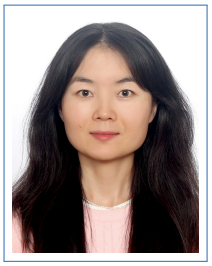

Chengcheng Ling

Curriculum Vitae

Personal Information

28.02.1994 Born in Gansu Province, China

Experience and Education

2023.10–Current **Junior Professor (W1)**, *Augsburg University*, Augsburg, Germany
Nonlinear Analysis (Institut für Mathematik)

2022.10–2023.09 **Postdoc**, *Technische Universität Wien*, Vienna, Austria
In the group of Asst. Prof. Dr. Máté Gerencsér

2020.12–2022.09 **Postdoc**, *Technische Universität Berlin*, Berlin, Germany
In the group of Prof. Dr. Michael Scheutzow

2020.01–2020.11 **Research assistant**, *Bielefeld University*, Bielefeld, Germany
In the group of Prof. Dr. Michael Röckner

2016.10–2019.12 **PhD of Probability Theory**, *Bielefeld University*, Bielefeld, Germany
Supervisor: Prof. Dr. Michael Röckner

2015.09–2020.07 **PhD of Probability Theory and Statistics**, *Beijing Jiaotong University*, Beijing, China
Supervisor: Prof. Dr. Zhiming Ma

2011.09–2015.07 **Bachelor of Information and Computing Science**, *Beijing Jiaotong University*, Beijing, China, *GPA – 3.98*
Acquiring merit student and scholarship several times

Exchange study

2018 **Seoul National University, Science of Mathematics faculty**
01.03–30.08 Prof. Dr. Gerald Trutnau (Seoul, South Korea)

Research visit

2022 **Technische Universität Berlin**
20.11–26.11 Prof. Michael Scheutzow (Berlin, Germany)

Bachelor Thesis

– *Universitätsstraße 14, 86159 Augsburg, Germany*
chengcheng.ling@uni-a.de

Title	*Laws of Large numbers under Sublinear Expectations*
Supervisor	Prof. Dr. Xiangxchan Zhu
Description	This thesis studies laws of large numbers under the framework of sublinear expectation introduced by Peng Shige. The main results in this paper include weak law of large numbers and convergence rate laws of large numbers under sublinear expectations.

Phd Thesis

Title	*Stochastic Differential Equations with Singular Drifts and Multiplicative Noises*
Supervisor	Prof. Dr. Michael Röckner
Link	https://pub.uni-bielefeld.de/download/2941478/2941479/thesis.pdf

Teaching

-Courses

2024-2025 Winter semester	**Stochastic Analysis**, Lecture for master students in University of Augsburg
2024 Summer semester	**Stochastic differential equations**, Lecture for master students in University of Augsburg

-Tutorial

2023 Summer semester	**Numerics of PDEs**, Lecture for master student in TU Wien, given by Asst. Prof. Dr. Máté Gerencsér
2019 Summer semester	**Probability theory III-Stochastic differential equations**, Lecture for master student in Bielefeld University, given by Dr. Michael Hinz
2017 Summer semester	**Introduction to Stochastic Partial Differential Equations**, Lecture for master student in Bielefeld University, given by Prof. Dr. Michael Röckner

Talks

-2024

2024 03.11-08.11	**Directions in Rough Analysis(MFO Oberwolfach, Germany)**
2024 22.09-28.09	**Numerical Analysis and Applications of SDEs (NAASDE)** Quantitative approximation of stochastic kinetic equations: from discrete to continuum (Banach Center, Bedlewo, Poland)
2024 09.09-13.09	**2024 Open German-Japanese Conference on Stochastic Analysis and Applications** Path-by-path well-posedness and numerics of singular SDEs (Hokkaido University, Japan)
2024 02.08	**Probability and Stochastic Analysis Seminar** Random dynamical systems induced by singular SDEs (South China University of Technology, China)
2024 12.07-19.07	**2024 International Conference on Scientific Computation and Differential Equations** Numerics on regualarization by noise (National University of Singapore, Singapore)

2024 **One-parameter Semigroups of Operators 2024: Stochastics and Dynamics**
3.06-07.06 Numerics on regualarization by noise (Université Laval, Canada) (Online)

2024 3.05 **Augsburg-Munich Probability Colloquium**
Regularization by noise and approximations of kinetic SDEs (Augsburg, Germany)

