Félix Laplante

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Research Interests

Causal discovery, optimal transport, conformal prediction, statistical fairness, differential privacy.

Education

Oct. 2026–Present
PhD in Causality, Université Paris-Saclay (LaMME)
Supervised by Christophe Ambroise, Gilles Blanchard and Pierre Humbert. Latent structure discovery and compatibility constraints in structural causal models.

Sept. 2024–Apr. 2026
Master in Mathematics and AI, Université Paris-Saclay
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.

Sept. 2021–Apr. 2024
Bachelor in Mathematics and Applications, Université d'Évry
Ranked 1st, 19.42/20 in L3.

Awards / Grants

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

Peer-Reviewed Publications

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

Preprints Under Review

July 2026
Contrast-Free ICA and Causal Inference via Wasserstein Distances to the Gaussian
Félix Laplante, *Christophe Ambroise, Pierre Humbert*
Preprint arXiv:2607.12832, under review at *JMLR*. Submitted for presentation at *ICSDS 2026*.

May 2026
A Post-Processing Conformal Prediction Approach for Conditional Coverage via Pivotal Scores
Félix Laplante
Preprint arXiv:2605.25852, under review at an international conference.

Oct. 2025
A General Framework for Joint Multi-State Models
Félix Laplante, *Christophe Ambroise*
Preprint arXiv:2510.07128, under review at *Statistics and Computing*.

Research Experience

Apr.–Sept. 2026
Research internship in Causality, LaMME
Supervised by Christophe Ambroise and Pierre Humbert. Study of identifiability and causal discovery in structural causal models beyond the Gaussian setting. Development of Wasserstein-based methods for causal discovery.

Apr.–Sept. 2025
Research internship on Joint Models, INRAE
Supervised by Estelle Kuhn and Christophe Ambroise. 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.

Apr.–June 2024
Research internship in Clustering, LaMME
Supervised by Christophe Ambroise. 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.

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.

Sept. 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.

Attended Events

Mar. 2026 Workshop on Uncertainty Quantification and Causality (CAUSALI-T-AI, Jussieu)

Oct. 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

Oct. 2026 Reviewer for *AISTATS 2027* (upcoming)

Sept. 2026 Organizer of LLM sessions at LaMME

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

Teaching

2026–2027 Teaching assistant (TDs), Université d'Évry — 60 hours/year expected

Software

Python **`jmstate`** — joint multi-state models
`pitcp` — conformal prediction with pivotal scores
`otica` — Wasserstein-based independent component analysis
`otlingam` — Wasserstein-based causal discovery
`sbcluster` — scalable spectral clustering
`fastkmeanspp` — C++-backed K-means++
`mimisbm` — multilayer stochastic block models
`uniformbands` — uniform bands for survival functions

Languages

Native French, English

Referees

PhD supervisors Christophe Ambroise, Gilles Blanchard, Pierre Humbert
Former teachers Christophe Giraud, Christine Keribin

Interests & Activities

Hobbies Photography, cycling, piano, hiking