

Marco Biroli, Ph.D. Student

Laboratoire de Physique Statistique et Modèles Statistique (LPTMS)
Université Paris-Saclay

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🌐 <https://marcobiroli.github.io/>



Education

- 2022 – Now ■ **Ph.D., Université Paris-Saclay.**
Laboratory of Theoretical Physics and Statistical Models (LPTMS), Orsay.
Supervisor: Satya Majumdar.
Thesis title: *Interacting particles with stochastic resetting*
- 2020 – 2022 ■ **M.Sc. ICFP in theoretical physics** ENS-PSL, Paris.
GPA: 17.96/20
- 2019 – 2020 ■ **Licence 3 in Physics** ENS-PSL, Paris.
GPA: 15.5/20 in Physics and 19.5/20 in Mathematics and Computer Science.
- 2017 – 2020 ■ **Bachelor of Science, double major in physics and mathematics** Ecole Polytechnique.
Summa Cum Laude. GPA: 4.17/4.0

Awards




- 2022 – 2025 ■ **Contrats doctoraux spécifiques normaliens (CDSN)**, 75 600 €
Competitive 3 Year Doctoral Scholarship.
- 2019 – 2022 ■ **Scholarship of the physics departement of ENS-PSL**, 30 000 €.
Competitive 3 year excellence scholarship.
- 2018 – 2020 ■ **Excellence Scholarship from the Ecole Polytechnique Foundation**, 9 600 €.
Competitive 2 year excellence scholarship.

Research Publications






1. **M. Biroli**, Y. Feld, A. K. Hartmann, S. N. Majumdar and G. Schehr, *Resetting by rescaling: exact results for a diffusing particle in one-dimension*, arXiv preprint, arXiv:2406.08387 (2024)
2. **M. Biroli**, M. Kulkarni, S. N. Majumdar and G. Schehr, *Dynamically emergent correlations between particles in a switching harmonic trap* Physical Review E **109** (3), L032106 (2024).
3. **M. Biroli**, H. Larralde, S. N. Majumdar and G. Schehr, *Exact extreme, order, and sum statistics in a class of strongly correlated systems*, Physical Review E **109** (1), 014101 (2024).
4. **M. Biroli**, S. N. Majumdar and G. Schehr, *Critical number of walkers for diffusive search processes with resetting*, Physical Review E **107** (6), 064141 (2023).
5. **M. Biroli**, H. Larralde S. N. Majumdar and G. Schehr, *Extreme statistics and spacing distribution in a Brownian gas correlated by resetting*, Physical Review Letters **130** (20), 207101 (2023).
6. **M. Biroli**, F. Mori and S. N. Majumdar, *Number of distinct sites visited by a resetting random walkers*, Journal of Physics A: Mathematical and Theoretical **55** (24), 244001 (2022).

7. F.E. E. Orche, R. Géraud-Stewart, P.B. Rønne, G. Bana, D. Naccache, P. Y.A. Ryan, **M. Biroli**, M. Dervishi, H. Waltsburger, *Time, Privacy, Robustness, Accuracy: Trade-Offs for the Open Vote Network Protocol*, International Joint Conference on Electronic Voting, 19-35 (2022).




Teaching

- March 2024 – June 2024  **Assistant Professor** Université Paris-Saclay.
Undergraduate Experimental Physics
- 6-16 October 2023  **National divulgation physics event aimed at highschool students**
Animator of a stand on Probabilities.
- 2019 – 2022  **Private Tutoring**

Conferences & Workshops

- 17-19 June 2024  **New Vistas in Stochastic Resetting**
Higgs Centre for Theoretical Physics
Contributed Poster
- March 2024  **Talk at the LPTMS bi-weekly seminar series**
Invited Talk.
- 3-7 April 2023  **Workshop "Interaction, Disorder and Elasticity"**
Ecole de Physique des Houches
Contributed Talk
- 28-30 November 2022  **Groupeement de Recherche (GDR) "Interaction, Disorder and Elasticity"**
Université Grenoble-Alpes
Contributed Poster
- 3-5 October 2022  **Asymmetry in interacting particle systems, microscopic and macroscopic effects**
INRIA Lille





Schools

- July 2024  **Theory of Large Deviations and Applications summer school**
Ecole de physique des Houches.
Contributed Poster
- July 2023  **Quantum localization and Glassy physics**
Institut d'études scientifiques de Cargèse
Contributed Poster
- June 2023  **Statistical Physics of Complex Systems**
The Beg Rohu Summer School
Contributed Poster

Languages & Computer skills

- English (Proficient), French (Mother tongue), Italian (Mother tongue), Spanish (B2)
- Python, Pytorch, C++, HTML, CSS, Javascript

Miscellaneous

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| 2022-Now |  Reviewer
Review for J-Phys A and Chaos. |
| 2024-Now |  LPTMS Student Representative at the lab board
Elected to be the student representative at the General Assembly of the laboratory. |
| 2022 – 2024 |  Assessor for the Bachelor of Ecole Polytechnique admissions
Assessed around 50 candidate files for admission. |
| 2022-2023 |  Creator and organizer of the LPTMS Statistical Physics seminar series
Created a seminar series and took care of inviting the speakers as well as organizing the logistic of the seminar. |