

NIKLAS DEXHEIMER

Drienerlolaan 5 · 7522-NB Enschede · The Netherlands

☎ +49 172 4863591 ✉ n.dexheimer@utwente.nl

Employment

Vrije Universiteit Amsterdam

Assistant Professor at the Department of Mathematics

Starting Sep. 2026

Amsterdam, The Netherlands

University of Twente

Postdoc at the Department of Applied Mathematics (DAMUT)

Sep. 2024 – Sep. 2026

Enschede, The Netherlands

Aarhus University

Postdoc at the Department of Mathematics

Oct. 2022 – Sep. 2024

Aarhus, Denmark

Christian-Albrechts-Universität zu Kiel

Postdoc at the Department of Mathematics

Jul. 2022 – Sep. 2022

Kiel, Germany

Education

Aarhus University

Ph.D. in Mathematics

Thesis: On statistical inference for selected multivariate stochastic processes of diffusion type

Advisor: Prof. Dr. Claudia Strauch

Jun. 2020 – Jun. 2022

Aarhus, Denmark

University of Mannheim

Ph.D. Student

Continued studies at Aarhus University

May 2019 – May 2020

Master of Science in Mathematics in Business and Economics

Thesis: Lévy processes and stochastic differential equations, Grade: 1.1 with distinction

Sep. 2016 – May 2019

Bachelor of Science in Mathematics in Business and Economics

Thesis: Tricks with martingales, Grade: 1.4

Sep. 2013 – July 2016

Mannheim, Germany

Focus Areas

Statistics for stochastic processes, statistical analysis of biologically plausible learning rules, nonparametric statistics, high-dimensional statistical inference, data-driven stochastic optimal control, machine learning

Publications

Peer-reviewed

Spike-timing-dependent Hebbian learning as noisy gradient descent

(with Sascha Gaudlitz and Johannes Schmidt-Hieber)

The Thirty-ninth Annual Conference on Neural Information Processing Systems. (2025)

Adaptive nonparametric drift estimation for multivariate jump diffusions under sup-norm risk

Stochastic Processes and their Applications 190 (2025), 104741, DOI: 10.1016/j.spa.2025.104741

On Lasso and Slope drift estimators for Lévy-driven Ornstein–Uhlenbeck processes

(with Claudia Strauch)

Bernoulli 30 (2024), no.1, pp. 88–116. DOI: 10.3150/22-bej1574

Estimating the characteristics of stochastic damping Hamiltonian systems from continuous observations

(with Claudia Strauch)

Stochastic Processes and their Applications 153 (2022), pp. 321–362. DOI: 10.1016/j.spa.2022.08.008

Adaptive invariant density estimation for continuous-time mixing Markov processes under sup-norm risk

(with Claudia Strauch and Lukas Trottnner)

Annales de l'Institut Henri Poincaré B (Probab. et Stat.) 58 (2022), no. 4, pp. 2029–2064.

DOI: 10.1214/21-aihp1235

Preprints

Generalization Bounds for Transformer-Based Next-Token Prediction in a Language Model(2026)

(with Insung Kong and Johannes Schmidt-Hieber)

submitted, arXiv: 2606.13280

Sparse Estimation for High-Dimensional Lévy-driven Ornstein–Uhlenbeck Processes from Discrete Observations (2026)

(with Natalia Jeszka)

submitted, arXiv: 2603.06176

Improving the Convergence Rates of Forward Gradient Descent with Repeated Sampling (2024)

(with Johannes Schmidt-Hieber)

major revision at *Information and Inference*, arXiv: 2411.17567.

Data-driven optimal stopping: A pure exploration analysis (2023)

(with Sören Christensen and Claudia Strauch)

in revision for resubmission, arXiv: 2312.05880

In Preparation

A spike-timing-dependent BCM model

(with Sascha Gaudlitz and Johannes Schmidt-Hieber)

Transfer learning for PCA

(with Anna Sepiarskaia)

Training of deep Heaviside networks

(with Yanis Bosch, Insung Kong and Johannes Schmidt-Hieber)

