

JOURNÉES DE PHYSIQUE STATISTIQUE

Paris – Thursday January 26 & Friday January 27, 2023

Welcome to the 42nd 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 physics department of ENS Paris for its help with the logistics, and both the ENS and the FRIF for their financial 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)

Frédéric van Wijland (Univ. de Paris / CNRS)



Département
de Physique
—
École normale
supérieure



PROGRAMME

Thursday January 26, 2023

8h45 - 9h15	Registration
9h15 - 10h30	Série A (Chairman: Camille Aron)
11h30 - 11h00	Pause
11h00 - 11h30	Jean Dalibard (LKB / Collège de France) <i>Scale invariance, a hidden symmetry explored with quantum gases</i>
11h30 - 12h00	Jacopo De Nardis (LPTM / Université Cergy-Paris) <i>Hydrodynamics and universality in quantum spin chains</i>
12h00 - 13h45	Lunch time
13h45 - 15h00	Série B (Chairwoman: Cécile Cottin-Bizonne)
15h00 - 15h30	Pause
15h30 - 16h00	Salima Rafai (LIPhy / CNRS / Université Grenoble-Alpes) <i>Active jamming of microswimmers at a bottleneck constriction</i>
16h00 - 16h30	Emmanuel Trizac (LPTMS / Université Paris-Saclay) <i>Like-charge attraction, old and new</i>
16h30 - 17h00	Pause
17h00 - 18h15	Série B – continued (Chairwoman: Cécile Cottin-Bizonne)
18h15 - 19h30	Apéritif / dinner (offered upon subscription)
19h30 - 20h00	Denis Bartolo (ENS Lyon) <i>Flocking fluids</i>
19h30 - 20h00	Série B – night session (Chairman: Frédéric van Wijland)

Friday January 27, 2023

- 9h15 - 10h45** **Série C** (Chairman: Frédéric van Wijland)
- 10h45 - 11h15** Pause
- 11h15 - 11h45** **Silvia De Monte (ENS Paris / CNRS)**
Modelling artificial selection of microbial communities
- 11h45 - 12h15** **Martin Weigt (LCQB / Sorbonne Université)**
Protein sequence landscapes: from data to models and back
- 12h15 - 14h00** Lunch time
- 14h00 - 14h30** **Kirsten Martens (LIPhy / CNRS / Université Grenoble-Alpes)**
Out-of-equilibrium phenomena in yield stress fluids
- 14h30 - 15h00** Pause
- 15h00 - 16h20** **Série D** (Chairman: Vivien Lecomte)

Série A – chairman: Camille Aron

Thursday January 26, 9h15 - 10h30

- **SEYE, Alioune**
PMC, Ecole polytechnique
Localization in the quantum Hall effect: towards a magnetic landscape
- **DANSAGE, Victor**
Laboratoire de Physique de l'ENS de Lyon - Institut UTINAM Besançon
The dilute interacting Bose gas: comparisons between Feynman diagram expansion and the hierarchy equations for imaginary time
- **COQUINOT, Baptiste**
LPENS
Out-of-equilibrium solid-liquid interface: flow-induced electronic current and negative friction
- **MARTINEZ-AZCONA, Pablo**
Dept. of Physics and Materials Science, University of Luxembourg
A universal bound on the decay of the Spectral Form Factor
- **SINATRA, Alice**
Laboratoire Kastler Brossel
Protocole quantique d'estimation multiparamètre et acquisition comprimée d'un champ
- **SRDINŠEK, Miha**
PASTEUR
Rényi entropy of quantum anharmonic lattice at finite temperature
- **MAJUMDAR, Saptarshi**
LPTMS
Bath-induced phase transition in a Luttinger liquid
- **GIVOIS, Jules**
Laboratoire de Physique Théorique et Modèles Statistiques (LPTMS)
Self-binding in 1D fermionic mixtures
- **CASTIN, Yvan**
Laboratoire Kastler Brossel de l'ENS
Quatrièmes coefficients d'amas et du viriel d'un gaz unitaire de fermions pour un rapport de masse quelconque

