

Brieuc FRÉNAIS

Curriculum Vitae

Institut de recherche mathématique avancée

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Personal webpage

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Education

- Sep. 2021 – **PhD in Mathematics, IRMA (Strasbourg, France).**
present *Stochastic branching processes with selection*, under supervision of Jean Bérard and Lionel Lenôtre.
- 2020–2021 : **Master of Mathematics (Probability theory), Université de Strasbourg.**
- 2017–2021 : **Magistère de Mathématiques, École Normale Supérieure de Rennes, Université de Rennes I.**
Bachelor's degree in 2018, Master's degree in 2020. Agrégation de Mathématiques in 2020.
- 2015–2017 **CPGE MPSI-MP***, *Lycée Clemenceau (Nantes, France).*
- 2015 **Baccalauréat Scientifique, Lycée Clemenceau (Nantes, France).**

Research & Teaching Experience

IRMA, Université de Strasbourg

- Sep. 2021 – **PhD in Mathematics, Stochastic branching processes with selection.**
present Under supervision of Jean Bérard and Lionel Lenôtre.
- Sep. 2021 – **Teaching assignment.**
present Teaching classes from Bachelor's to Master's degree students (mainly on Probability).
- Sep. 2022 – **Co-organizer of PhD students' seminar.**
Sep. 2023
- Summer 2022 **Summer School CEMRACS 2022, CIRM (Marseille, France).**
One week summer school, five weeks working on a research project about a mean field control problem.
- ### Oral interrogations in CPGE
- 2020–2021 **Mathematics colles in MPSI & PCSI, Lycée Kléber (Strasbourg, France).**
- 2018 **Mathematics colles in MPSI, Lycée Clemenceau (Nantes, France).**
- ### Other experiences
- April 2021 – **Research internship, IRMA (Strasbourg, France).**
- August 2021 Working on the hydrodynamic limit of the N-branching Brownian motion, under supervision of Jean Bérard and Lionel Lenôtre.
- Summer 2019 **Research internship, Laboratoire Jean Leray (Nantes, France).**
Working on the connective constant of the hexagonal lattice, under supervision of Nicolas Pétrélis.
- Summer 2018 **Research internship, Laboratoire Jean Leray (Nantes, France).**
Working on resonance and periodicity phenomena for some dynamic systems, under supervision of Benoît Grébert.
- 2015–2017 **Private teacher for highschool students.**

Computer & linguistic skills

- Programming LaTeX, Python, Keras, Tensorflow, HTML/CSS
- Languages French (mother tongue), English (written, read, spoken), German (basic notions)

Publications

Submitted papers

- Nov. 2023 **The comonotone flow of a stochastically monotone Feller process on the real line**, *J. Bérard and B. Frénais*, (HAL).
- Nov. 2023 **Hydrodynamic limit of N-branching Markov processes**, *J. Bérard and B. Frénais*, (HAL).
- Feb. 2023 **Deep Learning for Mean Field Optimal Transport**, *S. Baudelet, B. Frénais, M. Laurière, A. Machtalay and Y. Zhu*, (HAL).

Talks

- March 2024 **Limite hydrodynamique de processus de Markov branchants avec sélection**, *Mathematics Seminar (IRIMAS, Mulhouse)*.
- Nov. 2023 **Limite hydrodynamique de processus de Markov branchants avec sélection**, *Stochastic calculus seminar (IRMA, Strasbourg)*.
- Nov. 2023 **Limite hydrodynamique d'un processus de branchement-sélection**, *PhD students' seminar (IRMA, Strasbourg)*.
- October 2023 **Méthodes de machine learning pour le problème de transport optimal en champ moyen**, *Workshop on Optimal Transport (IRIMAS, Mulhouse)*.
- Feb. 2023 **Méthodes de machine learning pour le problème de transport optimal en champ moyen**, *PhD students' seminar (IRMA, Strasbourg)*.
- Aug. 2022 **Numerical methods for mean field optimal transport**, *CEMRACS project presentation (Marseille)*.
- Nov. 2021 **Vitesse de croissance exponentielle des chemins auto-évitant sur le réseau hexagonal**, *PhD students' seminar (IRMA, Strasbourg)*.

Scientific mediation

- April 2023 **Rendez-vous des Jeunes Mathématiciennes et Informatiennes**, *IRMA, Université de Strasbourg*, Supervision of a mathematical activity.
- April 2023 **Tournoi Français des Jeunes Mathématiciennes et Mathématiciens**, *UFR de mathématique et d'informatique, Strasbourg*, Jury for the regional tournament.
- Feb. 2022 **Rendez-vous des Jeunes Mathématiciennes et Informatiennes**, *IRMA, Université de Strasbourg*, Supervision of a research workshop and a mathematical activity.