Jason Garnier

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Dynamic and dedicated Master's student in Mathematics and Applications at Sorbonne Université, specializing in functional analysis, dynamical systems, spectral theory and operator theory. Experienced in conducting advanced research on topics like Schnirelman's theorem and Quantum Unique Ergodicity. Strong background in teaching, mathematical communication, and interdisciplinary studies combining philosophy and mathematics. Proven ability to tackle complex problems, publish research, and present findings, with a passion for advancing knowledge and contributing to academic communities.

EDUCATION

Sorbonne Université Paris, France
Master of Mathematics and Applications 2024-Present

- Research: Working with Professor Laurent Charles on Schnirelman's theorem.
- Relevant Courses: Functional Analysis, Dynamical Systems, Differential Geometry, Riemannian Surfaces, Number Theory, Differential Partial Equations.

Sorbonne Université Paris, France
Bachelor's Degree in Mathematics and Philosophy 2021-2024

- Graduated with Distinction and Highest Honours
- Research: "*Introduction to the Quantum Unique Ergodicity Conjecture*" with Pierre-Antoine Guihéneuf. Published one paper (CNRS).
- Key Courses: Advanced Mathematics, Algebra (Linear Algebra, Advanced Group Theory), Topology, Analysis (Lebesgue Integrals, Real Analysis, Multivariable Functions), Logic, Arithmetic, Probability, Programming in Python.

University of Florida Gainesville, USA
Exchange Year in Mathematics and Philosophy 2023-2024

- Chosen by TASSEP (Trans-Atlantic Science Student Exchange Program), an initiative of the European Commission, from among multiple European universities for a prestigious year abroad.
- Research: "*A Comprehensive Study on Best Approximate Minimization for Multi-Hankel Matrices using Noncommutative AAK Theory*" with Dr. Mike Jury.
- Research : "*Banach-Tarski paradox : a limit case of the logic of identity*" with Dr. Biro
- Key Courses: Topology I & II, Analysis I & II, Abstract Algebra I, Differential Equations.

Lycée du Parc Lyon, France
Preparatory Classes for Grandes Écoles (Mathematics and Physics) 2020-2021

- Research: "*Study of Magnetic Fields in Spatial Devices Against Solar Winds*."
- Key Courses: Advanced Algebra, Multivariable Functions, Galois Theory, Classical and Quantum Mechanics, Thermodynamics, Electromagnetism, Programming (Python).

Jean-Marc Boivin High School Chevigny-Saint-Sauveur, France
French Baccalaureate (Scientific Stream) 2017-2020

- Graduated with Distinction and Highest Honours (20.16/20)
- Research Project: "*Terraforming of Mars*."
- Class Representative for three years.

RESEARCH EXPERIENCE

Sorbonne Université Paris, France
Research Internship (Semi-classical analysis and QUE conjecture) 2025

- Conducting in-depth research on semi-classical limit and QUE conjecture under the supervision of Dr. Thibault Lefeuvre (CNRS Junior researcher (HDR) working at Sorbonne Université, former student of the Ecole polytechnique) this summer.

Sorbonne Université Paris, France
Research Internship (Schnirelman's Theorem) 2024-2025

- Conducting in-depth research on Schnirelman's theorem under the supervision of Dr. Laurent Charles (Senior lecturer in mathematics at Sorbonne University, within the IMJ-PRG (Complex Analysis and Geometry team)).
- This research will culminate in a paper and an oral defense in front of professors and specialists at the end of the year.

University of Florida Gainesville, USA
Research Internship (Noncommutative AAK Theory) 2023

- Worked on optimization techniques for Multi-Hankel Matrices in the AAK theory in collaboration with Dr. Mike Jury (Professor of Mathematics, Associate Chair and Graduate Coordinator, University of Florida).

Sorbonne Université Paris, France
Research Internship (Quantum Unique Ergodicity Conjecture) 2022

- Published one paper on the Quantum Unique Ergodicity (QUE) Conjecture on the journal "*Images des mathématiques - CNRS*" in collaboration with Titouan Mousset, under the supervision of Dr. Pierre-Antoine Guihéneuf (senior lecturer at the IMJ-PRG, Sorbonne University, in the Algebraic Analysis team)

TEACHING EXPERIENCE

Sorbonne Université Paris, France
Teaching Assistant (Lebesgue Integration) 2025

- Assisting second-year mathematics students with core topics in Lebesgue integration, including mesurable sets, Lebesgue mesure, Fubini theorem, dominated convergence theorem, convolution, $L^p(R)$ spaces, Fourier transformations..

