

Julien BRÉMONT

Postdoctoral Researcher – Collège de France

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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 amounting to 82,800 euros over three years.

Laboratories: Jean Perrin Laboratory and Theoretical Physics of Condensed Matter Laboratory.

Advisors: Raphaël Voituriez and Olivier Bénichou.

Thesis: *Exploration and Aging of Non-Markovian Stochastic Processes*.

2021–2022 — Master's Degree (M2) ICFP, ENS Ulm (Theoretical Physics)

Specialization: statistical mechanics, active matter, complex systems. **Honors: Highest distinction.**

2018–2021 — École polytechnique (Class of X2018)

Teaching assignment (6 months) in mathematics and physics at Sun Yat-sen University (Zhuhai, China).

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

- [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*.