

Massat Benjamin

Toulouse (31)

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Personal Profile

I am a motivated PhD candidate specializing in Probability Theory, particularly interested in Hawkes processes and their real-world applications. With a strong foundation in mathematical modeling and analysis, I am dedicated to advancing knowledge in stochastic processes and collaborating effectively in academic and research settings.

Education

PhD in Probability

Institut de Mathématiques de Toulouse

Toulouse, FR

Sept 2023 - Current

- **Title :** Quantitative limit theorems for Hawkes functionals and their applications in Finance and Insurance.
- **Supervisor :** L. Coutin and A. Réveillac
- Key words : Hawkes processes, Stein's method, Malliavin calculus, Modele of Cramèr-Lundberg
- Funding : "Ecole Universitaire de Recherche" MINT (Mathematics and INteractions in Toulouse)

Master Research Innovation of Applied and Pure Mathematics

University of Toulouse III

Toulouse, FR

2022-2023

Master Fellowships : EUR MINT

Agrégation de Mathématiques

University of Toulouse III

Toulouse, FR

2020-2022

Ranking : 208

Bachelor in Applied Mathematics

University of Orleans

Orleans, FR

2019-2020

Ranking : 2nd and 1st

CPGE MP/MPSI

Highschool "Sainte-Croix Saint-Euverte"

Orleans, FR

2017-2019

Baccalaureate

Highschool "Maurice Genevoix"

Orleans, FR

2017

Scientific baccalaureate - option : SVT

Publications

Limit theorems for non linear (compound marked) Hawkes processes

B. Massat

arXiv preprint [arxiv:2601.18236](https://arxiv.org/abs/2601.18236)

Jan 2026

Quantification of limit theorems for Hawkes processes.

L. Coutin, B. Massat and A. Réveillac

To appear in *Bernoulli*

Mar 2025

Normal Approximation of Functionals of Point Processes: Application to Hawkes Processes.

L. Coutin, B. Massat and A. Réveillac

arXiv preprint [arXiv:2407.19806](https://arxiv.org/abs/2407.19806)

Aug 2024

Academic Service

PhD Student Representative in Mathematics

Docotral school MITT

2024-2026

- Representation of PhD students in academic and administrative committees
- Liaison between PhD students and the doctoral school

Work Experience

PhD Teaching Assistant

INSA Toulouse

- Delivered lectures in English and French
- Led tutorial sessions in English and French
- Supervised statistics lab sessions
- Evaluated students' work

Toulouse, FR
Sept 2023 – Present

Jury Member at TFJM²

ENS Paris Saclay and ULM

- Evaluation of written and oral presentations

Paris, FR
April 2026

Oral test examiner

Lycée Pierre de Fermat

- Prepared and conducted oral examinations in mathematics for students in French preparatory classes
- Provided personalized feedback and guidance to help improve their academic performance.
- Maintained fair and rigorous evaluation standards aligned with national expectations.

Toulouse, FR
Sept 2024 – Dec 2025

Jury Member at TFJM²

Lycée Bellevue

- Evaluation of written and oral presentations

Toulouse, FR
Sept 2023

Private Tutor

Private tutoring

- Tutoring for a student in CPGE ECG
- Tutoring for a final-year high school student

Orléans, FR
Sept 2019 – March 2020

University Projects

Master Project / Internship

University of Toulouse

- **Title :** Quantification of limit theorem for nearly unstable Hawkes processes
- **Supervisor :** L. Coutin and A. Réveillac
- Introduction to the Hawkes processes, to the Stein's method and to the Malliavin calculus

Toulouse, FR
2023

Master Project (M1)

University of Toulouse

- **Title :** Classical linear multistep formulas
- **Supervisor :** J-F Coulombel
- Study of different classical linear multistep formulas, study of the order, stability and convergence

Toulouse, FR
2021

Bachelor Project

University of Orleans

- **Title :** Disease transmission and asymptotic result on binary trees
- **Supervisors :** P. Debs and T. Haberkorn
- Study of a paper written by I. Benjamini and Y. Lima.
- Extension of some results

Orleans, FR
2020

Presentations

Seminar (Invited talk)

Humboldt-Universität of Berlin

Quantification of limit theorems for Hawkes processes

Berlin, DE
May, 2026

Regional session of the PhD Student Seminar (Invited Talk)

Université Paris Dauphine - PSL

Quantification of limit theorems for Hawkes processes

Paris, FR
March, 2026

Regional session of the PhD students' seminar (Contributed talk)

Montpellier

Quantification of limit theorems for Hawkes processes

Montpellier, FR
Nov, 2025

Young Probabilists and Statisticians Conference, 2025-JPS (Contributed talk)

Saint Pierre d'Oléron
Quantification of limit theorems for Hawkes processes

Oléron, FR
Sep, 2025

Hawkes Seminar (Invited talk)

University of Toulouse and Jussieu Campus by Zoom
Quantification of limit theorems for Hawkes processes

Toulouse/Paris, FR
Sep, 2025

5th Barcelona Summer School of Stochastic Analysis and Quantitative Finance 2025 (Contributed talk)

Centre de Recerca Matemàtica
Quantification of limit theorems for Hawkes processes

Barcelona, ES
Jul, 2025

Student Seminar (Invited talk)

University of Toulouse
Title : Asymptotic Properties in Trees: From Binary to Ternary Structures

Toulouse, FR
Feb, 2025

New Advances on Hawkes Processes for a Better Risk Quantification (Invited talk)

University of Padova, Department of Mathematics "Tullio Levi-Civita"
Normal Approximation of Functionals of Point Processes: Application to Hawkes Processes.

Padova, IT
Jan, 2025

Stochastic control and Games for Risk and Regulation (Contributed talk)

Golden Tulip Taj Sultan Hammamet
Normal Approximation of Functionals of Point Processes: Application to Hawkes Processes.

Hammamet, TN
Oct, 2024

Journée de rentrée du GMM (Invited talk)

INSA de Toulouse
Normal Approximation of Functionals of Point Processes: Application to Hawkes Processes.

Toulouse, FR
Oct, 2024

Journée des Probabilités (Contributed talk)

INSA de Toulouse
Normal Approximation of Functionals of Point Processes: Application to Hawkes Processes.

Toulouse, FR
Oct, 2024

Stochastic Process Under Constrains (Contributed talk)

Universität Bielefeld
Normal Approximation of Functionals of Point Processes: Application to Hawkes Processes.

Bielefeld, DE
Aug, 2024

France-Berkeley Conference on Cyber Risk (Invited talk)

Berkeley University of California
Normal Approximation of Functionals of Point Processes: Application to Hawkes Processes.

Berkeley, USA
Jun, 2024

Student Seminar (Invited talk)

University of Toulouse
Title : How much Christmas chocolate should you eat to end up with the best?

Toulouse, FR
Dec, 2023

Skills

Language English - Professional proficiency
Programming Python, Notebook, \LaTeX
Soft Skills Time Management, Teamwork, Documentation.

References available upon request.