## LUKAS TROTTNER

⚠ l.trottner@bham.ac.uk ∘ 🎓 lukastrottner@github.io
 ☒ B15 2TT · Birmingam · UK

## **EMPLOYMENT**

Assistant Professor, School of Mathematics, <b>University of Birmingham</b> Postdoc, Department of Mathematics, <b>Aarhus University</b>	since Sep. 2024	
	Sep. 2021 – Sep. 2024	
Education		
University of Mannheim		
PhD in Mathematics (Dr. rer. nat.)	2018 - 2021	
Thesis: Implications of Markov stability theory for nonparametric statistics, Markov additive fluctuations and		
data-driven stochastic control, Advisor: Prof. Dr. Leif Döring, grade: summa cum laude		
MSc in Mathematics in Business and Economics	2016 - 2018	
Thesis: Lamperti transformation for self-similar Markov processes, first class honors (1.0)		
BSc in Mathematics in Business and Economics	2012 - 2016	
Thesis: Verzweigungsprozesse: Aussterben einer Population, first class honors (1.1)		
California State University Fullerton		
Semester abroad	2014	

### RESEARCH INTERESTS

Statistics for stochastic processes, concentration of measure, transfer learning, MCMC, generative models, data-driven stochastic optimal control, high-dimensional statistical inference, Lévy processes and Markov additive processes

### **PUBLICATIONS**

## Peer-reviewed

Data-driven rules for multidimensional reflection problems (with Sören Christensen and Asbjørn Holk Thomsen) appears in SIAM/ASA Journal on Uncertainty Quantification, arXiv:2311.06639

Markov additive friendships (with Leif Döring and Alex Watson)

Transactions of the American Mathematical Society 377 (2024), no. 11, pp. 7699-7752, DOI:10.1090/tran/9266

The uniqueness of the Wiener–Hopf factorisation of Lévy processes and random walks

(with Leif Döring, Mladen Savov and Alex Watson)

Bulletin of the London Mathematical Society 56 (2024), no. 9, pp. 2951–2968, DOI:10.1112/blms.13112

Covariate shift in nonparametric regression with Markovian design

Information and Inference 13 (2024), no. 2, paper no. iaae011. DOI: 10.1093/imaiai/iaae011

Learning to reflect: A unifying approach for data-driven stochastic control strategies (with S. Christensen and C. Strauch)

Bernoulli 30 (2024), no. 3, pp. 2074-2101. DOI: 10.3150/23-BEJ1665

Stability of overshoots of Markov additive processes (with Leif Döring)

Annals of Applied Probability 33 (2023), no. 6B, pp. 5413-5458. DOI: 10.1214/23-AAP1951

Concentration analysis of multivariate elliptic diffusions (with Cathrine Aeckerle-Willems and Claudia Strauch)

Journal of Machine Learning Research 24 (2023), paper no. 106, pp. 1–38. ISSN: 1532-4435.

Adaptive invariant density estimation for continuous-time mixing Markov processes under sup-norm risk (with Niklas Dexheimer and Claudia Strauch)

Annales de l'Institut Henri Poincaré B (Probab. et Stat.) 58 (2022), no. 4, pp. 2029-2064. DOI: 10.1214/21-aihp1235

#### **Preprints**

Multivariate change estimation for a stochastic heat equation from local measurements (2024) with Anton Tiepner, arXiv:2409.15059

Change point estimation for a stochastic heat equation (2023)