-2023

2023 **Mean field interactions with singular kernels and their approximations**
18.12-22.12 Path-by-path well-posedness and numerics of singular SDEs (Institut Henri Poincaré, Paris, France)

2023 14.12 **Augsburg-Munich Probability Colloquium**
Regularization by noise (Augsburg, Germany)

2023 28.11 **Stochastic Analysis Seminar**
Regularization by noise (Imperial College London, UK)

2023 24.10 **Probability Seminar**
Regularization by noise (Shanghai, China) (online)

2023 17.10 **Applied stochastics Group Seminar**
Regularization by noise (Hagen, Germany) (online)

2023 **Workshop: SDEs with Low-regularity Coefficients: Theory and Numerics**
21.09-22.09 Numerical analysis for singular SDEs-Milstein scheme (Torino, Italy)

2023 **The SPDEvent 2023**
17.07-19.07 Path-by-path uniqueness for stochastic differential equations under Krylov-Röckner condition (Bielefeld, Germany)

2023 **17th Berlin-Oxford meeting**
27.04-29.04 Numerical analysis for singular SDEs (Berlin, Germany)

2023 **Seminar**
19.04-21.04 Regularization by noise on singular SDEs (Augsburg, Germany)

2023 **Tenth Bielefeld-SNU joint Workshop in Mathematics 2023**
21.02-24.02 Numerical analysis on regularization by noise for singular SDEs (Bielefeld, Germany)

-2022

2022 07.12 **Webinar on stochastic analysis 2022**
Regularization by Noise for Singular SDEs–PDEs and Rough Path Theory (Beijing, China) (online)

2022 **Workshop: The SPDEvent**
07.09-09.09 Martingale problem for rough stochastic differential equations (Bielefeld, Germany)

2022 **15th International Conference on Monte Carlo and Quasi-Monte Carlo**
17.07-22.07 **Methods in Scientific Computing**
Taming singular SDEs: A numerical method (Linz, Austria)

2022 **42nd Conference of Stochastic Processes and their Applications (SPA) 2022**
27.06-01.07 Taming singular SDEs: A numerical method (Wuhan, China)(online)

2022 **2022 IMS Annual Meeting in Probability and Statistics**
27.06-30.06 Taming singular SDEs: A numerical method (London, UK)

2022 **Stochastic Seminar**
21.06-23.06 Regularization by noise-PDEs and Rough path theory (Padernborn, Germany)

2022 **CSH WORKSHOP: "Stochastic Dynamics for Complex Systems"**
01.06-03.06 Random dynamical systems generated by the solution to singular SDEs (Vienna, Austria)

2022 04.05 **IRS Seminar**
Singular SDEs and PDEs (WIAS, Germany)

2022 17.02 **Workshop: Regularization by Noise: Theoretical Foundations, Numerical Methods and Applications**
Regularization by noise: a numerical (Wong-Zakai approximation) viewpoint (Oberwolfach, Germany)

-2021

2021 01.12 **Seminar: Stochastic Analysis**
Taming singular SDEs: A numerical method (Tianjin University, China)(online)

2021 06.10 **Workshop: Junior Female Researchers in Probability**
Approximation for singualr SDEs with unbounded drift (Harnack-Haus, Berlin, Germany)

2021 29.04 **SPDE seminar**
Wong-Zakai approximation for singualr SDEs with unbounded drift (Technische Universität Berlin, Germany)

-2020

2020 01.12 **Oberseminar: Stochastische Analysis**
Well-posedness of stochastic differential equations with singular drifts and Lévy noise (Technische Universität Berlin, Germany)

2020 14.09 **DMV Annual Meeting 2020**
Well-posedness of stochastic differential equations with singular drifts and Lévy noise (Technische Universität Chemnitz, Germany) (online)

2020 26.02 **DFG-NRF on-site review**
Regularity versus irregularity in PDEs and diffusions (Bielefeld, Germany)

2020 13.02 **Young researchers between geometry and stochastic analysis**
SDEs with singular drifts and multiplicative noise on general space-time domains (Bergen, Norway)

2020 31.01 **Cluster Group Stochastic Analysis**
SDEs with singular drifts and multiplicative noise on general space-time domains (II) (Bielefeld, Germany)

2020 24.01 **Cluster Group Stochastic Analysis**
SDEs with singular drifts and multiplicative noise on general space-time domains (I) (Bielefeld, Germany)

