

Maxence Petit

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Profile

I am currently a PhD student at Sorbonne University at the intersection of analysis and probability theory. More precisely, my researches deal with the Martin boundary of transient stochastic processes, particularly on reflected Brownian motions. Passionated about mathematics, my goal is to teach in French preparatory classes ("classes préparatoires"). Calm and attentive, I enjoy sharing my enthusiasm for mathematics and wish to contribute to the success of students.

Education and Competitive Exams

- 2023 – present **PhD**, *Study of transient stochastic processes and Martin boundary with an analytical approach*, Supervisors: Irina Kourkova and Sandro Franceschi, Sorbonne Université
- 2022 – 2023 **Master's Degree in Probability (Probabilités et Modèles Aléatoires)**, Sorbonne Université, Paris, Highest honours
- July 2022 **Mathematics Agrégation**, Rank: 29th
- July 2020 **Normalien Civil Servant Status (ENS Rennes)**, Master-level national entrance exam
- 2019 – 2022 **L3, M1 in Fundamental Mathematics and Agrégation Preparation**, École Normale Supérieure, Rennes, Highest honours each year
- 2016 – 2019 **Preparatory Classes MPSI – MP**, Châtelet high school, Douai, Highest honours
- June 2016 **Scientific Baccalaureate**, Sainte Claire high school, Lille, Highest honours

Teaching Experience

- 2024 – 2025 **L2 – Tutorials in numerical series and series of functions (36h)**, Sorbonne Université
- 2024 – 2025 **L3 – Tutorials in functional analysis (36h)**, Sorbonne Université
- 2023 – 2024 **L3 – Tutorials in measure theory (36h)**, Sorbonne Université
- 2023 – 2024 **L2 – Tutorials in numerical series and series of functions (36h)**, Sorbonne Université
- 2023 – 2024 **L3 – Tutorials in functional analysis (36h)**, Sorbonne Université
- 2022 – 2023 **60h of oral examinations in mathematics for MP2I students**, Paul Valéry high school, Paris
- May – June 2021 **6h of oral examinations in MP class**, Albert Châtelet high school, Douai

Publications and Preprints

- 2024 **Asymptotics for the Green's functions of a transient reflected Brownian motion in a wedge**, with Sandro Franceschi and Irina Kourkova, Queueing Systems, Special issue: Reflected Brownian Motion
- 2024 **Martin boundary of a degenerate Reflected Brownian Motion in a wedge**, (Preprint)

Conferences and Research Internships

- April 2025 **IMERA, Marseille**, Talk: Martin boundary of a degenerate reflected Brownian motion in a quadrant, "Un quart de siècle pour un quart de plan"

- March 2025 **University of Lille**, *Talk at the stochastic analysis working group*, On reflected Brownian motion: motivations, definitions, focus on the 2D case
- March 2025 **University of Lille**, *Talk at the doctoral seminar*, Searching for harmonic functions for the degenerate reflected Brownian motion
- August 2024 **Isaac Newton Institute – Churchill College, Cambridge**, Lightning session + poster: Reflected Brownian motion in a cone and Martin boundary, Stochastic Reflection
- May 2024 **Doctoral Seminar, Brest**, *Talk: Reflected Brownian motion in a cone and Martin boundary*
- November 2023 **Institut d'Études Scientifiques de Cargèse**, *Talk: Asymptotics of Green's functions for reflected Brownian motion in a cone*, "Elliptic Combinatorics and Beyond!"
- April 2023 **CNRS Center, Roscoff**, *Poster: Reflected Brownian motion, transient case and asymptotics of Green functions*, "40 Years of Reflected Brownian Motion and Related Topics"
- May – June 2021 **Mathematics Research Internship (remote)**, *UPV Universitat Politècnica de València*, Valencia, Supervised by Alfred Peris
- Study of linear dynamical systems
- May 2020 **Mathematics Research Internship (remote)**, *Paul Painlevé Laboratory*, Villeneuve d'Ascq, Supervised by Sophie Grivaux
- Study of uniformly distributed sequences modulo 1
 - Work on the characterization of random equidistributed sequences

Mathematics Outreach

- 2023 – 2025 **Outreach activities with Sorbonne Université**
- (June 10, 2025) Mathematics Rally, Research Discovery Workshop – Sophie Germain, Paris
 - (June 9, 2025) Mathematics Workshops – Lacordaire Public Elementary School, Paris
 - (June 14, 2025) Research Workshop at the "Salon Culture et Jeux Mathématiques", Paris
 - (October 18, 2024) Mathematics Workshops – Jacques Cabourg Elementary School, Vanves
 - (October 12, 2024) Mathematics Rally, Research Discovery Workshop – Jussieu, Paris
 - (October 8, 2024) Mathematics Workshops – Blomet Public Elementary School, Paris
 - (May 23 and 26, 2023) Research Workshop at the "Salon Culture et Jeux Mathématiques", Paris
- 2024 – 2025 **Jury Member – TFJM² Tournament**, (*French Tournament of Young Mathematicians*)
- (May 30, 2025) Final at ENSTA
 - (May 3–4, 2025) Regional round at ENS Paris-Saclay
 - (April 13–14, 2024) Regional round at ENSTA
- 2024 – 2025 **MATh.en.JEANS Supervision**
- (2025 – 2026) La Mare aux Saules Middle School, Coignières
 - (2024 – 2025) La Mare aux Saules Middle School, Coignières
 - (2024 – 2025) Pierre Corneille High School, La Celle-Saint-Cloud
- 2024 – 2025 **Association Regards de géomètre (Les Maths en Scène)**
- (June 12–13, 2025) "Salon Culture et Jeux Mathématiques": Hilbert curve fractal stand – Paris
 - (January 31, 2025) Workshop: discovery and construction of fractals – Le Cèdre Middle School, Le Vésinet (video: <https://podeduc.apps.education.fr/video/80757-intervention-maxence-petit-2025mp4/>)
 - (January 8, 2025) Workshop on cat-and-mouse games in graphs – Sorbier Elementary School, Paris
 - (April 29, 2024) Workshop on symmetry and perspective in the context of the Olympic/Paralympic Games – Le Cèdre Middle School, Le Vésinet
- February 2025 **Workshop – Supervision of a mathematics internship for 9th grade students**, *Research-style workshop*, Sophie Germain Campus, (February 13)

Languages, Skills, and Interests

- English Comfortable in reading, writing, and speaking
- Computer Skills Python and $\text{\LaTeX}$
- Hobbies Piano, clarinet, running, table tennis, swimming, cooking
- Driving License Obtained in 2016