

Grégoire Le Lay

PhD Candidate in physics

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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
Component of the 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

- (2024) **Grégoire Le Lay** and Adrian Daerr
Phase-locking melody : A parametric instability coupling longitudinal and transverse waves on rivulets in a Hele-Shaw cell
Under review at *Phys. Rev. L.*
- 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
- 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
- 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
- 2021 Sunday Sormendi, Mathieu Deygas, Anupam Sinha, Mathilde Bernard **et al.**,
HIF2 α is a direct regulator of neutrophil motility
Blood — 10.1182/blood.2020007505

Presentations

- 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 (Fr), Invited seminar.
- 09/2023 **European Coating Symposium**, Paris (Fr), Contributed talk.
- 07/2023 **Congrès Général des 150 ans de la SFP**, Paris (Fr), Contributed talk.
- 06/2023 **Non-linear physics team**, LPENS (Fr), Invited seminar.
- 03/2023 **Rencontres du Non-Linéaire**, Paris (Fr), Poster presentation.

Non-academic activities

- 2023-2025 **Laboratory concil**, MSC
Elected member for the non-permanents of the laboratory concil of MSC.
- 2022-2024 **French IPHO scientific comitee**, French Ministry of Education
Member of the scientific comitee of the selection and training of the french team for the International Physics Olympiads (IPHO).
- 2023 **Young Physicists Meeting**, Paris
Organiser of the RJP 2023, a one-day conference reuniting 150 PhD students and Post-Docs in french laboratories

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)
- 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

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.