University of Münster
Orléans-Ring 10
48149 Münster, Germany

Lukas Niebel
Postdoctoral Researcher

+49 157 83632890
lukasniebel.github.io
niebel.math@gmail.com

LIST OF PUBLICATIONS

Fundamental solutions to Kolmogorov-Fokker-Planck equations with rough coefficients: Existence, uniqueness, upper estimates — 03/2024
with P. Auscher and C. Imbert, ArXiv/HAL, link to the preprint.

Weak solutions to Kolmogorov-Fokker-Planck equations: Regularity, existence and uniqueness — 03/2024
with P. Auscher and C. Imbert, ArXiv/HAL, link to the preprint.

A trajectorial interpretation of Moser's proof of the Harnack inequality — 05/2023
with Rico Zacher, to appear in Annali della Scuola Normale Superiore di Pisa - Classe di Scienze, link to the preprint.

On a kinetic Poincaré inequality and beyond — 12/2022
with Rico Zacher, ArXiv, link to the preprint.

Kinetic maximal L^p-regularity with temporal weights and application to quasilinear kinetic diffusion equations — 01/2022
with Rico Zacher, Journal of Differential Equations, 307, p. 29–82, link to the article.

Kinetic maximal $L_\mu^p(L^p)$-regularity for the fractional Kolmogorov equation with variable density — 01/2022
Nonlinear Analysis, 214, link to the article.

Kinetic maximal L^2-regularity for the (fractional) Kolmogorov equation — 04/2021
with Rico Zacher, Journal of Evolution Equations, 21, p. 3585–3612, link to the article.

EDUCATION

PhD Mathematics — 04/2019 — 06/2023
Ulm University

- Thesis: Analytic aspects of kinetic partial differential equations.
- Advisor: Prof. Dr Rico Zacher.
- Referees: Prof. Dr Cyril Imbert, Prof. Dr Hongjie Dong.
- Grade: Summa cum laude.

M.Sc. Mathematics — 03/2018 — 03/2019
Ulm University

- Thesis: Kolmogorov equations - Well-posedness, regularity, asymptotics and Harnack inequalities.
- Grade: 1.0 with distinction, awarded for the best graduation.

B.Sc. Mathematics — 10/2014 — 02/2018
Ulm University

- Thesis: Long-time behaviour of Markov chains by discrete functional inequalities and entropic Ricci curvature.
- Grade: 1.1 with distinction, awarded for the best graduation.

Abitur, *Joachim-Hahn-Gymnasium Blaubeuren* — 06/2014
Junior studies in mathematics, *Fernuniversität Hagen and PfH Göttingen* — 04/2013 — 09/2014

WORKING EXPERIENCE

Postdoctoral fellow — Since 04/2023
University of Münster

- Member of the group of Prof. Dr Christian Seis, where we will be studying vortex rings in ideal fluids.

Predoctoral fellow — 10/2022 — 03/2023
Ulm University

Teaching assistant — 03/2020 — 10/2022
University of Applied Sciences Neu-Ulm

Predoctoral fellow — 04/2019 — 10/2019
Ulm University

Scientific assistant — 10/2017 — 03/2019
Ulm University

Working student — 03/2015 — 03/2019
Daimler AG Research & Development

Student assistant — 10/2015 — 09/2017
Ulm University

Awards and Scholarships

Travel grant by the ProTrainU Mobility-Programme, Ulm University (1000 €)	06/2022
Master graduation award "Absolventenpreis M.Sc. Mathematik Uni Ulm 2020" for the best graduation (500 €)	04/2022
Graduate scholarship granted by the State of Baden-Wuerttemberg, Germany (52.200 €)	since 11/2019
Bachelor graduation award "Absolventenpreis B.Sc. Mathematik Uni Ulm 2018" for the best graduation (500 €)	05/2018
Ferry Porsche award and graduation award of the "Deutsche Physikalische Gesellschaft"	06/2014

Volunteer Work

Elected member of the council of PhD students at Ulm University — 02/2021 — 09/2022
- *Representing the interests of doctoral students in university committees, e.g. for the change of the PhD regulations. Chair of the council of PhD students (12/2021 — 09/2022).*

Elected member of the faculty council for Mathematics and Economic Sciences at Ulm University — 02/2021 — 09/2022

Member of the Academic Student Council Mathematics — 07/2017 — 03/2019
- *Member of the appointment committee for a professorship in "Stochastics".*

Other Scientific Activities

Research stay at Prof. Dr Pascal Auscher, Université Paris-Saclay, one week	11/2023
Research stay at Dr Tobias Ried, MPI Leipzig, one week	09/2023
Research stay at Prof. Dr Rico Zacher, Ulm University, one week	07/2023
Referee for Discrete and Continuous Dynamical Systems	05/2023
Research stay at Nicola De Nitti, FAU Erlangen, one week	03/2023
Research stay at Prof. Dr Christian Seis, WWU Münster, half a week	02/2023
Research stay at Prof. Dr Cyril Imbert, École normale supérieure Paris, half a week	02/2023
Supporting the organisation of the summer school "Horizons in non-linear PDEs" at Ulm University	09/2022
Referee for Journal of Evolution Equations	10/2022
Co-organisation of the seminar "Mathematisches Kolloquium" at Ulm University	since 03/2020

- *A series of talks at which researchers are invited to give a talk accessible to a broad audience.*

Organisation of a workshop for PhD students in mathematics at Ulm University — 06/2022
- *One weekend, 15 participants, funding (2500 €) acquired by the StuVe Ulm University.*

Supervision of a project for the workshop of the 25th Internetseminar — 03/2022 — 06/2022
- *Title: Kolmogorov equation in $L^p(\mathbb{R}^{2n})$ – Semigroup, spectrum, maximal regularity?*

