

# 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*  
Laboratoire Matière et Systèmes Complexes (MSC), Université Paris Cité, Paris, France
- 2021-2022    **Admission to Agrégation de Physique**  
High-level competitive examination for future physics teachers for high school and preparatory classes (rank : 2/459)  
École Normale Supérieure and Sorbonne Université, Paris, France
- 2020-2021    **M2 Nonlinear and Out of Equilibrium Phenomena** in Physics  
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 (FIP) and M1 in Fundamental Physics (ICFP)

## Research Internships

- 2021  
(5 months)    **Experimental study of the meandering of a liquid rivulet**, supervised by Adrian Daerr  
Laboratoire Matière et Systèmes Complexes, Université Paris Cité, Paris, France
- 2020  
(6 months)    **Computational analysis of leukocytes migration dynamics in complex environments**, supervised by Pablo Vargas and Matthieu Piel  
MOTILE group, Institut Curie, Paris, France
- 2019  
(6 months)    **Transition to disordered front propagation in a Hele-Shaw channel**, supervised by 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**, supervised by Joshua McGraw  
Laboratoire Gulliver, ESPCI, Paris, France

## Expertise

|                         |   |
|-------------------------|---|
| Experimental Techniques | Optical alignment protocols<br>Basic chemistry techniques<br>Computer Assisted Design & 3D printing |
| Softwares               | LabView<br>ImageJ<br>Inkscape   |
| Code                    | Python - Image analysis, Data treatment<br>C, C++ - Software development                            |

## Interests

|           |  |
|-----------|--|
| Fields    | Fluid dynamics, Classical mechanics, Soft matter                   |
| Phenomena | Nonlinear behaviour, Instabilities, Wave propagation and resonance |
| Other     | Popularizing science, History of physics, Hiking                   |

## Publications

|      |   |
|------|---|
| 2021 | Antoine Gaillard, Jack S. Keeler, <b>Grégoire Le Lay</b> , Grégoire Lemoult, Alice B. Thompson, Andrew L. Hazel and Anne Juel<br><i>The life and fate of a bubble in a geometrically perturbed Hele-Shaw channel</i><br><i>Journal of Fluid Mechanics</i> — <a href="https://doi.org/10.1017/jfm.2020.844">10.1017/jfm.2020.844</a>   |
| 2023 | Tania Gajardo, Mathilde Bernard, Marie Lô, Elisa Turck, Claire Leveau, Marie-Thérèse El-Daher, Alexandre Deslys, Patricia Panikulam, Constantin Menche, Mathieu Kurowska, <b>Grégoire Le Lay</b> et al.<br><i>Actin dynamics regulation by TTC7A/PI4KIII<math>\alpha</math> limits DNA damage and cell death under confinement</i><br><i>Journal of Allergy and Clinical Immunology</i> — <a href="https://doi.org/10.1016/j.jaci.2023.06.016">10.1016/j.jaci.2023.06.016</a> |
| 2021 | Sundry Sormendi, Mathieu Deygas, Anupam Sinha, Mathilde Bernard, Anja Krüger, Ioannis Kourtzelis, <b>Grégoire Le Lay</b> , Pablo J. Sáez, Michael Gerlach et al.,<br><i>HIF2<math>\alpha</math> is a direct regulator of neutrophil motility</i><br><i>Blood</i> — DOI : <a href="https://doi.org/10.1182/blood.2020007505">10.1182/blood.2020007505</a>  |

## Presentations

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|---------|--|
| 06/2024 | <b>International meeting in the memory of Yves Couder</b> , Paris (Fr), Poster presentation. |
| 03/2024 | <b>Rencontres du Non-Linéaire</b> , Paris (Fr), Poster presentation.                         |
| 03/2024 | <b>Séminaire café</b> , PMMH (Fr), Invited seminar.  |
| 09/2023 | <b>European Coating Symposium</b> , Paris (Fr), Contributed talk.                            |
| 07/2023 | <b>Congrès Général des 150 ans de la SFP</b> , Paris (Fr), Contributed talk.                 |
| 06/2023 | <b>Non-linear physics team</b> , LPENS (Fr), Invited seminar.                                |
| 03/2023 | <b>Rencontres du Non-Linéaire</b> , Paris (Fr), Poster presentation.                         |

## Teachings

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

## Outreach

- 2023      **Fête de la science**, UPCité  
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      **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.

## 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