

Lukas Niebel

Curriculum Vitae

Postdoctoral researcher
University of Münster
✉ lukas.niebel@uni-muenster.de
🌐 lukasniebel.github.io

Education

- 04/2019–06/2023 **PhD Mathematics**, *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, awarded by the Ulmer Universitätsgesellschaft.
- 03/2018–03/2019 **M.Sc. Mathematics**, *Ulm University*
Thesis: Kolmogorov equations – Well-posedness, regularity, asymptotics and Harnack inequalities.
Grade: 1.0 with distinction, awarded for the best graduation.
- 10/2014–02/2018 **B.Sc. Mathematics**, *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.
- 04/2013–09/2014 **Junior studies in mathematics**, *Fernuniversität Hagen and Pfh Göttingen*
06/2014 **Abitur**, *Joachim-Hahn-Gymnasium Blaubeuren*

Employment History

- 04/2023–present **Postdoctoral researcher in the group of Prof. Dr Christian Seis**, *University of Münster*
- 10/2022–03/2023 **Predoctoral researcher**, *Ulm University*
- 03/2020–10/2022 **Teaching assistant**, *University of Applied Sciences Neu-Ulm*
- 10/2015–10/2019 **Teaching assistant**, *Ulm University*
- 03/2015–03/2019 **Research assistant (working student)**, *Daimler AG Research & Development Ulm*

Research

Preprints

- [1] **Critical trajectories in kinetic geometry** in collaboration with Helge Dietert, Clément Mouhot, and Rico Zacher. [arXiv:2508.14868](https://arxiv.org/abs/2508.14868), 2025.
- [2] **Steady bubbles and drops in inviscid fluids** in collaboration with David Meyer and Christian Seis. [arXiv:2503.05503](https://arxiv.org/abs/2503.05503). To appear in *Calc. Var. PDE*, 2025.
- [3] **Weak solutions to Kolmogorov–Fokker–Planck equations: regularity, existence and uniqueness** in collaboration with Pascal Auscher and Cyril Imbert. [arXiv:2403.17464](https://arxiv.org/abs/2403.17464), 2024.

Publications

- [4] **A trajectorial interpretation of Moser’s proof of the Harnack inequality** in collaboration with Rico Zacher. *Ann. Sc. Norm. Super. Pisa Cl. Sci. (5)*, 26(2):605–617, 2025.
- [5] **Fundamental solutions to Kolmogorov–Fokker–Planck equations with rough coefficients: existence, uniqueness, upper estimates** in collaboration with Pascal Auscher and Cyril Imbert. *SIAM J. Math. Anal.*, 57(2):2114–2137, 2025.
- [6] **On a kinetic Poincaré inequality and beyond** in collaboration with Rico Zacher. *J. Funct. Anal.*, 289(1):Paper No. 110899, 18, 2025.
- [7] **Kinetic maximal L^p -regularity with temporal weights and application to quasilinear kinetic diffusion equations** in collaboration with Rico Zacher. *J. Differential Equations*, 307:29–82, 2022.
- [8] **Kinetic maximal $L^p_\mu(L^p)$ -regularity for the fractional Kolmogorov equation with variable density.** *Nonlinear Anal.*, 214:Paper No. 112517, 21, 2022.
- [9] **Kinetic maximal L^2 -regularity for the (fractional) Kolmogorov equation** in collaboration with Rico Zacher. *J. Evol. Equ.*, 21(3):3585–3612, 2021.

Teaching Experience

University of Münster

- 2023–2025 Teaching assistant for *Partial Differential Equations* (1 semester) and *Analysis and Numerics of Differential Equations* (1 semester).
- Winter 2024 Supervision of a student seminar on *De Giorgi–Nash–Moser Theory*.
- 2024–2025 Refereeing of a Bachelor's thesis and co-supervision/refereeing of the Master's thesis of Yuanjiang Han (now PhD student with Christian Seis).

University of Applied Sciences Neu-Ulm

- 2020–2022 Teaching assistant for *Business Mathematics and Statistics I* (3 semesters) and *Business Mathematics and Statistics II – Regression Models / Statistical Testing* (2 semesters).

Ulm University

- 2017–2022 Teaching assistant for *Analysis I* (2 semesters), *Analysis II* (1 semester), *Dynamical Systems* (2 semesters), and *Elements of Functional Analysis* (1 semester). Local coordinator of the 26th Internet-seminar (Winter 2022).
- Winter 2019 Organisation of the "Trainingscamp", a yearly event for first-year students to refresh their mathematical skills.
- 2015–2017 Tutor for the Mathlabs in *Analysis I* and *Analysis II*.

