# Brieuc FRÉNAIS

*Curriculum Vitae*

*Mines Nancy (ENSMN)*
*92 Rue du Sergent Blandan*
*Nancy Cedex 54042, France*
*Office R419*
*Personal webpage*
✉ *brieuc.frenais@univ-lorraine.fr*


## Education

Sep. 2021 – Dec. 2024 **PhD in Mathematics**, *IRMA (Strasbourg, France)*.
*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

### Ecole des Mines, Nancy (ENSMN) & IECL, Université de Lorraine

Sep. 2024 – present **ATER (non-tenured teaching and research position)**.
Continuation of my PhD, as well as teaching to engineer-students on various topics.

### IRMA, Université de Strasbourg

Sep. 2021 – Dec. 2024 **PhD in Mathematics**, *Stochastic branching processes with selection*.
Under supervision of Jean Bérard and Lionel Lenôtre.

Sep. 2021 – June 2024 **Teaching assignement**.
Teaching classes from Bachelor's to Master's degree students (mainly on Probability).

Sep. 2022 – Sep. 2023 **Co-oragnizer of PhD students' seminar**.

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 – August 2021 **Research internship**, *IRMA (Strasbourg, France)*.
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, R, HTML/CSS

Languages French (mother tongue), English (written, read, spoken), German (basic notions)

## Publications

### Conference proceedings

Nov. 2024 **Deep Learning for Mean Field Optimal Transport**, *S. Baudelet, B. Frénais, M. Laurière, A. Machtalay and Y. Zhu*, In ***ESAIM: ProcS, Vol. 77*** *(HAL)(DOI)*.

### Submitted papers & pre-prints

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)*.

## Talks

July 2024 **Problème inverse du premier temps de passage et problème à frontière libre**, *MAThEOR Days 2024 (Sainte-Marie-aux-Mines)*.

June 2024 **Limite hydrodynamique d'un processus de branchement avec sélection**, *Journées de Probabilités 2024 (Bordeaux)*.

June 2024 **Limite hydrodynamique d'un processus de branchement avec sélection**, *Probability seminar (IRMAR, Rennes)*.

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-évitants sur le réseau hexagonal**, *PhD students' seminar (IRMA, Strasbourg)*.

## Scientific mediation

April 2023 **Rendez-vous des Jeunes Mathématiciennes et Informaticiennes**, *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 Informaticiennes**, *IRMA, Université de Strasbourg*, Supervision of a research workshop and a mathematical activity.