



Universität Hamburg  
DER FORSCHUNG | DER LEHRE | DER BILDUNG

FAKULTÄT  
FÜR MATHEMATIK, INFORMATIK  
UND NATURWISSENSCHAFTEN  
Fachbereich Mathematik

# Kolloquium über Mathematische Statistik und Stochastische Prozesse

## Anne Sabourin

Professor at Université Paris Cité (MAP5, Statistics group)

**08.07.2025, 15:45 Uhr, Geom Hörsaal H5**

## Statistical learning viewpoints on extreme value analysis

### Abstract:

Recent years have seen significant theoretical and methodological developments at the intersection of Extreme Value Analysis (EVA), machine learning, and statistical learning. In this talk, I will discuss recently introduced frameworks for supervised learning with extreme covariates.

I will also highlight key shared proof techniques, particularly those concerning the deviations of empirical processes indexed by low-probability classes. Time permitting, I will explain the connexion with other ML settings outside EVA such as imbalanced classification. The presentation will be primarily based on the following works:

- Cléménçon, S., Jalalzai, H., Lhaut, S., Sabourin, A., & Segers, J. (2023). Concentration bounds for the empirical angular measure with statistical learning applications. *Bernoulli*, 29(4), 2797-2827.
- Huet, N., Cléménçon, S., & Sabourin, A. (2023). On regression in extreme regions. *arXiv preprint arXiv:2303.03084*.
- Aghbalou, A., Bertail, P., Portier, F., & Sabourin, A. (2024). Cross-validation on extreme regions. *Extremes*, 27(4), 505-555.
- Aghbalou, A., Portier, F., & Sabourin, A. (2024) Sharp error bounds for imbalanced classification: how many examples in the minority class? *Proceedings of AISTATS*.

### Anne Sabourin

[anne.sabourin@math.cnrs.fr](mailto:anne.sabourin@math.cnrs.fr)

<https://helios2.mi.parisdescartes.fr/~asabouri/>

### Kontakt:

*Prof. Dr. Johannes Lederer*

[johannes.lederer@uni-hamburg.de](mailto:johannes.lederer@uni-hamburg.de)

<http://www.math.uni-hamburg.de/home/lederer/>