LP ENS Lyon

Human-Scale Brownian Ratchet: A Historical Thought Experiment

Série C – chairman: Vivien Lecomte

Friday January 26, 9h15 - 10h50

- **BARCI, Daniel**

University of the State of Rio de Janeiro, Brazil (LPTHE-Sorbonne Univ. , Visiting Professor)

Hydrodynamic regime of Active Brownian Matter: a gauge theory

- **KHAIN, Tali**

University of Chicago

Sedimentation in a chiral fluid

- **ROSAS, Edgardo**

Gulliver

Edge modes in spherical confinement of a dense suspension of microswimmers

- **DAUCHOT, Olivier**

Gulliver

Active Solids: Rigid Body Motion and Shape-changing Mechanisms

- **CASAGRANDE, Luca**

University of Luxembourg

The role of anisotropy in pulsating active matter

- **PONCET, Alexis**

Laboratoire de physique à l'ENS de Lyon

Active hydraulics from frustration principles

- **SOLON, Alexandre**

LPTMC

Metastability of flocks

- **DESPEIGNES, Nino**
Matière et Systèmes Complexes
Fluctuation, organization and stability in active cellular systems
- **SPERA, Gianmarco**
Laboratoire Matière et Systèmes Complexes
Active particles in tactic traps
- **BARBIER, Léo-Paul**
Gulliver
Self-propelled swimming droplets: control and interactions
- **GIAVASSIS, François**
ILM (institut lumière matière)
How to constrain social interactions in pedestrian modelling ?
- **OUAZAN-REBOUL, Vincent**
Laboratoire de Physique et Modèles Statistiques
Self-organization of catalytically active mixtures
- **DINELLI, Alberto**
MSC, Université Paris Cité
Quorum sensing in colloidal active matter
- **SARFATI, Lila**
Matière et Systèmes Complexes
Microscopic theory for nonequilibrium correlation functions in 2D dense active fluids
- **BRÉMONT, Julien**
LPTMC / LJP
Aging Dynamics of d-dimensional Locally Activated Random Walks
- **TOUZO, Léo**
LPENS
Non-equilibrium phase transitions in active rank diffusions
- **SCANDOLO, Mattia**
CoBBS
Natural swarms in 3.99 dimensions

- **VATIN, Marin**

Dipartimento di Fisica e Astronomia Galileo Galilei Università di Padova

Conformation of active polymers in a confined space

- **GUÉNEAU, Mathis**

LPTHE

Relating absorbing and hard wall boundary conditions for active particles

Série D – chairman: Leonardo Mazza

Friday January 26, 15h15 - 16h35

- **CACI, Nils**

Laboratoire Kastler Brossel

Poisson-Dirichlet distributions and weakly first-order spin-nematic phase transitions

- **ZELENSKIY, Andrey**

LPTMS

Chiral and nematic phase in AB-stacked Kagome system

- **NOBLET, Thibault**

LPTMC

Majorana Diagrammatics for Quantum Spins Systems

- **MORETTINI, Gianluca**

LPTMS

Slow dynamics in closed quantum systems

- **BOUVEROT-DUPUIS, Oscar**

LPTMS

XXZ spin chain at half-filling subject to local dissipation

- **MARCHÉ, Alice**

LPTMS

Non-Hermitian physics in a one-dimensional $SU(2)$ dissipative Hubbard model

- **MANY MANDA, Bertin**

LAUM UMR CNRS 6613

Skin modes in a nonlinear Hatano-Nelson model

- **DESPRES, Julien**
Collège de France
Correlation spreading in the non-Hermitian short-range transverse Ising model
- **GERBINO, Federico**
Laboratoire de Physique Théorique et Modèles Statistiques
A Dyson Brownian motion model for weak measurements in chaotic quantum systems
- **FERTÉ, Benoît**
LPENS
Quantum Darwinism on expanding trees
- **NARDIN, Alberto**
LPTMS
Bisognano-Wichmann Hamiltonian for the fractional quantum Hall effect
- **SAROJ, Sunil Kumar**
Gulliver and PMMH
Experimental investigation to test the static Bell's inequality in a hydrodynamic system
- **CHAIGNE, Martin**
Laboratoire Matière et Systèmes Complexes (MSC)
Emergence of tip singularities in dissolution patterns
- **DETOUO, Brinda**
Nonlinear Dynamics and Magneto-Rheological Control of a Mechanical Oscillator Immersed in a Remoissenet-Peyrard Substrate Potent
- **FRUCHART, Michel**
Gulliver
Pattern formation by turbulent cascades
- **GAUTHIER, Georges**
FAST
Rheology of a 2D granular film