Research stay at Prof. Dr Cyril Imbert, École normale supérieure Paris, one week	11/2021
Facilitator at the autumn school "COLLAB – Collaboratory for Global Sustainability 2021", Toronto/Ulm	10/2021
Supporting the organisation of the winter school "Grad. Flows and Var. Methods in PDEs" at Ulm University	11/2019

Talks and Posters

Poster — Mathematics Münster Mid-term Conference, *University of Münster*	03/2024
Talk — Séminaire Analyse Numérique et EDP, *Université Paris-Saclay*	11/2023
Talk — Seminar of the AG Analysis-Probability, *MPI Leipzig*	09/2023
Talk — "Real Analysis and Geometry", *CIRM Marseille*	06/2023
Talk — Willhelm Killing Colloquium, *WWU Münster*	04/2023
Talk — Chair Dynamics Control and Numerics, *FAU Erlangen*	03/2023
Talk — TULKKA, *KIT Karlsruhe*	02/2023
Poster — "Kinetic Theory", *CIRM Marseille*	11/2022
Talk & Poster — "Horizons in non-linear PDEs", *Ulm University*	09/2022
Poster — When Kinetic Theory meets Fluid Mechanics, *ETH Zürich*	07/2022
Poster — 11th Summer school on "Methods and Models of Kinetic Theory", *Pesaro*	06/2022
Poster — Frontiers in analysis of kinetic equations, *INI Cambridge*	01/2022
Talk — Nonlinear Evolution Equations and Approximations, *University of Duisburg-Essen*	07/2021
Talk — Oberseminar Analysis, *Ulm University*	03/2021
Poster — Winterschool on Analysis and Applied Mathematics, *University of Münster*	02/2021

Attended Conferences

Mathematics Münster Mid-term Conference, *University of Münster*	03/2024
Phase mixing, kinetic theory and fluid mechanics, *SRS Les Diablerets*	02/2024
Kinetic and hydrodynamic PDEs, *ETH Zürich*	01/2024
Workshop on Stability, Mixing and Fluid Dynamics, *University of Münster*	08/2023
Stability and dynamics in fluid mechanics and kinetic theory, *ICL London*	07/2023
New Directions in Compressible and Incompressible Flows, *MPI Leipzig*	06/2023
Real Analysis and Geometry, *CIRM Marseille*	06/2023
Kinetic Theory, *CIRM Marseille*	11/2022
Horizons in non-linear PDEs, *Ulm University*	09/2022
2nd IST Austria Summer School in Analysis and PDEs, *IST Austria*	07/2022
When Kinetic Theory meets Fluid Mechanics, *ETH Zürich*	07/2022
25th Internetseminar "Spectral Theory for Operators and Semigroups", *Agropoli*	06/2022
11th Summer school on "Methods and Models of Kinetic Theory", *Pesaro*	06/2022
Oxbridge PDE Conference, *University of Oxford*	05/2022
Frontiers in the Interplay Between Probability and Kinetic Theory, *ICMS Edinburgh*	04/2022
Kinetic Theory: old and new tutorial, *INI Cambridge*	01/2022
Frontiers in analysis of kinetic equations, *INI Cambridge*	01/2022
Deep Learning and partial differential equations, *INI Cambridge*	07/2021
Recent advances in Gradient Flows, Kinetic Theory, and Reaction-Diffusion Equations, *University of Vienna*	03/2021
Kinetic Equations: from Modeling Computation to Analysis, *CIRM Marseille*	03/2021
Winterschool on Analysis and Applied Mathematics, *University of Münster*	02/2021
Gradient flows and variational methods in PDEs, *Ulm University*	11/2019
PDE/Probability Interactions: Particle Systems, Hyperbolic Conservation Laws, *CIRM Marseille*	10/2019
Parabolic Evolution Equations, Harmonic Analysis And Spectral Theory, *Bad Herrenalb*	05/2019
Non Standard Diffusions in Fluids, Kinetic Equations and Probability, *CIRM Marseille*	12/2018
Evolutionsgleichungen in Ulm, *Ulm University*	04/2018

Teaching Experience

Teaching assistant, *University of Münster*	Winter 2023
Analysis and Numerics of Differential Equations	
Teaching assistant, *Ulm University*	Winter 2022
Analysis 1, Local coordinator of the 26th ISEM	
Teaching assistant, *University of Applied Sciences Neu-Ulm*	Summer 2022
Business Mathematics and Statistics 1	
Teaching assistant, *University of Applied Sciences Neu-Ulm*	Winter 2021
Business Mathematics and Statistics 2 - Regression Models/Statistical Testing	
Teaching assistant, *University of Applied Sciences Neu-Ulm*	Summer 2021
Business Mathematics and Statistics 1	
Teaching assistant, *Ulm University*	Winter 2020
Dynamical systems	
Teaching assistant, *University of Applied Sciences Neu-Ulm*	Winter 2020
Business Mathematics and Statistics 2 - Regression Models/Statistical Testing	
Teaching assistant, *University of Applied Sciences Neu-Ulm*	Summer 2020
Business Mathematics and Statistics 1	
Teaching assistant, *Ulm University*	Winter 2019
Organisation of the Trainingscamp, a yearly event for first-year students to refresh their mathematical skills.	
Teaching assistant, *Ulm University*	Summer 2019
Analysis 1	
Teaching assistant, *Ulm University*	Winter 2018
Dynamical systems	
Teaching assistant, *Ulm University*	Summer 2018
Elements of functional analysis	
Teaching assistant, *Ulm University*	Winter 2017
Analysis 2	
Tutor, *Ulm University*	Winter 2015 — Summer 2017
Mathlabs for Analysis 1 & Analysis 2	