

# Virgile BRODU

*Temporary assistant (Teaching and Research) at Université de Lorraine, PhD in mathematics*

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Born on 11/14/1997 in Nancy



## Presentation

I recently defended my PhD at Université de Lorraine, mixing mathematics and theoretical biology. This multidisciplinary aspect requires transmission of knowledge to various audiences, mathematicians or not. This resonates with the pleasure I feel in teaching mathematics, and in playing a mediating role within the scientific community. I want to get involved in teaching and research projects where this aspect of transmission is essential.

My thesis focuses on the emergence of allometries in ecosystems. The idea is to design mathematical models for a better understanding of the nature of these allometric relationships, their significance, and their structuring role in food webs from an evolutionary perspective. I am currently working on natural extensions of my thesis work.

## Academic position

2025-2026 **Temporary assistant (Teaching and Research) in Mathematics**, *Université de Lorraine*, Mines de Nancy, ENSEM.

## Education

2022-2025 **PhD in Mathematics**, *Université de Lorraine*, Supervised by Nicolas CHAMPAGNAT, Coralie FRITSCH and Sylvain BILLIARD, **Teaching Label** awarded by the doctoral school IAEM.

PhD started on 09/01/2022, defended on 08/27/2025.

2017-2022 **Graduate studies**, *ENS de Lyon*.

**Diplôme de l'École Normale Supérieure de Lyon.**

**M2 Advanced Mathematics**, *Probability and statistics*.

**M2 FEADéP mathématiques**, *Teacher training*, Admitted to the "agrégation" exam, Rank : 3.

2014-2017 **Undergraduate studies**, *Lycée Descartes*, Tours.

## Teaching

2025-2026 **Lecture**, *ENSEM*, Graduate students, PDE/Distributions.

**Lecture**, *ENSEM*, Undergraduate students, Probability/statistics.

**Tutorial**, *ENSEM*, Undergraduate students, Engineering Mathematics.

**Tutorial**, *Mines Nancy*, Graduate students, Monte Carlo Methods and Applications to Random Processes.

**Tutorial**, *Mines Nancy*, Undergraduate students, Operations Research.

**Supervision of projects**, *Mines Nancy*, Graduate students, Supervision of several students throughout a semester on a research subject, resulting in a written report and a defense.

2023-2025 **Tutorial**, *Mines Nancy*, Undergraduate students, Numerical analysis, Statistics.

2023-2024 **Supervision of a research project**, *Mines Nancy*, Graduate student, Co-supervision of a student throughout the year on a research project, resulting in a written report and a defense.

2022-2023 **Tutorial**, *Mines Nancy*, Undergraduate students, Numerical Analysis, Probability theory.

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## Popularization of mathematics

2024 **Participation in the French Tournament of Young Mathematicians**, *As team supervisor*, First National Prize.

**Participation in the European Tournament of Enthusiastic Apprentice Mathematicians**, *As team supervisor*, Second European Prize.

2022-2024 **Maths club**, *Co-supervisor*, Lycée Jeanne d'Arc, Nancy.

2022 **Proofreading and co-writing of mathematics book chapters**, Available [here](#).

2018-2020 **Participation in the French Tournament of Young Mathematicians**, *As jury member*.

2014 **Participation in the French Tournament of Young Mathematicians**, *As highschool student*.

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## Publications

Jan 2025 **An individual-based stochastic model reveals strong constraints on allometric relationships with minimal metabolic and ecological assumptions**, *joint work with Sylvain Billiard, Nicolas Champagnat and Coralie Fritsch*, submitted to the Annals of Applied Probability, currently in review, available [here](#).

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## Talks

Oct 2025 **Rencontre scientifique de la chaire MMB**, Collège de France, Paris.

July 2025 **SPA 44th Conference**, Wrocław.

June 2025 **Séminaire de l'équipe Inria SIMBA**, Strasbourg.

May 2025 **Groupe de travail de l'équipe Probabilités et Statistiques**, Nancy.

April 2025 **Groupe de travail de l'équipe Inria SIMBA**, Nancy.

Jan 2025 **Séminaire des doctorants I2M**, Marseille.

**Séminaire d'équipe Evo-Eco-Paléo**, Lille.

Oct 2024 **Congrès des Jeunes Chercheurs en Mathématiques Appliquées**, Lyon.

July 2024 **Mathematical Models in Ecology and Evolution (MMEE) Conference**, Vienna.

June 2024 **Séminaire de l'équipe Inria SIMBA**, Thannenkirch.

**Journées Maths Bio Santé**, Nantes. Séance de poster.

April 2024 **Webinaire du GdT Morpheia**, Nancy.

**Séminaire des doctorants**, Lyon.

Jan 2024 **Séminaire MoVi**, Rennes.

Dec 2023 **Everevol Conference**, Grenoble. Poster session.

Nov 2023 **Conférence du GdR Branchement**, Toulouse. Séance de poster.

Oct 2023 **Colloque Jeunes Probabilistes et Statisticiens**, Oléron.

July 2023 **SPA 43rd Conference**, Lisbonne. Poster session.

June 2023 **Inform APS Conference**, Nancy. Poster session, Best Poster Prize.

April 2023 **MPDEE Conference**, CIRM, Marseille.

**Groupe de travail de l'équipe Probabilités et Statistiques**, Nancy.

**Séminaire de l'équipe Inria BIGS**, La Petite Pierre (Bas-Rhin).

Nov 2022 **Séminaire des doctorants**, Nancy.

April 2022 **Séminaire de l'équipe Inria BIGS**, La Petite Pierre (Bas-Rhin).

## Attended events without talking

Sept 2024 **Non-local branching processes Conference**, CIRM, Marseille.

Oct 2023 **Rencontre scientifique de la chaire MMB**, Muséum d'Histoire Naturelle, Paris.

June 2023 **École de printemps de la chaire MMB**, Aussois.

May 2023 **Masterclass Géométrie et Probabilités**, Nancy.

Feb 2023 **Rencontre scientifique de la chaire MMB**, siège de Veolia à Aubervilliers.

Nov 2022 **Journée thématique interdisciplinaire Maths-Bio**, Université Paris-Dauphine.

Oct 2022 **Journées Maths Bio Santé**, Besançon.

## Collective duties

2023-2026 **Vice-Secretary** of the Nancy University Choir (former Treasurer 2023-2024, then Président 2024-2025).

2023-2025 **Doctoral students representative** to the doctoral school Council, as well as to the CLED Council.

## Skills

### Languages

English **General professional competence.**  
Internship in Canada during Summer 2019  
**Cambridge Advanced English, C1 level.**

German **Basic skill.**

Russian **Basic skill.**

### Softwares

Python **General mastery of the programming language.**  
Regular academic use since 2017

LaTeX **General mastery of the programming language.**  
Careful writing of presentations and research documents

MATLAB **General mastery of the programming language.**  
Tutorial in Numerical Analysis in Mines Nancy

Additional

**Driving license**

**First Aider**, *Last formation in October 2023.*

**National Vocational Qualification**, *Bakery, 2022.*