Mathilde E. André
PhD student in Probability applied to Biology

(+33)680732500
LinkedIn
mathilde.andre@college-de-france.fr
Personal webpage

A PhD student at *Collège de France* and *University of Vienna*, I graduated from *École Polytechnique* and pursued my curriculum with a master's degree in probability theory at *Université Paris-Saclay*. I am passionate about stochastic processes with special interest for applications in biology, to which I am willing to dedicate my research career.

EDUCATION

PhD thesis in Probability applied to Biology   **2023 — 2026**
Collège de France, ENS, University of Vienna   *Paris, France and Vienna, Austria*

- PhD entitled *"Scaling limits of random graphs arising in branching and interacting particle systems"*
- Collaboration with Emmanuel SCHERTZER (University of Vienna), Amaury LAMBERT (ENS, Collège de France) and Jean-Jil DUCHAMPS (University of Besançon – Franche-Comté)

Master of Science in Probability Theory   **2022 — 2023**
Université Paris-Saclay (M2 Mathématiques de l'Aléatoire)   *Orsay, France*

- Master's degree in probability theory, research-oriented
- Added some courses from the master "Mathematics for life sciences" from Université Paris-Saclay
- Coursework included Stochastic calculus, Limit theorems, Populations genetics, Random graphs, Branching processes
- Obtained a master's degree in Probability, with high honours

Final-year specialisation in Applied Mathematics   **2021 — 2022**
École Polytechnique   *Palaiseau, France*

- Coursework included Operation Research, Probability, Stochastic Processes, Mathematical Biology and Risk Analysis
- Obtained an engineer diploma (master's degree), **GPA : 3.92/4, Ranked 78/557**

Multidisciplinary engineering curriculum - Bachelor Of Science   **2019 — 2021**
École Polytechnique   *Palaiseau, France*

- Major in Applied Mathematics : Modelling, Randomness, Numerical Analysis, Machine Learning and Optimisation
- Minors in Computer Science and Mathematics, + some courses in Art, Philosophy and Management
- Obtained a Bachelor of Science with high honours

Classe préparatoire MPSI/MP* (CPGE)   **2016 — 2019**
Lycée J.B. Kléber   *Strasbourg, France*

- Joined CPGE after a high school diploma with high honours, option in Mathematics
- Attented a selective scientific program to join top leading French schools
- Coursework included Mathematics, Physics and French Literacy

TALKS AND POSTERS

Mathematical Models in Ecology and Evolution – MMEE24   **July 15th - 18th, 2024**
Faculty of Mathematics, University of Vienna, Austria   *Poster*

Junior Female Researchers in Probability Workshop – JFRP24   **July 3rd – 5th 2024**
WIAS, Berlin, Germany   *Contributed talk*

6th edition of the conference « Stochastic Processes in Evolutionary Biology » in CIRM   **May 20th – 24th 2024**
Centre International de Recherche en Mathématiques, Luminy, France   *Contributed talk*

Probability Seminar   **May 5th 2024**
LMB, Université de Besançon, France   *Seminar talk*

Bio-Maths Seminar   **April 26th 2024**
Faculty of Mathematics, University of Vienna, Austria   *Seminar talk*

Technical Experience

Teaching assistant (54h)   **First semester 2024–2025**
University of Franche-Comté   *Besançon, France*

- Exercise sessions in mathematics for BSc students in mathematics and economy (L2-L3)

Teaching assistant (64h)   **First semester 2023–2024**
IBENS, ENS   *Paris, France*

- Exercise sessions in mathematics and computer science for MSc and BSc students in biology (L3-M1)

Research Internship in Mathematical Biology, under the supervision of Amaury Lambert   **April 2023–August 2023**
CIRB, SMILE research team, Collège de France   *Paris, France*

- Modelling development through branching and interacting particle systems
- Keywords : Branching Brownian Motion, particle systems, large deviations theory, eco-evolutionary processes, somatic evolution, Turing patterns

Research Internship in probability theory, under the supervision of Emmanuel Schertzer   **March 2022–July 2022**
Faculty of Mathematics, University of Vienna   *Vienna, Austria*

- Developed a branching process toy model to study the Wright-Fisher model with recombination and transposition
- Studied long-time behavior and limits theorems for nearly critical branching processes conditioned to being nonzero

Internship in Graph Theory and Data Science   **June 2021–August 2021**
Gens de Confiance   *Nantes, France*

- Designed and implemented a link prediction algorithm on a large social graph to optimise and fasten members' friend suggestions
- Involved research in graph theory, random walks on graphs, knowledge graphs and graph neural networks

Tutoring in Mathematics and Physics   **October 2019– June 2020**
LFB – French Highschool of Barcelona   *Barcelona, Spain*

- Regularly helped and supervised ∼10 highschool students with learning difficulties
- Continued to help them remotly during the pandemic until the end of the school year

Internship in Education and Mathematics   **October 2019–April 2020**
UPC BarcelonaTech/LFB – French Highschool of Barcelona   *Barcelona, Spain*

- Worked as a math teacher for highschool and undergraduate students and trained them for mathematics competitions
- Took charge of a class of 30 students for a month as a replacement for their Math teacher

Volunteering in a child's festival   **July 2011-2017**
Festival Idéklic   *Moirans-en-Montagne, France*

- Took care of children aged 2-13 full-time for a week and initiated them to Braille's writing system

Skills

Tools and Languages	Python, Jupyter Notebook, LaTeX, Unix, Java, C++, Git, PHP, SQL, Adobe, Affinity
Hard Skills	Probability theory, Stochastic Calculus, Mathematical Biology, Numerical Analysis, Topology
Languages	• French (Mother tongue) • English (Fluent, TOEFL 103/120)
	• Spanish (Profession level, lived in Spain) • German (Profession level, lived in Austria)
	• Italian (Basic level, from highschool) • Korean (Basic level)