- **ROSSETTO, Vincent**

LPMMC

Random walks of photons

- **LABOUSSE, Matthieu**

Gulliver

Soft violation of Bell's inequality

- **ANFRAY, Valentin**

Institut Lumière Matière

Infinite Disorder Fixed Point and Universality Class

- **DELAMOTTE, Bertrand**

Laboratoire de physique théorique de la matière condensée (LPTMC)

Renormalization group and generalized Central Limit Theorems: The critical probability distributions of the order parameter from the functional renormalization group

- **FLACK, Ana**

LPTMS

Devil's staircase and the modular invariance

Série B – chairwoman: Cécile Cottin-Bizonne

Thursday January 26, 13h45 - 15h00

- **ZAKINE, Ruben**
LadHyX - Chair of EconophysIX at CFM
Bistable active particle dynamics: experimental realizations of instantons
- **BALDOVIN, Marco**
LPTMS
Control of Active Brownian Particles: An exact solution
- **BACONNIER, Paul**
Gulliver
Polarization-induced reentrance transition to collective actuation in active solids
- **DINELLI, Alberto**
MSC, Université Paris Cité
Non-reciprocity across scales in active mixtures
- **DUCLUT, Charlie**
Laboratoire Physico-Chimie Curie, Institut Curie, Université PSL, Sorbonne Université
Stochastic dynamics of chemotactic colonies with logistic growth
- **SPERA, Gianmarco**
Laboratoire Matière et Systèmes Complexes
Nematic Torques in Scalar Active Matter
- **GUÉNEAU, Mathis**
LPTHE
Mean first passage time of a run and tumble particle in a potential
- **HAHN, Leo**
Laboratoire de mathématiques Blaise Pascal
Pair of jamming run-and-tumble particles: exact results and universality classes
- **TOUZO, Léo**
LPENS
Run-and-tumble particles with long-range interactions: the active Dyson Brownian motion
- **HARGUS, Cory**
Laboratoire Matière et Systèmes Complexes (MSC)
Odd Transport Phenomena in Chiral Active Matter

- **LOBASKIN, Vladimir**

School of Physics, University College Dublin

Consensus vs polarisation: Collective behavior of active particles with selective interactions

- **MANACORDA, Alessandro**

Department of Physics and Materials Science, University of Luxembourg

Lattice dynamics of pulsating active particles

- **BENVEGNEN, Brieuc**

LPTMC

Flocking in one dimension

- **VATIN, Marin**

Dipartimento di Fisica e astronomia "Galileo Galilei" - Università di Padova

Heterogeneous activity drives polymer chain conformation and dynamics: Insights from simulation studies

- **LIU, Hongwei**

Laboratoire Matière & Systèmes Complexes

A Single-chain Model for the Linear Viscoelasticity (LVE) of Unentangled Melts of Associating Polymers

Thursday January 26, 17h00 - 18h15

- **OUADFEL, Mehdi**

Institut Lumière Matière

Molecular contributions to thermo-osmotic phenomena for an electrolyte at a charged surface

- **PUIBASSET, Joël**

ICMN

Bubble size distributions for nucleation barrier calculation: all bubbles versus the largest one