Awards

Award for best master’s degree in Mathematics, University of Mannheim

2019

Award for best bachelor’s thesis in Mathematics, University of Mannheim

2016

Teaching/Supervision

University of Twente

Supervision

Co-supervision of PhD student Yanis Bosch (with Johannes Schmidt-Hieber)

since Fall 2025

Co-supervision of PhD student Natalia Jeszka (with Johannes Schmidt-Hieber)

since Fall 2024

Aarhus University

Lecturing

Statistics for Stochastic Processes

Spring 2024

Supervision

Co-supervision of two master’s theses on data-driven optimal control

Spring 2023+2024

Tutoring

Introduction to Probability Theory and Statistics

Fall 2023

Risk

Spring 2023

Statistical Theory

Fall 2021

Introduction to Probability Theory and Statistics

Fall 2021

Mathematical Statistics

Spring 2021

Nonparametric Statistics

Spring 2021

Reinforcement Learning

Fall 2020

Introduction to Probability Theory and Statistics

Fall 2020

Calculus

Fall 2020

University of Mannheim

Tutoring

Stochastics I

Fall 2019

Probability Theory I

Spring 2019

Professional Activities

Presentations and Seminars

European Meeting of Statisticians 2026, Lugano (Switzerland)	August 2026
ISNPS 2026, Thessaloniki (Greece) <i>invited talk</i>	June 2026
Dynstoch 2026, Gothenburg (Sweden)	June 2026
Oberseminar Stochastische Prozesse und Ihre Anwendungen, Goethe-University Frankfurt <i>invited talk</i>	April 2026
Statistics Seminar, Heidelberg University <i>invited talk</i>	April 2026
MDS Seminar, University of Twente <i>invited talk</i>	December 2025
Stochastics Seminar, Stuttgart University <i>invited talk</i>	November 2025
65th ISI World Statistics Congress, Den Haag (The Netherlands) <i>invited talk</i>	October 2025
11th International Conference on Lévy Processes, Sofia (Bulgaria) <i>invited talk</i>	July 2025
Stochastics Seminar, Karlsruhe Institute of Technology <i>invited talk</i>	July 2025
Stochastics Seminar, Bielefeld University <i>invited talk</i>	June 2025
Workshop on the Statistical Theory of Neural Networks, Egmond aan Zee (The Netherlands) <i>invited talk</i>	May 2025
Frontiers of Statistics and Machine Learning (Junior Session), Oberwolfach (Germany) <i>invited talk</i>	March 2025
German Probability and Statistics Days 2025, Dresden (Germany)	March 2025
Seminar Department of Mathematics, Kiel University <i>invited talk</i>	Feb. 2025
Dynstoch 2024, Kiel (Germany)	May 2024
Statistics Seminar, Heidelberg University <i>invited talk</i>	December 2024
Stochastics Seminar, Aarhus University <i>invited talk</i>	March 2024
Workshop on Stochastic Analysis and Statistics, Tokyo (Japan) <i>invited talk</i>	Feb. 2024
Young Researchers in Stochastic Control and Games, Bielefeld (Germany) <i>invited talk</i>	Dec. 2023
43rd Conference on Stochastic Processes and their Applications, Lisbon (Portugal)	July 2023
European Meeting of Statisticians 2023, Warsaw (Poland)	July 2023
Workshop on Stochastic Dynamic Games and Related Topics, Kiel (Germany) <i>invited talk</i>	March 2023
German Probability and Statistics Days 2023, Essen (Germany)	March 2023
Seminar Department of Mathematics, Kiel University <i>invited talk</i>	July 2022
German Probability and Statistics Days 2021, Mannheim (Germany)	Sep. 2021
Stochastics Seminar, Aarhus University <i>invited talk</i>	Oct. 2020
Bernoulli-IMS One World Symposium 2020	Aug. 2020
Seminar Department of Mathematics, Kiel University <i>invited talk</i>	Feb. 2020
Stochastics Seminar, University of Heidelberg/Mannheim <i>invited talk</i>	Nov. 2019

Research Stays

Research stay with Richard Samworth at the University of Cambridge	Sep. 2025
Research visit at the Simons Institute for the Theory of Computing with Johannes Schmidt-Hieber, Berkeley (California)	Oct. 2024

Spring/Summer/Fall Schools

Hausdorff School: High-Dimensional Statistics, Bonn	July 2021
RTG1953 Fall School on Causal Inference and Stein's method, Mannheim	Nov. 2019
Satellite Summer School to the 9th International Conference on Lévy Processes, Athens	July 2019

Refereeing

Annals of Statistics, Journal of Statistical Planning and Inference, Bernoulli, Electronic Journal of Probability, Stochastic Processes and their Applications, Information and Inference, ALEA, Stochastics, Journal of Nonparametric Statistics, Statistical Inference for Stochastic Processes, Methodology and Computing in Applied Probability.

References

Johannes Schmidt-Hieber, Professor of Statistics, Department of Applied Mathematics (DAMUT), University of Twente

✉ a.j.schmidt-hieber@utwente.nl

Claudia Strauch, Professor for Statistics, Institute for Mathematics, Heidelberg University

✉ strauch@math.uni-heidelberg.de

Sören Christensen, Professor for Probability and Statistics, Department of Mathematics, Kiel University

✉ christensen@math.uni-kiel.de

Vita Date: June 18, 2026