

# Mathilde André

## PhD student in Probability applied to Biology

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[Personal webpage](#)

A PhD student at *Collège de France* and *University of Vienna*, 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 in limit theorems for branching population models with structure and interactions
- Collaboration with Emmanuel SCHERTZER (University of Vienna), Amaury LAMBERT (ENS, Collège de France) and Jean-Jil DUCHAMPS (Marie et Louis Pasteur University of Besançon)

**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
- Attended a selective scientific program to join top leading French schools
- Coursework included Mathematics, Physics and French Literacy

### PUBLICATIONS

**Moments of density-dependent branching processes and their genealogy**

September 2025

*With Emmanuel SCHERTZER and Félix FOUTEL-RODIER*

*ArXiv Preprint*

**Sharp L log L condition for supercritical Galton–Watson processes with countable types**

March 2025

*With Jean-Jil DUCHAMPS*

*ArXiv Preprint*

### TALKS AND POSTERS

**Journées Modélisation Aléatoire et Statistique**

August 2026

*Lyon, France*

*Invited Talk*

**Bath Probability Seminar**

January 12th 2026

*University of Bath, UK*

*Seminar Talk*

**Meeting on Ancestral lines in population models with interaction**

September 24th - 26th 2025

*BOKU University, Vienna, Austria*

*Invited Talk*

<b>44th Conference on Stochastic Processes and their Applications</b> <i>Wrocław, Poland</i>	<b>July 14th - 18th 2025</b> <i>Invited Talk</i>
<b>Math-bio reading group Seminar</b> <i>University of Vienna, Austria</i>	<b>June 17th 2025</b> <i>Seminar Talk</i>
<b>Journée des Probabilités de Demain: Modèles stochastiques en dynamique des populations</b> <i>Institut Henri Poincaré (IHP) Paris, France</i>	<b>May 7th 2025</b> <i>Invited Talk</i>
<b>Journée du GT Math-Bio Sud-Est</b> <i>Inria Lyon, France</i>	<b>December 19th 2024</b> <i>Invited Talk</i>
<b>Mathematical Models in Ecology and Evolution – MMEE24</b> <i>Faculty of Mathematics, University of Vienna, Austria</i>	<b>July 15th - 18th, 2024</b> <i>Poster</i>
<b>Doctoral Seminar</b> <i>LMB, Université de Besançon, France</i>	<b>June 11th 2024</b> <i>Seminar talk</i>
<b>Junior Female Researchers in Probability Workshop – JFRP24</b> <i>WIAS, Berlin, Germany</i>	<b>July 3rd – 5th 2024</b> <i>Contributed talk</i>
<b>6th edition of the conference « Stochastic Processes in Evolutionary Biology » in CIRM</b> <i>Centre International de Recherche en Mathématiques, Luminy, France</i>	<b>May 20th – 24th 2024</b> <i>Contributed talk</i>
<b>Probability Seminar</b> <i>LMB, Université de Besançon, France</i>	<b>May 5th 2024</b> <i>Seminar talk</i>
<b>Bio-Maths Seminar</b> <i>Faculty of Mathematics, University of Vienna, Austria</i>	<b>April 26th 2024</b> <i>Seminar talk</i>

## TECHNICAL EXPERIENCE

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### Co-organisation of math-related events

- MMEE2024 conference Vienna, Austria
- Besançon meeting on Probability, Ecology & Evolution 2024 Besançon, France
- Math C pour L for encouraging BSc female student to pursue an academic career in math Besançon, France

### Teaching assistant at University of Franche-Comté, Besançon, France (54h+36h)

2024–2026

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

### Teaching assistant at IBENS, ENS, France (64h)

2023–2024

- 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*

- Modeling 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 friend suggestions
- Keywords: graph theory, random walks on graphs, knowledge graphs, graph neural networks

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

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

**Internship in Education and Mathematics***UPC BarcelonaTech/LFB – French Highschool of Barcelona***October 2019–April 2020***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***Festival Idéklic***July 2011-2017***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**Languages**

- French (Mother tongue)
- Spanish (Profession level, lived in Spain)
- Italian (Basic level, from highschool)
- English (Fluent, TOEFL 103/120)
- German (Basic level, lived in Austria)