Awards and Scholarships

- 02/2025 PhD thesis award "Promotionspreis der Ulmer Universitätsgesellschaft" (1500 EUR).
- 06/2022 Travel grant by the ProTrainU Mobility-Programme, Ulm University (1000 EUR).
- 04/2022 Master graduation award "Absolventenpreis M.Sc. Mathematik Uni Ulm 2020" for the best graduation (500 EUR).
- 11/2019 Graduate scholarship granted by the State of Baden-Wuerttemberg, Germany (52,200 EUR).
- 05/2018 Bachelor graduation award "Absolventenpreis B.Sc. Mathematik Uni Ulm 2018" for the best graduation (500 EUR).
- 06/2014 Ferry Porsche award and graduation award of the Deutsche Physikalische Gesellschaft.

Talks and Posters

- 10/2025 Talk – Noko25 43rd Northern German Colloquium on Applied Analysis and Numerical Mathematics, Humboldt-Universität zu Berlin.
- 10/2025 Talk – Oberseminar Angewandte Analysis, Dortmund University.
- 09/2025 Poster – Hyperbolic Problems in Nürnberg 2025, FAU Erlangen.
- 05/2025 Talk – Seminar Nichtlineare Partielle Differentialgleichungen, KIT Karlsruhe.
- 03/2025 Poster – Kinetic equations and turbulence, CentraleSupélec and Collège de France.
- 10/2024 Talk – Münster–Imperial Day in PDE, University of Münster.
- 09/2024 Talk – Oberseminar Analysis, University of Bonn.
- 03/2024 Poster – Mathematics Münster Mid-term Conference, University of Münster.
- 11/2023 Talk – Séminaire Analyse Numérique et EDP, Université Paris-Saclay.
- 09/2023 Talk – Seminar of the AG Analysis-Probability, MPI Leipzig.
- 06/2023 Talk – Real Analysis and Geometry, CIRM Marseille.
- 04/2023 Talk – Wilhelm Killing Colloquium, University of Münster.
- 03/2023 Talk – Chair Dynamics Control and Numerics, FAU Erlangen.
- 02/2023 Talk – TULKKA, KIT Karlsruhe.
- 11/2022 Poster – Kinetic Theory, CIRM Marseille.
- 09/2022 Talk & Poster – Horizons in non-linear PDEs, Ulm University.
- 07/2022 Poster – When Kinetic Theory meets Fluid Mechanics, ETH Zürich.
- 06/2022 Poster – 11th Summer school on "Methods and Models of Kinetic Theory", Pesaro.
- 01/2022 Poster – Frontiers in analysis of kinetic equations, INI Cambridge.
- 07/2021 Talk – Nonlinear Evolution Equations and Approximations, University of Duisburg-Essen.

- 03/2021 Talk – Oberseminar Analysis, Ulm University.
 02/2021 Poster – Winterschool on Analysis and Applied Mathematics, University of Münster.

Research Stays

- 2023–2025 Multiple visits to Pascal Auscher (Université Paris-Saclay), totaling 7 weeks.
 2023–2025 Multiple visits to Rico Zacher (Ulm University), totaling 5 weeks.
 2021–2025 Three visits to Cyril Imbert (École normale supérieure, Paris), totaling two weeks.
 05/2025 Visit to Björn de Rijk (KIT Karlsruhe), one week.
 09/2023 Visit to Tobias Ried (MPI Leipzig), one week.
 03/2023 Visit to Nicola De Nitti (FAU Erlangen), one week.
 02/2023 Visit to Christian Seis (University of Münster), half a week.

Other Scientific Activities

- 10/2024 Supporting the organisation of the Münster–Imperial Day in PDE, University of Münster.
 09/2022 Supporting the organisation of the summer school “Horizons in non-linear PDEs” at Ulm University.
 03/2020 Co-organisation of the seminar “Mathematisches Kolloquium” at Ulm University for six semesters.
 06/2022 Organisation of a workshop for PhD students in mathematics at Ulm University. One weekend, 15 participants, funding (2500 EUR) acquired by the StuVe Ulm University.
 03/2022 Supervision of a three-month project for the workshop of the 25th Internetseminar. Title: Kolmogorov equation in $L^p(\mathbb{R}^{2n})$ – Semigroup, spectrum, maximal regularity?
 10/2021 Facilitator at the autumn school “COLLAB – Collaboratory for Global Sustainability 2021”, Toronto/Ulm.
 11/2019 Supporting the organisation of the winter school “Grad. Flows and Var. Methods in PDEs” at Ulm University.
 Attended over 30 international workshops and conferences, including CIRM Marseille, INI Cambridge, ETH Zürich, and Oxford.
 Refereeing activity for *Communications in Partial Differential Equations*, *Annales scientifiques de l'École normale supérieure*, *Discrete and Continuous Dynamical Systems*, *European Journal of Mathematics*, and *Journal of Evolution Equations*.

Academic Volunteer Work

- 02/2021–09/2022 **Elected member of the council of PhD students, Ulm University, Ulm**
 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).
 02/2021–09/2022 **Elected member of the faculty council for Mathematics and Economic Sciences, Ulm University, Ulm**
 07/2017–03/2019 **Member of the Student Council Mathematics, Ulm University, Ulm**
 Member of the appointment committee for a professorship in “Stochastics”.