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Humboldt-Universität zu Berlin

Course Announcement

In winter term 2024/2025 I offer the course

Statistics for Stochastic Processes

(The course language may be English or German, depending on the participants.)

Course:

Monday, 9.15 – 10.45 a.m., Rudower Chaussee 25, Room 3.006

Starting date: Monday, 21 October 2024

Class:

Monday, 11.00 – 11.45 a.m., Rudower Chaussee 25, Room 3.006

Starting date: Monday, 21 October 2024

Topics:
Long-time behaviour of stochastic processes (stationarity, ergodicity, mixing)
time series models (e.g., AR-, ARMA-, GARCH-processes)
Construction of estimators and their asymptotics, CLTs under dependence
Statistics for continuous-time processes
Drift and volatility estimation in stochastic differential equations / semi-martingales
Stochastic filtering methods
Inference problems in stochastic partial differential equations

Prerequisites:
Stochastik II (stochastic processes in discrete time and Brownian motion);
Optional, but recommended: Some knowledge in statistics and stochastic analysis.

Literature:
Aït-Sahalia, Y. and Jacod, J. *High-Frequency Financial Econometrics,* Princeton UP, 2014
Brockwell, P. and Davis, R. *Time Series: Theory and Methods*, Springer, 2006
Dacunha-Castelle D., Duflo, M. *Probability and Statistics II,* Springer, 1986
Kessler, M., Lindner, A., Sørensen, M. (ed.), *Statistical Methods for Stochastic Differential Equations,* CRC Press, 2012
Kutoyants, Y. *Statistical Inference for Ergodic Diffusion Processes*, Springer 2004