with Markus Reiß and Claudia Strauch, arXiv:2307.10960

# Awards and Fellowships

Award for best master's thesis in Mathematics, University of Mannheim Award for best bachelor's degree in Mathematics, University of Mannheim Deutschlandstipendium, scholarship, University of Mannheim Catchring  Bayesin Statistics and Computation Foundations of Statistical Inference Foundations of PhD student Assignm Holk Thomsen (with Claudia Strauch) Foundations of PhD student Assignm Holk Thomsen (with Claudia Strauch) Foundations of PhD student Assignm Holk Thomsen (with Claudia Strauch) Foundations of PhD student Assignm Holk Thomsen (with Claudia Strauch) Foundations of PhD student Assignm Holk Thomsen (with Claudia Strauch) Foundations of PhD student Assignm Assistical Statistics Foundations of PhD student Assignm Holk Thomsen (with Claudia Strauch) Foundations of PhD student Assignm Assistical Statistics Foundations of PhD student Assistical Inference Foundations of PhD student Assistical I	AWARDS AND FELLOWSHIPS	
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Member of Research Training Group 1953 "Statistical Modeling of Complex Systems"  Research Assistant, Digital Economy, Leibniz Centre for European Economic Research  ROFESSIONAL ACTIVITIES  Presentations and Seminars  11th International Conference on Lévy Processes, Sofia, invited talk  Frontiers of Statistics and Machine Learning, Mathematisches Forschungsinstitut Oberwolfach, invited talk  Nov. 20: Statistics Seminar, University of Cambridge, invited talk  Data Science and Computational Statistics Seminar, University of Birmingham, invited talk  Nov. 20: 12th World Congress of the Bachelier Finance Society, Rio de Janeiro  Institute of Statistics and Operations Research Colloquium, University of Vienna, invited talk  April 20: Workshop on Stochastic Analysis and Statistics, Tokyo, invited talk  Feb. 20: NeurIPS 2023, New Orleans, poster  43rd Conference on Stochastic Processes and their Applications, Lisbon, two presentations  July 20: European Meeting of Statisticians 2023, Warsaw  July 20: Informs APS 2023, Nancy, invited talk  June 20:		
Member of Research Training Group 1953 "Statistical Modeling of Complex Systems"  Research Assistant, Digital Economy, Leibniz Centre for European Economic Research  2012 – 20  ROFESSIONAL ACTIVITIES  Presentations and Seminars  11 <sup>th</sup> International Conference on Lévy Processes, Sofia, invited talk  Frontiers of Statistics and Machine Learning, Mathematisches Forschungsinstitut Oberwolfach, invited talk  March 20  Statistics Seminar, University of Cambridge, invited talk  Nov. 20  Data Science and Computational Statistics Seminar, University of Birmingham, invited talk  Nov. 20  12 <sup>th</sup> World Congress of the Bachelier Finance Society, Rio de Janeiro  Institute of Statistics and Operations Research Colloquium, University of Vienna, invited talk  April 20  Workshop on Stochastic Analysis and Statistics, Tokyo, invited talk  Feb. 20  NeurIPS 2023, New Orleans, poster  43 <sup>rd</sup> Conference on Stochastic Processes and their Applications, Lisbon, two presentations  July 20  Informs APS 2023, Nancy, invited talk  June 20  Informs APS 2023, Nancy, invited talk	Mathematical Finance	Fall 20
Research Assistant, Digital Economy, Leibniz Centre for European Economic Research  2012 – 20  ROFESSIONAL ACTIVITIES  Presentations and Seminars  11 <sup>th</sup> International Conference on Lévy Processes, Sofia, invited talk  Frontiers of Statistics and Machine Learning, Mathematisches Forschungsinstitut Oberwolfach, invited talk  Statistics Seminar, University of Cambridge, invited talk  Nov. 20  Data Science and Computational Statistics Seminar, University of Birmingham, invited talk  Nov. 20  12 <sup>th</sup> World Congress of the Bachelier Finance Society, Rio de Janeiro  Institute of Statistics and Operations Research Colloquium, University of Vienna, invited talk  April 20  Workshop on Stochastic Analysis and Statistics, Tokyo, invited talk  Feb. 20  NeurIPS 2023, New Orleans, poster  Dec. 20  43 <sup>rd</sup> Conference on Stochastic Processes and their Applications, Lisbon, two presentations  July 20  Informs APS 2023, Nancy, invited talk  June 20  Informs APS 2023, Nancy, invited talk	Research Groups	
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Presentations and Seminars  11 <sup>th</sup> International Conference on Lévy Processes, Sofia, invited talk  Frontiers of Statistics and Machine Learning, Mathematisches Forschungsinstitut Oberwolfach, invited talk  Statistics Seminar, University of Cambridge, invited talk  Nov. 20 Data Science and Computational Statistics Seminar, University of Birmingham, invited talk  Nov. 20 12 <sup>th</sup> World Congress of the Bachelier Finance Society, Rio de Janeiro  Institute of Statistics and Operations Research Colloquium, University of Vienna, invited talk  Workshop on Stochastic Analysis and Statistics, Tokyo, invited talk  NeurIPS 2023, New Orleans, poster  Dec. 20 43 <sup>rd</sup> Conference on Stochastic Processes and their Applications, Lisbon, two presentations  July 20 Informs APS 2023, Nancy, invited talk  June 20 Informs APS 2023, Nancy, invited talk	Research Assistant, Digital Economy, Leibniz Centre for European Economic Research	2012 - 20
Presentations and Seminars  11 <sup>th</sup> International Conference on Lévy Processes, Sofia, invited talk  Frontiers of Statistics and Machine Learning, Mathematisches Forschungsinstitut Oberwolfach, invited talk  Statistics Seminar, University of Cambridge, invited talk  Nov. 20 Data Science and Computational Statistics Seminar, University of Birmingham, invited talk  Nov. 20 12 <sup>th</sup> World Congress of the Bachelier Finance Society, Rio de Janeiro  Institute of Statistics and Operations Research Colloquium, University of Vienna, invited talk  Workshop on Stochastic Analysis and Statistics, Tokyo, invited talk  NeurIPS 2023, New Orleans, poster  Dec. 20 43 <sup>rd</sup> Conference on Stochastic Processes and their Applications, Lisbon, two presentations  July 20 Informs APS 2023, Nancy, invited talk  June 20 Informs APS 2023, Nancy, invited talk	Professional Activities	
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	Stochastics Seminar, Aarhus University, <i>invited talk</i>	June 202 April 202