- **YE, Yilin**

Laboratoire Ondes et Matière d'Aquitaine

Brownian motion near a soft surface

- **DOBLER, Maud**

PMMH

Thin film adhesion instability

- **BAUMBERGER, Tristan**
Institut des NanoSciences de Paris
Syneresis of hydrogels: a self-driven athermal aging process
- **GOVORUN, Elena**
Gulliver, ESPCI
Statistics of pattern-modified polymer chains via random walks
- **DÉMERY, Vincent**
Gulliver, ESPCI Paris PSL
Probe coupled to a Gaussian field: model for non-linear effects in microrheology
- **SMALLENBURG, Frank**
Laboratoire de Physique des Solides
Crystal nucleation of (nearly) hard colloidal spheres
- **DUMONT, Denis**
SPEC/CEA
Dense granular flow: a thermal fluid of hard spheres?
- **VANI, Nathan**
ESPCI, PMMH et UCSB
Clogging by bridging of suspended particles in constricted channels
- **ANZIVINO, Carmine**
Department of Physics "A. Pontremoli", University of Milan (Italy)
Estimating random close packing in hard spheres via an equilibrium model of crowding
- **HONG, Joo-Won**
PMMH - ESPCI
Kirigami inspired shape-morphing structures
- **ILLIEN, Pierre**
PHENIX (CNRS/Sorbonne Université)
Diffusion of a tracer in a dense mixture of soft particles connected to different thermostats
- **RODRÍGUEZ-GALLO, Carolina**
Magnetic Soft Matter Group, Pietro Tierno's Lab. University of Barcelona
Geometrical control of topological charge transfer in artificial colloidal ice.
- **JOSSERAND, Christophe**
LadHyX
Dendritic growth over a substrate

Série B – night session

chairman: Frédéric van Wijland

Thursday January 26, 20h00 - 21h35

- **ROUVIÈRE, Eric**
Olivier Rivoire's Lab, Gulliver / Chicago, Illinois, USA
On the emergence of single versus multi-state allostery
- **MIHALCESCU, Irina**
Laboratoire Interdisciplinaire de Physique
When lowering temperature, the in vivo circadian clock in cyanobacteria abide by the in vitro protein clock trough a Hopf bifurcation
- **DEROULERS, Christophe**
IJCLab
Predicting the density profile of an invading population of polarising and migrating cells
- **MONCEAU, Pascal**
Matière et Systèmes Complexes
Modelisation of the synchronisation transition in 2D neuronal cultures in vitro
- **LOMBARDI, Fabrizio**
Institute of Science and Technology Austria (ISTA)
Statistical mechanics of adaptive neural networks: Understanding coexistence of avalanches and oscillations in the resting human brain
- **BOUVARD, Julien**
LadHyX
Clustering of passive beads induced by swimming bacteria
- **GANESH, Akash**
Fluides, Automatique et Systèmes Thermiques (FAST)
Saffman–Taylor instability induced by swimming bacteria suspensions
- **LANZA, Federico**
Laboratoire de Physique Théorique et Modèles Statistiques
Non-Newtonian fluids in porous media
- **BONNEAU, Haggai**
Gulliver
Transient dynamics of electrolytes

- **BOUVIER, Antoine**
PMMH (ESPCI Paris)
Formation de film continu homogène par coalescence de goutte
- **VILQUIN, Alexandre**
LOMA (Laboratoire Ondes et Matière d'Aquitaine)
Nanoparticle transport in near-surface flows
- **JHA, Aditya**
LOMA, Université de Bordeaux
Viscocapillary Lift Force near a fluid interface
- **GUNNY, Masoodah**
Gulliver
Transport of nanoparticles near liquid-liquid interfaces
- **FELIACHI, Ouassim**
Institut Denis Poisson
A microscopical derivation of the fluctuating (in)compressible Navier-Stokes equations
- **GORCE, Jean-Baptiste**
Matière et Systèmes Complexes
Cascade and statistical equilibrium in turbulence
- **BECHARAT, Antoine-Cyrus**
Chair of Econophysics and Complex Systems, Laboratoire d'Hydrodynamique, Ecole Polytechnique
Out-of-equilibrium Schelling model of social segregation
- **FARANDA, Davide**
Laboratoire des Sciences du Climat et de l'Environnement / Institut Pierre Simon Laplace CNRS
A recurrence-based approach to the attribution of extreme weather events to climate change
- **NOYELLE, Robin**
LSCE - ISPL
Investigating the typicality of the dynamics leading to extreme temperatures in the IPSL-CM6-LR model

