

Education

- 2022-Today **PhD Candidate in physics**, under the supervision of Adrian Daerr
Nonlinear Meandering Dynamics of a Liquid Filament
Matière et Systèmes Complexes (MSC), Université Paris Cité / CNRS, Paris, France
- 2021-2022 **Admission to Agrégation de Physique**
High-level competitive exam for future physics teachers (rank : 2/459)
École Normale Supérieure and Sorbonne Université, Paris, France
- 2020-2021 **M2 Nonlinear and Out of Equilibrium Phenomena** in Physics & Mathematics
Applied and Theoretical Mathematics (MATH) Master's degree
École Normale Supérieure and Université Paris Dauphine, Paris, France
- 2019-2020 **M2 Lophiss** in History and Philosophy of Science
Université Paris Diderot, Paris, France
- 2017-2022 **Scolarity at École Normale Supérieure**
Elite academic institution accessed by competitive exam in Paris, France
2017-2019 : Bachelor in Physics (L3 FIP) and Master 1 in Fundamental Physics (ICFP)

Research Internships

- 2021
(5 months) **Experimental study of the meandering of a liquid rivulet**, with Adrian Daerr —
Laboratoire Matière et Systèmes Complexes, Université Paris Cité, Paris, France
- 2020
(6 months) **Computational analysis of leukocytes migration dynamics in complex environments**, with
Pablo Vargas and Matthieu Piel — MOTILE group, Institut Curie, Paris, France
- 2019
(6 months) **Transition to disordered front propagation in a Hele-Shaw channel**, with Anne Juel —
Manchester Center for Nonlinear Dynamics, University of Manchester, Manchester, UK
- 2018
(1 month) **Assembly of a Total Internal Reflexion Fluorescence Microscope (TIRFM) to study the
dynamics of polymers at nanometric scales**, with Joshua McGraw —
Laboratoire Gulliver, ESPCI, Paris, France

Expertise

- Experimental Optical alignment protocols
Chemistry lab techniques
Computer Assisted Design, Laser cutting & 3D printing
- Softwares LabView, ImageJ, Inkscape
- Programming Python - Image analysis, Data treatment
C, C++ - Software development, GTK & Qt framework
Git - Distributed version control

Publications

- [in review] **Grégoire Le Lay** & Adrian Daerr
Controlling deposition and characterising dynamics of thin liquid films with high temporal and spatial resolution
arXiv — arxiv.org/abs/2502.13552
- 2025 **Grégoire Le Lay** & Adrian Daerr
Phase-locking parametric instability coupling longitudinal and transverse waves on rivulets in a Hele-Shaw cell
Physical Review Letters — [10.1103/PhysRevLett.134.014001](https://doi.org/10.1103/PhysRevLett.134.014001)
- 2024 **Grégoire Le Lay**, Sarah Layani, Adrian Daerr, Michael Berhanu et al.
Magnetic levitation in the field of a rotating dipole
Physical Review E — **Editor's suggestion** — [10.1103/PhysRevE.110.045003](https://doi.org/10.1103/PhysRevE.110.045003)
- 2023 Tania Gajardo, Mathilde Bernard, Marie Lô, Elisa Turck **et al.**
Actin dynamics regulation by TTC7A/PI4KIII α limits DNA damage and cell death under confinement
Journal of Allergy and Clinical Immunology — [10.1016/j.jaci.2023.06.016](https://doi.org/10.1016/j.jaci.2023.06.016)
- 2021 Antoine Gaillard, Jack S. Keeler, **Grégoire Le Lay**, Grégoire Lemoult et al.
The life and fate of a bubble in a geometrically perturbed Hele-Shaw channel
Journal of Fluid Mechanics — [10.1017/jfm.2020.844](https://doi.org/10.1017/jfm.2020.844)
- 2021 Sundry Sormendi, Mathieu Deygas, Anupam Sinha, Mathilde Bernard **et al.**
HIF2 α is a direct regulator of neutrophil motility
Blood — [10.1182/blood.2020007505](https://doi.org/10.1182/blood.2020007505)

