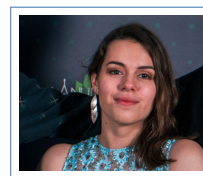


# Jessie Levillain

PhD student

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## Education

- April, **PhD, mathematics, CMAP, École polytechnique**, Palaiseau, France.  
2021–present Magneto-elastic micro-swimmers. PhD and internship supervised by Prof. François Alouges and Prof. Aline Lefebvre-Lepot.
- 2017–2021 **École Normale Supérieure Paris-Saclay diploma, ENS Paris-Saclay**, Gif-sur-Yvette, France  
(Formerly ENS Cachan), Civil servant and student.  
M2 Analyse Modélisation Simulation at Université Paris-Saclay,  
M1 Hadamard at Ecole Normale Supérieure Paris-Saclay, Université Paris-Saclay and École polytechnique.  
Bachelor's Degree in Mathematics at ENS Paris-Saclay in partnership with Université Paris Diderot.
- 2015–2017 **Lycée Marcelin Berthelot, CPGE MPSI-MP\***, Saint-Maur-des-Fossés, France.  
Two intensive years of training in Mathematics, Physics, and computer Science, in order to take competitive examinations and enter the most prestigious engineering or research schools.

## Research Experience

- 2019 – 2020 **Politecnico di Torino, Pre-doctoral year of research abroad**, Turin, Italy.  
Internship in the Energy department of Politecnico di Torino, supervised by Prof. Fabio Freschi, on "H-matrices and ACA method" as a part of the MICEV project.
- April – **UCD School of mathematics and statistics, Internship**, Dublin, Ireland.  
August 2019 Internship supervised by Prof. Frédéric Dias, in the School of Mathematics and Statistics on "Extended Green's Law : Calculating Beta using machine learning".
- July 2018 **DTU Energi, Internship**, Copenhagen, Denmark.  
Internship supervised by Prof. Kaspar Kirstein Nielsen, Prof. Christian Bahl and Prof. Rasmus Bjørk, entitled "Optimizing magnet structures with neural networks".
- January – **CMLA, ENS Paris-Saclay, Internship**, Cachan, France.  
June 2017 "Deep burst denoising": Image denoising thanks to neural networks (machine learning). Supervised by Prof. Jean-Michel Morel, Pablo Arias and Thibaud Ehret, in tandem with Raymond Zhang.

## Teaching

- 2021 – 2023 **École polytechnique, Teaching fellow**, Palaiseau, France.  
Course list:  
• MAP350: Preparatory mathematics course, 1st year of Ingénieur Polytechnicien Program  
• Computational mathematics (MAA106, Bachelor of Science, 1st year)  
• Numerical linear algebra (MAA208, Bachelor of Science, 2nd year)  
• Supervision of Bachelor Thesis (internships, Bachelor of Science, 3rd year).
- Jan. – June 2021 **Institut Villebon Georges Charpak, Orsay, France.**  
Tutoring in mathematics for bachelor students.
- 2017 – 2018 **INSEP, Mathematics guest teacher**, Paris, France, Classes for high-schoolers.
- 2014 – 2018 **United Network EU, Committee director**, Rome, Italy and Paris, France.  
IMUNA/United Network EU: Planning and chairing debates in English in Rome (IMUN) and Paris (FMUN) for high school students in English in direct partnership with the UN. Speeches and training classes for students on the subjects they will be debating on, and on rules of procedure during debates.
- 2012 – 2015 **Lycée Notre Dame de la Providence, France.**  
Tutoring in Mathematics, English and all subjects for middle- and high-schoolers.

## Publications

Authors listed in alphabetical order.

- 2023 François Alouges, Aline Lefebvre-Lepot, and **Jessie Levillain**. A limiting model for a low reynolds number swimmer with  $N$  passive elastic arms. *Mathematics in Engineering*, volume 5, pages 1–20, 2023.

## Communications

- June 2023 **AJS Seminars**, *SISSA, Trieste, Italy*, A limit model for a low Reynolds number swimmer with  $N$  passive elastic arms.
- Jan. 2023 **Séminaire des doctorants du CMAP et du CMLS**, *École polytechnique, Palaiseau, France*.
- Oct. 2022 **RIMS Fluid Dynamics Group seminar**, *Kyoto University, Japan*.
- Oct. 2022 **Microscale Ocean Biophysics online seminar**.
- Sept. 2022 **CJC-MA**, *Calais, France*, A mathematical model of flagellar activation mechanisms.
- June 2022 **CANUM 2020+2**, *Évian-les-bains, France*, Flagellar Locomotion of Micro-organisms. invited by L. Giraldi and P. Lissy (Mini-symposium)

## Short-term research visits

- May – June **SISSA**, *Trieste, Italy*, 2 months.
- 2023 Collaboration with Irene Anello and Prof. Antonio De Simone. Funded by 'Programme Visibilité Scientifique Junior', Fondation Mathématiques Hadamard.
- Oct. 2022 **RIMS, Kyoto University**, *Kyoto, Japan*, 3 weeks.
- Invited by Dr. C. Moreau and Prof. K. Ishimoto.

## Administrative work

- Jan. 2022 – present **PhD student representative at CMAP lab council**, *CMAP, École polytechnique*.

## Miscellaneous skills

- Programming Languages
- Advanced level in MATLAB, Python. Intermediate level in C/C++ and CamL.
- Office
- Proficient in LaTeX, beamer and office tools.

## Languages

- English Cambridge C2 diploma, lived in America.
- French Native language.
- Italian Intermediate, B2.
- German Intermediate, B2.