Rémi Bonnin

Curriculum vitae / October 2026

Doctoral researcher in probability

Aix-Marseille Université, Paris | École normale supérieure–PSL

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Research interests. Random tensors and random matrices; free probability; spectral theory of random graphs and hypergraphs.

Education

2024–present **PhD in Mathematics (in progress)**, Aix-Marseille Université.
Research at I2M, Marseille, and DMA, ENS–PSL, Paris.
Advisors: Charles Bordenave and Djalil Chafaï.

2020–2024 **Mathematics studies**, École normale supérieure (Ulm), Paris.
2023: Master's programme in Probability and Statistics (M2, MDA), Université Paris-Saclay.
2022: Mathematics (M1), ENS. 2021: Mathematics (L3), ENS.

2018–2020 **Preparatory classes (MPSI and MP*)**, Lycée Louis-le-Grand, Paris.
Intensive undergraduate programme in mathematics and physics.

Publications and preprints

Published articles

1. Rémi Bonnin. **Characterization of Gaussian Tensor Ensembles**.
SIGMA **22** (2026), Paper no. 031, 19 pp. arXiv:2505.02814.
2. Rémi Bonnin. **Universality of the Wigner-Gurau limit for random tensors**.
Electronic Journal of Probability **31** (2026), Paper no. 43, pp. 1–31.
arXiv:2404.14144.

Manuscripts in revision

3. Rémi Bonnin and Charles Bordenave. **Freeness for tensors**.
Preprint, 2024; revised 2026. arXiv:2407.18881.
In revision for The Annals of Probability.
4. Rémi Bonnin. **Tensorial free convolution, semicircular, free Poisson and R-transform in high order**.
Preprint, 2024; revised 2026. arXiv:2412.02572.
In revision for the Canadian Journal of Mathematics.

Preprint

5. Rémi Bonnin and Alexis Imbert. **Spectral aspects of random heavy-tailed tensors**.
Preprint, 2026. arXiv:2607.24695.

Research experience

Winter 2026 **Invited visitor**, Institute for Advanced Study, Princeton, USA.

Spring 2023 **Research internship**, Kyoto University, Japan.
Random tensors in high dimension. Supervisor: Charles Bordenave.

Spring 2022 **Research internship**, Instituto de Matemática Pura e Aplicada (IMPA), Rio de Janeiro.
Directed polymers for heavy-tailed random walks. Supervisor: Hubert Lacoin.

2021 **Undergraduate dissertation**, École normale supérieure, Paris.
Random trees. Supervisor: Anna Ben Hamou.

Work in progress

ℓ^p-spectrum of p-linear forms, with Charles Bordenave.
Injective norms of Wigner tensors, with Benjamin McKenna and Stéphane Dartois.

Talks

Forthcoming

Jan. 2027 **Spectral aspects of random tensors**.
Probability, Statistics and Applications Seminar, Université de Poitiers.

Nov. 2026 **Spectrum and invariant polynomials for (random) multilinear forms**.
Probability Seminar, Institut Fourier, Grenoble.

Selected past talks

Mar. 2026 **The spectrum of the infinite regular hypertree and applications**.
Tagadays, École normale supérieure, Paris.

Dec. 2025 **From Random Matrix Theory to Random Tensors**.
GDR MEGA, École polytechnique, Palaiseau.

Sept. 2025 **Random tensors: An analog of the Wigner Theorem**.
Probability and Statistics Seminar, Université de Lille.

Nov. 2024 **Free probability theory for random tensors**.
Probabilistic Operator Algebras Seminar, University of California, Berkeley (online).

Oct. 2024 **Freeness for tensors**.
Abu Dhabi Stochastics Seminar (online).

June 2024 **Universality of the Wigner-Gurau limit for random tensors**.
Tensor Journal Club (online).

May 2024 **Introduction to random tensors**.
Probability Seminar, Aix-Marseille Université.

Teaching and supervision

2025-2026 **Lectures on free probability**, Probability Research Group, ENS Paris.

2025–2026 **Undergraduate thesis co-supervision**, ENS Paris.
Montgomery's pair correlation conjecture, with Gaspard Gomez as co-supervisor.

2024–2025 **Teaching assistant**, Integration and Numerical Series, Aix-Marseille Université.
Course lecturer: Rémi Rhodes.

2024–2025 **Oral examiner**, mathematics and computer science undergraduate programmes, Aix-Marseille Université.

2024-2025 **Research workshop adviser**, Hippocampe programme, IRES, Aix-Marseille Université.

2021-2022 **Oral examiner**, second-year MP (mathematics–physics) preparatory classes, Lycée Michelet, Vanves.

Scientific service

Mar. 2027 **Organizer**, GDR MEGA Spring School, Villa Clythia, Fréjus (*forthcoming*).

Grant *BOUM* project awarded from the SMAI with Alexis Imbert: 1k€.

Refereeing *Annales de l'Institut Henri Poincaré*.

Languages and skills

Languages: French (native); English and Spanish (fluent); Portuguese (advanced).
Computational tools: Python, PyTorch, LaTeX.
Sports: Football (since 2006); Tennis (2009-2016); Triathlon (2016-2018); Chess (2005-2012).