

# Julien BRÉMONT

Postdoctoral Researcher – Collège de France

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 [Personal website](#)

## Since 2025 — Postdoctoral position, Collège de France (Paris)

Supervisor: Jean-François Joanny — active matter (active interfaces, collective dynamics).

## 2022–2025 — PhD in Statistical Physics, Sorbonne Université

PhD funded by an AMX fellowship (82,800 € over three years).

Laboratories: Jean Perrin and Laboratoire de Physique Théorique de la Matière Condensée.

Supervisors: Raphaël Voituriez and Olivier Bénichou.

Thesis: *Exploration and aging of non-Markovian stochastic processes*.

## 2021–2022 — Master 2 ICFP, ENS Ulm (Theoretical Physics)

Specialization: statistical mechanics, active matter, complex systems. Graduated with highest honors.

## 2018–2021 — École polytechnique (class of X2018)

## Teaching

- Tutorial sessions (L3) in mathematics and physics, including preparation for the international entrance examination of École polytechnique — Sun Yat-sen University (Zhuhai, China), September 2018 – May 2019.
- Oral examinations (“colles”) in mathematics for preparatory classes — Lycée Saint-Louis (Paris), September 2020 – September 2022.
- Tutorial sessions in Numerical Physics (L2, SPRINT track) — Sorbonne Université (Paris), 128 hours, January 2023 – May 2024.
- Occasional substitute teaching for the Master’s-level (M1) course in Statistical Physics (N. Sator) — Sorbonne Université (Paris).

## Scientific Organization

- Co-organizer — Workshop [Recent Progress on Self-Interacting Processes and Non-Reversible Monte Carlo](#), ENS Paris — scheduled for May 2026.
- Co-organizer — [Gustins Summer School](#), Aiguebelette — scheduled for August 2026.

## Scientific Communications

- [EURandom](#), Eindhoven (Poster) – Oct. 2022
- [Out-of-Equilibrium Physics](#), Sitges (Poster) – May 2023
- [Beg Rohu Summer School](#) (Poster) – June 2023
- [Physico-Chimie Curie](#) (Seminar) – Dec. 2023
- [Journées de Physique Statistique](#) (Short talk) – Jan. 2024
- [LPTMC, Sorbonne](#) (Seminar) – March 2024
- [Les Houches Summer School on Large Deviations](#) (Poster) – July 2024

- **Bad Honnef Physikzentrum** (Poster) – Jan. 2025
- **Journées de Physique Statistique** (Short talk) – Jan. 2025
- **Institut Henri Poincaré** (Seminar) – May 2025
- **Nordita** (Seminar) – July 2025 (invited)
- **QBio, LPENS** (Seminar) – Dec. 2025 (invited)
- **LOMA, Bordeaux** (Seminar) – Dec. 2025

## Publications (updated on my personal website)

- [1] J. Brémont, T. Jakuszeit, R. Voituriez, and O. Bénichou. *Aging dynamics of  $d$ -dimensional locally activated random walks*. **Physical Review E** **110**, 014604 (July 2024).
- [2] J. Brémont, O. Bénichou, and R. Voituriez. *Exact Propagators of One-Dimensional Self-Interacting Random Walks*. **Physical Review Letters** **133**, 157101 (October 2024). Article highlighted by Wolfram Research.
- [3] J. Brémont, L. Régnier, R. Voituriez, and O. Bénichou. *Persistence Exponents of Self-Interacting Random Walks*. **Physical Review Letters** **134**, 197103 (May 2025).
- [4] J. Brémont, L. Régnier, A. Barbier–Chebbah, O. Bénichou, and R. Voituriez. *Flips Reveal the Universal Impact of Memory on Random Explorations*. Accepted in **Nature Communications**.
- [5] J. Brémont. *Beyond Poisson: First-Passage Asymptotics of Renewal Shot Noise*. arXiv:2510.21670 (October 2025) — under review at *Physical Review Letters*.