

Hadrien Maffioli

Ph.D. Student

Laboratoire de mathématiques de Besançon

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I am a first-year Ph.D. student at the University Marie & Louis Pasteur, France under the supervision of Drs. François Bienvenu and Jean-Jil Duchamps. My research field is probability theory. More specifically, I study random trees and networks, focusing primarily on the geometry of large-scale networks and their applications to evolutionary biology. My thesis is devoted to the development of new tools and random graph models for phylogenetic networks.

Education

Ph.D. in Probability , University Marie & Louis Pasteur (UMLP), France Thesis: <i>Limits of random graphs to model reticulated evolution</i> Thesis supervisors: Drs. François Bienvenu & Jean-Jil Duchamps	Sep. 2025 – Present
Master's degree in Advanced Mathematics , UMLP, France Specialization: Probability	Sep. 2024 – July 2025
Magistère of Mathematics (University degree) , UMLP, France Research initiation in mathematics	Sep. 2022 – July 2025
Master's degree in General Mathematics , UMLP, France Preparation for the French competitive examination Agrégation in Mathematics; ranked 45th.	Sep. 2024 – July 2025
Academic degree in Fundamental Mathematics , UMLP, France	Sep. 2021 – July 2022
Undergraduate degree in Mathematics, Computer science and Economy , University Paris Dauphine-PSL, France	Sep. 2019 – July 2021

Preprints

F. Bienvenu, J.-J. Duchamps and H. Maffioli. A parameterized family of balance indices for phylogenetic networks (2026) [Preprint]. doi.org/10.48550

Teaching Experience

Teaching Assistant , UMLP, France 64 contact hours per academic year.	Sep. 2025 – Present
Oral Examiner (Classes Préparatoires) , Lycée Victor Hugo, Besançon (France) Prepared and conducted weekly oral examinations in mathematics for students in the French Classes Préparatoires (PC & MP).	Sep. 2025 – Present

Undergraduate Mathematics Tutor, UMLP, France

Sep. 2024 – May 2025

Conducted weekly 90-minute evening tutoring sessions for first-year undergraduate mathematics students.

Private teacher, Various employers, France & UAE

Aug. 2022 – Present

One-to-one classes for students from middle school to Classes Préparatoires following the french curriculum at home or through video.

Other Relevant Experience

Research Project Mentor, UMLP, France

June 2026

Supervised a one-week introductory research project for female undergraduate students during the event [Maths C pour L](#)

Oral Examiner, UMLP, France

Dec. 2024 – Present

Conducted oral examinations in algebra, analysis and probability for master's students preparing for the French competitive examination Agrégation.

Conference Co-organizer, [XXV meeting of the Carnot-Pasteur Doctoral School](#), UMLP, France

June 2026

Co-organized a one-day interdisciplinary research conference (approximately 100 participants), including development of the scientific program, coordination with speakers, and event logistics.

Member of the Quality of Work Life and Sustainability Committee, UMLP, France

Oct. 2025 – Present

Represent doctoral students and contribute to initiatives to improve quality of work life and environmental sustainability.

Mémoires & Projects

Master's internship (2025), The H_α index of random phylogenetic networks.

I worked on balance indices on random phylogenetic networks under the supervision of Drs. François Bienvenu and Jean-Jil Duchamps. This work resulted in the preprint *A parameterized family of balance indices for phylogenetic networks*.

Master's Project (2024), Local Convergence of Random Graphs.

I worked on local limits of random graphs under the supervision of Dr. François Bienvenu and Dr. Jean-Jil Duchamps. More precisely the goal was to establish the theoretical foundations of the local topology before discussing a more detailed study of random regular graphs.

Master's Project (2024), Notes d'une lecture détaillée sur la complétion de matrices (in french).

I worked on Matrix Completion under the supervision of Drs. Camelia Goga and Mehdi Dagdoug. More precisely the goal was to study in detail an article by B. Recht entitled *A Simpler Approach to Matrix Completion* which provided theoretical results on matrix completion using linear algebra and large deviations theory.

Magistère's Project (2023), The Riesz-Thorin theorem : proof and applications.

Along with R. Kremeurt we worked on the proof of the Riesz-Thorin Theorem under the supervision of Dr. Florence Lancien. We studied the proof along with some applications such as Clarkson's inequality and gave a brief introduction to Banach space interpolation.

Conference Presentations

International Workshop on Probabilistic, Combinatorial, and Algorithmic Phylogenetics, March 30 to April 2, 2026, National Chengchi University, Taipei, Taiwan.

Title: *The H_α index of Galton-Watson trees.*

Xe Day of young reseachers in mathematics in Bourgogne Franche-Comté, April 17, 2025, UMLP, France.

Title: *Balance Indices and Phylogenetic networks.*

Workshops and Seminars attended

Weekly seminar of the Probability and Statistics team of LmB, 2025 – 2026, UMLP, France

Winter school Statski, January 28 to January 30, 2026, Métabief, France

Probability & Statistics Masterclass, January 19 to January 23, 2026, Institut Élie Cartan de Lorraine, France

Seed seminar of mathematics and physics, Random forests and fermionic field theories, October 29, 2026, Institut Henri Poincaré, France

Annual conference of GdR branching, January 27 to January 31, 2025, Orsay, France

Master's Winter school, January 8 to January 10, 2024, Pierrefontaine-les-Varans, France

Master's Summer School, June 5 to June 9, 2023, UMLP, France

Introduction to convex functions and differential geometry.

Professional Development/Trainings

First Aid Certification (SST) , UMLP	May 2026
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Research Ethics and Integrity , MOOC	Feb. 2026
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University Teaching and Pedagogy , MOOC	Feb. 2026
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General and Technical Skills

Languages: French (Native), English (C1+)

Computer skills: Python, R, LaTeX

Last updated: July 9, 2026