-2019

2019 16.12 **Cluster Group Stochastic Analysis**
Stochastic differential equations with singular drifts and multiplicative noises (Bielefeld, Germany)

2019 15.11 **Cluster Group Stochastic Analysis**
Strong well-posedness for stochastic differential equations with coefficients in mixed-norm spaces (Bielefeld, Germany)

2019 15.01 **IRTG Seminar**
SDEs with distributional valued drift driven by α-stable processes (Bielefeld, Germany)

-2018

2018 29.10 **IRTG Seminar**
SDEs with singular coefficients and Partial differential equations (Bielefeld, Germany)

2018 19.10 **BGTS Doctoral Day**
SDEs with singular coefficients (Bielefeld, Germany)

Research interests

Stochastic analysis, Singular stochastic (partial) differential equations, Regularization by noise, Rough path, Random dynamical systems, Stochastic numerical analysis, Application of stochastic analysis and PDEs (e.g. machine learning)

Preprints

1. SDEs with singular drifts and multiplicative noise on general space-time domains, C. Ling, M. Röckner, X. Zhu, https://arxiv.org/pdf/1910.03989.pdf. (*Selected as one of the 'top ten representative papers from IRTG 2235'*)
2. Taming singular stochastic differential equations: A numerical method, K. Lê, C. Ling, https://arxiv.org/pdf/2110.01343.pdf
3. Path-by-path uniqueness for stochastic differential equations under Krylov-Röckner condition, L. Anzeletti, K. Lê, C. Ling. https://arxiv.org/abs/2304.06802
4. The Milstein scheme for singular SDEs with Hölder continuous drift, M. Gerencsér, G. Lampl, C. Ling. https://arxiv.org/pdf/2305.16004.pdf
5. Quantitative approximation of stochastic kinetic equations: from discrete to continuum, Z. Hao, K. Lê, C. Ling. http://arxiv.org/abs/2409.05706

Publications

1. Stochastic Differential Equations with Singular Drifts and Multiplicative Noises, C. Ling, (PhD thesis (2019)) https://pub.uni-bielefeld.de/record/2941478
2. Strong well-posedness for stochastic differential equations with coefficients in mixed-norm spaces, C. Ling, L. Xie https://link.springer.com/article/10.1007/s11118-021-09913-4 (*Potential Analysis*)
3. Regularity of Local times associated to Volterra-Lévy processes and pathwise regularization of stochastic differential equations, F.A. Harang, C. Ling https://link.springer.com/article/10.1007/s10959-021-01114-4 (*Journal of Theoretical Probability*)
4. Nonlocal elliptic equation in Hölder space and the martingale problem, C. Ling, G. Zhao, https://www.sciencedirect.com/science/article/abs/pii/S0022039622000316 (*Journal of Differential Equations*)
5. The perfection of local semi-flows and local random dynamical systems with applications to SDEs, C. Ling, M. Scheutzow, I. Vorkastner https://www.worldscientific.com/doi/abs/10.1142/S021949372240010X?journalCode=sd (*Stochastics and Dynamics*)

6 A Wong-Zakai theorem for SDEs with singular drift, C. Ling, S. Riedel, M. Scheutzow https://www.sciencedirect.com/science/article/abs/pii/S0022039622002674 (*Journal of Differential Equations*)

7 Stability estimates for singular SDEs and applications, L. Galeati, C. Ling, https://projecteuclid.org/journals/electronic-journal-of-probability/volume-28/issue-none/Stability-estimates-for-singular-SDEs-and-applications/10.1214/23-EJP913.full (*Electronic Journal of Probability*)

8 Expansion and attraction of RDS: long time behavior of the solution to singular SDE, C. Ling, M. Scheutzow. https://projecteuclid.org/journals/electronic-journal-of-probability/volume-29/issue-none/Expansion-and-attraction-of-RDS–long-time-behavior-of/10.1214/24-EJP1118.full (*Electronic Journal of Probability*)

Others

Oberwolfach Reports — Regularization by noise: from a numerical (Wong-Zakai approximation) viewpoint, C. Ling (based on the joint work with S. Riedel, M. Scheutzow), *Regularization by Noise: Theoretical Foundations, Numerical Methods and Applications.* DOI 10.4171/OWR/2022/9

Language

Native — Chinese

Work, communication — English (daily use), German (B2, improving)

○ ○ Up to 30.09.2023