Félix Laplante

Personal Information

Mail: felixlaplante.research@gmail.com
GitHub: https://github.com/felixlaplante0
Personal website: https://felixlaplante0.github.io
Nationalities: French & Canadian

Education

2024–2026 | **Master in Mathematics and AI, Orsay** — **Ranked 1st, 19.28/20 in M1, 18.21/20 in M2**
Joint coursework with the Probability and Statistics program, co-organized with Institut Polytechnique de Paris.

2021–2024 | **Bachelor in Mathematics and Applications, Évry** — **Ranked 1st, 19.42/20 in L3**

Research experience

April–September 2026 | **Research internship in Causality under Christophe Ambroise and Pierre Humbert, LaMME**
Study of identifiability in structural causal models, with a focus on non-Gaussian settings and causal discovery. Analysis of quantum causal inflation constraints and their implications for classical causal representations.

April–September 2025 | **Research internship on Joint Models under Estelle Kuhn, Christophe Ambroise, INRAE**
Development of estimation and prediction methods for joint models and extension to multi-state models. Derivation of uniform high-probability bounds for survival functions, implementation of the `jmstate` package, simulation studies and analysis on real-world data, and comparison with state-of-the-art methods.

April–June 2024 | **Research internship in Clustering under Christophe Ambroise, LaMME**
Design and implementation of a hierarchical topological clustering algorithm inspired by SVMs, *Spectral Bridges*. Partitioning into Voronoi regions, followed by grouping and automatic detection of boundaries and low-density regions using spectral methods on a local scale-invariant affinity matrix.

Awards / Grants

June 2024 | **Sophie Germain Excellence Scholarship**
Also selected for the the non-cumulative *MixtAI DATAIA* Excellence Scholarship.

Published papers / Preprints

May 2026 | **A Post-Processing Conformal Prediction Approach for Conditional Coverage via Pivotal Scores**
Félix Laplante
arXiv preprint https://arxiv.org/abs/2605.25852.

October 2025 | **A General Framework for Joint Multi-State Models**
Félix Laplante, Christophe Ambroise
arXiv preprint https://arxiv.org/abs/2510.07128 submitted to *Statistics and Computing*.

December 2024 | **Scalable Spectral Clustering Based on Vector Quantization**
Félix Laplante, Christophe Ambroise
Computo journal paper https://doi.org/10.57750/1gr8-bk61.

Talks / Posters

June 2026 | **A Post-Processing Conformal Prediction Approach for Conditional Coverage via Pivotal Scores**

Poster presentation at Ukrainian Mathematics Days (IHP) discussing the PIT-CP framework for conditional validity based on pivotal scores.

June 2026 — **A General Framework for Joint Multi-State Models**
Oral presentation at *Journées de la Statistique* (Clermont-Ferrand) introducing a unified framework for longitudinal biomarkers and multi-state event processes.

September 2025 — **Uniform High-Probability Bands for Survival Functions**
Poster presentation at *StatMathAppli* (Fréjus) deriving asymptotic uniform confidence bands under a joint modeling framework.

June 2025 — **Selecting the Number of Clusters in a Clustering Algorithm**
Oral presentation at *Journées de la Statistique* (Marseille) introducing a connectivity-based score for scalable spectral clustering.

Other attended events

March 2026	Workshop on Uncertainty Quantification and Causality (CAUSALI-T-AI, Jussieu)
October 2025	Winter School on Causality and Explainable AI (SCAI, Jussieu)
July 2025	Working group on Topological Data Analysis (LaMME)
June 2025	Working group on Causality (MIA Paris-Saclay)

Services

May 2026	Co-organizer of a Causality Working Group at LaMME with Pierre Humbert

Packages

Python

`jmstate`
Companion package to the *Multi-State Models* paper, built on `PyTorch`.

`pitcp`
Companion package to the *Pivotal Scores Conformal Prediction* paper, built on `zuko`.

`sbcluster`
Companion package to the *Scalable Spectral Clustering* paper.

`fastkmeanspp`
C++-backed implementation of K-means++, with massive speedups over `scikit-learn`.

`mimisbm`
Vectorized port of the corresponding `R` project, implementing a mixture of multilayer stochastic block models.

`uniformbands`
Asymptotic uniform confidence bands for survival functions.

Languages

French	Native
English	Native

Referees

Former teachers	Gilles Blanchard Christophe Giraud Christine Keribin

Interests & Activities

Hobbies	Photography, cycling, piano, hiking