Sorbonne Université Paris, France
Teaching Assistant (Linear and Bilinear Algebra) 2024-Present

- Assisting second-year mathematics students with core topics in linear and bilinear algebra, including matrix theory, vector spaces, quadratic forms, conics, euclidian geometry/spaces.

Sorbonne Université - DURESPE Paris, France
Private Tutor for Refugee Students (Sciences & Humanities) 2022-2023

- Provided tailored learning in sciences (physics, mathematics, chemistry) and philosophy for refugee students.

Sorbonne Université - DURESPE Paris, France
Collective Tutor for Refugee Students (Humanities). January 2022 – September 2022

- Tutored a class of 10-15 refugee students in subjects such as Philosophy, Economics, French, English, and Literature.
- Prepared philosophy lessons on topics like freedom, reality, and reason, and led discussions on contemporary moral and transcultural issues.
- Taught French language and culture to aid integration.

PROFESSIONAL EXPERIENCE

Science Experiences Museum Paris, France
Scientific Communicator 2021-2023

- Presented scientific concepts (quantum physics, mathematics, biology) to over 500 visitors monthly, ensuring an engaging experience for a diverse audience.
- Led recruitment efforts for scientific staff, interviewing and screening over 15 candidates, contributing to the successful onboarding of 5 new team members.
- Created a Van de Graaf generator for the museum.

Private Teacher in Biostatistics for Medical School Students 2021-2022

- Taught biostatistics for first year medical students.
- Prepared mock exams for the first-year medical entrance exam.

LEADERSHIP & ACTIVITIES

Aromaths (Math Research Seminar Organizer) Paris, France
Organizer/Communications Officer 2021-Present

- Aromaths is an organization of students and professors that organizes talks on cutting-edge mathematical research for undergraduate and graduate students, aiming to introduce them to the research world.
- Organized seminars featuring renowned speakers such as Isabelle Gallagher and Federica Fanoni.

Course contre la Faim Chevigny-Saint-Sauveur, France
Event Organizer 2019

- Spearheaded the organization of a charity race aimed at raising awareness and funds to combat global hunger.
- Coordinated logistics, including race routes, participant registration, and fundraising campaigns.

SAKADO Chevigny-Saint-Sauveur, France
Organizer (Humanitarian Project) 2018-2019

- Led a humanitarian project focused on providing essential supplies, including food and clothing, to homeless individuals in the local area.
- Organized partnerships with local supermarkets to collect donations and distribute them to those in need.

SEMINARS AND TALKS ATTENDED

- **Master Class Analyse - IRMA Strasbourg**
  Participant, January 2025

  - Attended an advanced seminar for Master's students with full accommodation provided.
  - Topics covered:
    - **Colin Guillarmou** (Université Paris-Saclay): Probabilistic construction of conformal field theories
    - **Maja Resman** (University of Zagreb): Introduction to local holomorphic dynamics in dimension 1
    - **Miguel L. Rodrigues** (Université de Rennes): Long-term dynamics of differential equations
    - **Yilin Wang** (IHES): Brownian loop measure on Riemann surfaces and length spectra

- **Mathématiques en mouvement - Institut Henri Poincaré (IHP), Paris**
  Participant, November 2024

  - Dynamic systems-focused conference organized by Pierre-Antoine Guihéneuf (IMJ-PRG, Sorbonne Université) and Jérôme Buzzi (Université Paris-Saclay).
  - Sponsored by the SMF and in partnership with the Mathematic Park seminar.
  - Featured speakers :
    - David Aubin (IMJ-PRG, SU)
    - Pierre Berger (IMJ-PRG, CNRS)
    - Anna Florio (Université Paris Dauphine-PSL)
    - Charles Fougeron (LAGA, USPN)
    - Sébastien Gouezel (Université de Rennes)
    - Elise Janvresse (Université de Picardie Jules Verne)
    - Frédéric Le Roux (IMJ-PRG, SU)

- **Nalini Anantharaman**: *Spectres des espaces hyperboliques aléatoires*, Collège de France, 2024
- **Federica Fanoni**: *Classification of Surfaces*, 2023
- **R. Flamary and G. Peyré** : "*The strategy of least effort for teaching machine*s", 2023
- **Isabelle Gallagher**: *Probabilities, Irreversibility, and Propagation of Chaos*, 2022
- **Nalini Anantharam***'s inaugural lecture of Collège de France "History of spectrums"*,2022
- **Nalini Anantharaman**: "*Ergodicity and thermalization of eigenfunctions*", 2022

TECHNICAL & LANGUAGE SKILLS

- **Programming**: Python, LaTeX,
- **Languages**: French (native), English (C1), German (A2-B1), Italian (A2), Latin
- **Additional Skills**: Attentive, adaptable, strong analytical skills, communication of complex ideas, fast learner, teamwork.