Série C – chairman: Frédéric van Wijland

Friday January 27, 9h15 - 10h45

- **BERCEGOL, Herve**
SPEC
Vacuum friction: a potential contributor to the second law
- **HARUNARI, Pedro**
Complex systems and statistical mechanics
Transition-based coarse-graining
- **GARILLI, Alberto**
Department of Physics and Material Sciences, University of Luxembourg
Fluctuation Relations for marginal observers
- **RÉGNIER, Léo**
LPTMC
Universal exploration dynamics of random walks
- **CHAIGNEAU, Adrien**
Physique de la Matière Condensée, École Polytechnique
First-passage time to anisotropic partially reactive target
- **BIROLI, Marco**
LPTMS
Exact order, gap and counting statistics of a Brownian gas correlated by resetting
- **KHARSANSKY ATALLAH, Ivan**
IMSIA
Markovian Bistable Stall Dynamics
- **GUISLAIN, Laura**
LIPhy
Nonequilibrium phase transition to temporal oscillations in mean-field spin models
- **BRÉMAUD, Louis**
Laboratoire de physique théorique et modèle statistiques
Social structure description of epidemic propagation with a mean field game paradigm
- **PLATI, Andrea**
Laboratoire de Physique des Solides (LPS)
Self-assembly of crystals and quasi-crystals in binary granular mixtures: Simulations and experiments

- **CHALLET, Damien**

Laboratoire MICS, CentraleSupélec, Université Paris-Saclay

From statistical physics of records to statistics from records

- **KLINGER, Jérémie**

LPTMC

Splitting Probability of Symmetric Jump Processes

- **RIZKALLAH, Pierre**

PHENIX, Sorbonne Université

Particles are gaps between gaps between particles

- **DARSHAN, Shiva**

CERMICS École des Ponts

Energy Flow in Periodically Forced Atom Chains

Série D – chairman: Vivien Lecomte

Friday January 27, 15h00 - 16h20

- **ZACCONE, Alessio**
Department of Physics, University of Milan
A solution to amorphous elasticity and plasticity based on topological physics
- **RAEPSAET, Caroline**
CEA/DRF/IRAMIS/SPEC
Nonlinear susceptibility in a series of oligomers
- **CARRIÈRE, David**
CEA de Saclay, NIMBE
Non-classical nucleation: emergence of disorder on the path of crystalline order
- **CHIPPARI, Francesco**
LPTHE, Laboratoire de Physique Statistique et Hautes Energies
Long-range quenched bond disorder in the bidimensional Potts model
- **AGRAWAL, Ramgopal**
LPTHE
Domain growth and aging in the random-field XY-model
- **DZIK, Eden**
SPEC
Taking up the challenge of the glass transition by optical manipulations of molecules
- **BARON, Joseph**
LPENS
A perturbative approach to handling inconveniences in random matrix theory: network heterogeneity, sparseness and structure
- **PACCO, Alessandro**
LPTMS
Overlaps between eigenvectors of spiked, correlated random matrices
- **HARTMANN, Alexander**
Institute of Physics, University of Oldenburg
Replica symmetry breaking for Ulam's problem
- **GARCIA LORENZANA, Giulia**
LPENS, MSC
Can migration and disorder rescue metacommunities from extinctions?

- **DESPONS, Armand**

Gulliver, ESPCI

Adaptive strategies in Kelly's horse races model

- **KÜHN, Tobias**

Institut de la Vision, Sorbonne Université, CNRS, INSERM

Computing the Fisher information in continuous attractor networks

- **LOUREIRO, Bruno**

DI - ENS

Phase diagram of Stochastic Gradient Descent in high-dimensional two-layer neural networks

- **VROYLANDT, Hadrien**

Institut des Sciences du Calcul et des Données

Position-dependent memory kernel in generalized Langevin equations