German Probability and Statistics Days 2023, Essen	March 2023
SIAM Conference on Computational Science and Engineering 2023, Amsterdam, invited talk	March 2023
Seminar Department of Mathematics, Kiel University, invited talk	Nov. 2022
Workshop on Statistics for Stochastic Processes, Luxembourg, invited talk	Sep. 2022
10 <sup>th</sup> International Conference on Lévy processes, Mannheim, <i>invited talk</i>	July 2022
International Symposium on Nonparametric Statistics, Paphos, invited talk	June 2022
Stochastics Seminar, Aarhus University, <i>invited talk</i>	Nov. 2021
German Probability and Statistics Days 2021, Mannheim	Sep. 2021
IRTG "Stochastic Analysis in Interaction", Berlin Mathematical School, <i>invited talk</i>	June 2021
Seminar Department of Mathematics, Kiel University, <i>invited talk</i>	Dec. 2020
Fifth Conference on Ambit Fields and Related Topics, Aarhus University, <i>invited talk</i>	Aug. 2020 (canceled)
Bernoulli-IMS One World Symposium 2020	Aug. 2020
German Probability and Statistics Days 2020, Dresden	March 2020 (canceled)
Mannheim meets Konstanz: Workshop in Statistics, University of Konstanz	Dec. 2019
GWOT '19: Stochastic Modeling of Complex Systems, University of Heidelberg/Mannheim	April 2019
Stochastics Seminar, University of Heidelberg/Mannheim	March 2019
Organization of scientific events	
MFO Mini-Workshop in Oberwolfach on "Statistical Challenges for Deep Generative Models",	Feb. 2025
DYNSTOCH Satellite Summer School, Kiel	May 2024
Contributed session "High-dimensional statistics for stochastic processes" at SPA 2023, Lisbon	July 2023
The Midsummer Lectures 2023	June 2023
Aarhus-Copenhagen Data Science Meeting 2022	Dec. 2022
Research visits	M1- 0000
University College London, host: Alex Watson	March 2023
Kiel University, host: Sören Christensen	Nov. 2022
Humboldt-Universität zu Berlin, host: Markus Reiß	Oct. 2022
Humboldt-Universität zu Berlin, host: Markus Reiß	Aug. 2022
Summer/Spring/Fall Schools	
SFB1294 Spring School on Data Assimilation, Döllnsee	March 2022
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, Annales de l'Institut Henri Poincaré (Probab. et Stat.), Electronic Journal of Probability, Electronic Journal of Statistics, Electronic Communications in Probability, Annales Henri Lebesgue, Stochastic Processes and their Applications, Annals of the Institute of Statistical Mathematics, Statistics, NeurIPS

Vita Date: 10 October 2024.