Presentations

- 03/2025 **Rencontres du Non-Linéaire**, Paris (Fr), Long talk. [Conference poster]
- 01/2025 **Journées de Physique Statistique**, Paris (Fr), Contributed talk.
- 12/2024 **MSC Internal Seminar**, MSC lab (Fr), Invited seminar.
- 10/2024 **Journées de la Matière Condensée**, Marseille (Fr), Contributed talk.
- 09/2024 **European Fluid Dynamics Conference**, Aachen (De), Contributed talk.
- 06/2024 **International meeting in the memory of Yves Couder**, Paris (Fr), Poster presentation.
- 03/2024 **Rencontres du Non-Linéaire**, Paris (Fr), Poster presentation.
- 03/2024 **Séminaire café**, PMMH lab (Fr), Invited seminar.
- 09/2023 **European Coating Symposium**, Paris (Fr), Contributed talk.
- 07/2023 **Congrès Général des 150 ans de la SFP**, SFP Congress (Fr), Contributed talk.
- 06/2023 **Non-linear physics team**, LPENS lab (Fr), Invited seminar.
- 03/2023 **Rencontres du Non-Linéaire**, Paris (Fr), Poster presentation.

Para-academic activities

- 2023-2025 **Laboratory board member**, MSC
Elected representative of the non-permanents (PhD students and post-docs) at the laboratory board of MSC.
- 2024 **EDPIF Scientific Day organizer**, Paris
Planning and supervision of a one-day event reuniting ~200 2nd year PhD students of the doctoral school EDPIF.
- 2023 **Young Physicists Meeting organizer**, Paris
Organisation of the RJP 2023, a one-day wide-range conference reuniting ~150 PhD students and Post-Docs with a budget of 15 k€.
- 2022-2025 **French IPHO scientific comitee member**, French Ministry of Education
Member of the scientific comitee of the selection and training of the french team for the International Physics Olympiads (IPHO).

Outreach

- 2023 **Fête de la science**, Université Paris Cité
Presentation of scientific experiments to the general public.
- 2023 **Before du grand congrès de la SFP**, Cité des sciences et de l'industrie
Demonstration of a scientific experiment for the general public.
- 2018-2019 **Cours aux ernests**, ENS
Short courses explaining the basics of physics for non-physics students.
- 2018 **Fête de la science**, ENS
Presentation of scientific experiments for the general public.

Teaching

2022-2025	LASER , École d'Ingénieurs Denis Diderot (EIDD) Master 1 — Tutorials to master's students about the physics of lasers 18 h / year (20 students per class)
2022-2025	Preparation for the International Physicists' Tournament (IPT) , Université Paris Cité Bachelor (3rd year) — Supervising the university's team for the IPT 24 h / year, (10 students per class)
2023-2025	Wave phenomena , Préparation à l'agrégation interne, Université Paris Cité Master 2 — Refresher course about waves in physics for candidates to the agrégation 6 h / year, (30 students per class)
2024-2025	Electromagnetism , Préparation à l'agrégation interne, Université Paris Cité Master 2 — Refresher course about electrodynamics for candidates to the agrégation 6 h / year, (30 students per class)
2022-2025	Préparation au montage , Préparation à l'agrégation interne, Université Paris Cité Master 2 — Preparation of the experimental evaluation for candidates to the agrégation 14 h / year, (15 students per class)
2022-2023	Physique expérimentale , Master MEEF, Université Paris Cité Master 1 — Supervision of practical work for candidates to the CAPES competitive exam 27 h in total, (15 students per class)
2021-2022	Colles de physique , Prépa Hadamart Bachelor (1st and 2nd years) — Preparation of exams for students in "classe prépa" 2 hours per week, 3 students per session
2019-2020	Tutorat , Jean Zay state boarding school Bachelor (1st and 2nd years) — Personalized tutoring for scholarship holder students Four one-hour session per week, one student per session
2017-2019	Soutien bénévole , Maison des Jeunes Talents Bachelor (1st and 2nd years) — Preparation of exams for students in "classe prépa" 2 hours per week, 3 to 9 students per session