Curriculum vitae Dr. math. Marco Rehmeier

I was born on 10.07.1993 in Herford, Germany.
Married, one child

Contact

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Research Interests

Probability theory and stochastic analysis, in particular: Nonlinear Markov processes, McKean–Vlasov SDEs and nonlinear PDEs (Fokker–Planck equations); Convex integration for fluid dynamical (S)PDEs.

Positions

since 10.2024: **Postdoc**
Prof. Dr. Peter Friz, TU Berlin
Parental leave: 04.2025 and 05.2026

03.2024-09.2024: **Postdoc**
CRC 1283, Project A5 *Fokker-Planck-Kolmogorov equations on general state spaces*
Prof. Dr. Michael Röckner, Bielefeld University

06.2023-02.2024: **Walter Benjamin fellow (funded by German Research Foundation)**
Prof. Franco Flandoli, Scuola Normale Superiore Pisa

10.2021-05.2023: **Postdoc**
CRC 1283, Project A5 *Fokker-Planck-Kolmogorov equations on general state spaces*
Prof. Dr. Michael Röckner, Bielefeld University

05.2021–06.2021: **Research stay**
Prof. Dr. Seung-Yeal Ha, Seoul National University

10.2018–09.2021: **PhD student**
IRTG 2235, Bielefeld University
Prof. Dr. Michael Röckner
Thesis defended on 28.09.2021 (summa cum laude)

Education

10.2016–09.2018: **Study of Mathematics, Bielefeld University**
Master of Science (Grade: 1.0, awarded price for best degree in mathematics)

10.2013–09.2016: **Study of Mathematics (major) and Economics (minor), Bielefeld University**
Bachelor of Science (Grade: 1.0, awarded price for best degree in mathematics)

08.2004-06.2013: **Rudolph-Brandes-Gymnasium, Bad Salzuflen, Germany**
Degree: Abitur (Grade: 1.0, awarded price for best degree)

Publications and Preprints

12. **Nonlinear Fokker–Planck–Kolmogorov equations as gradient flows on the space of probability measures**, with Michael Röckner
accepted for publication in *J. Evol. Equ.* (2026)

11. **p-Brownian motion and the p-Laplacian**, with Viorel Barbu and Michael Röckner
accepted for publication in *Ann. Probab.* (2025)

10. **2D vorticity Euler equations: Superposition solutions and nonlinear Markov processes**, with Marco Romito
Stoch. Partial Differ. Equ. Anal. Comput. (2025)

9. **On nonlinear Markov processes in the sense of McKean**, with Michael Röckner
J. Theoret. Probab, 38, 60 (2025)

8. **Remarks on regularization by noise, convex integration and spontaneous stochasticity**, with Franco Flandoli
Milan J. Math. 92, 349–370 (2024)

7. **Average dissipation for stochastic transport equations with Lévy noise**, with Franco Flandoli and Andrea Papini
Stochastic Transport in Upper Ocean Dynamics III. STUOD 2023. Mathematics of Planet Earth, vol 13. Springer, Cham (2024)

6. **Emergence of phase-locked states for a deterministic and stochastic Winfree model with inertia**, with Myeongju Kang
Commun. Math. Sci., 21(7), 1875-1894 (2023)

5. **Nonuniqueness in law for stochastic hypodissipative Navier–Stokes equation**, with Andre Schenke
Nonlinear Anal., 227, 113179 (2023)

4. **Linearization and a superposition principle for deterministic and stochastic nonlinear FPK equations**
Ann. Sc. Norm. Super. Pisa Cl. Sci., 24(3), 1705-1739 (2023)

3. **Flow selections for (nonlinear) Fokker-Planck-Kolmogorov equations**
J. Differential Equations, 328, 105-132 (2022).

2. **Existence of flows for linear Fokker-Planck-Kolmogorov equations and its connection to well-posedness**
J. Evol. Equ., 21(1), 17-31 (2021)

1. **On Cherny's results in infinite dimensions: A theorem dual to Yamada-Watanabe**
Stoch. Partial Differ. Equ. Anal. Comput., 9, 33–70 (2021)

Preprints

16. **Non-uniqueness of nonlinear Markov processes in the sense of McKean associated with parabolic PDEs**, with Ehsan Abedi and Florian Bechtold (2026)
available under: arXiv:2604.25851

arXiv:2604.25851

15. **The Leibenson process**, with Viorel Barbu, Sebastian Grube and Michael Röckner (2025)
available under: arXiv:2508.12979

14. **Non-uniqueness of Leray–Hopf solutions for the** $3D$ **fractional Navier–Stokes equations perturbed by transport noise**, with Theresa Lange and Andre Schenke (2024)
available under: arXiv:2412.16532

13. **Weighted** L^1**-semigroup approach for nonlinear Fokker–Planck equations and generalized Ornstein–Uhlenbeck processes** (2023)
available under: arXiv:2308.09420

Theses

3. **Nonuniqueness of Laws on State and Path Space: Flow Selections and Superposition for Fokker–Planck–Kolmogorov Equations and Convex Integration for Stochastic Hypodissipative Navier–Stokes Equations**
   PhD thesis (2021), available here
2. **On Cherny's results in infinite dimensions: A theorem dual to Yamada–Watanabe**
   Master thesis (2018), available on request
1. **On the existence and properties of fractional Brownian motion**
   Bachelor thesis (2016), available on request

Teaching and Supervision

2026 (summer): Lecturer for *Measure- and Integration theory* (Berlin)
2025 (winter): Seminar *Rough SDEs and related topics* (Berlin)
Teaching Assistant for *Analysis III* (Berlin)
2025 (summer): Lecturer for *Introduction to Rough Paths* (Berlin)
Teaching Assistant for *Statistics* (Berlin)
2024 (winter): Lecturer for *Nonlinear Fokker–Planck equations* (Berlin)
2024 (summer): Lecturer for *Fokker–Planck equations* (Bielefeld)
2023 (winter): Lecturer for *Introduction to Convex integration* (Pisa)
2022 (summer): Lecturer for *Selected Topics from Probability Theory* (Bielefeld)
since 10.2015: Teaching Assistant for the courses:
Analysis I+II, Linear Algebra I, Measure Theory, Stochastics, Functional Analysis, Probability Theory, Stochastic Analysis, Statistics

Supervision

Bachelor theses:

Representation theorems for linear functionals (A. Kniazev)

Kolmogorovscher Erweiterungssatz und Stetigkeitssatz von Kolmogorov-Tschenzow (B. Bitterlich)

Fraktionale Brownsche Bewegung: Konstruktion und Eigenschaften (A. Heide)

Master theses:

Elements of nonlinear Markov processes (T. Koch)

Nonlinear Fokker–Planck equations on manifolds as gradient flows

Event Organization

10.2026 : Organizer (with M. Braun, G. Brigati and L. Dello Schiavo) of the conference *Nonlinear Markov processes, Dirichlet forms, and PDEs* (EPFL Bernoulli Center Lausanne)
06.2026 : Organizer (with I. Arharas, W. Bock and S. Grube) of the *3rd Young Summer School on Stochastic Analysis* (Växjö)
06.2025 : Organizer (with I. Arharas, W. Bock and S. Grube) of the *2nd Young Summer School on Stochastic Analysis* (Växjö)
06.2024 : Organizer (with W. Bock) of the *1st Young Summer School on Stochastic Analysis* (Växjö)
10.2020 : Organizer of the *2020 BGTS Doctoral Day* (Bielefeld)

Awards, Grants and Funding

07.2026: Conference travel grant, DAAD ($\sim$ 1.000€)
11.2025: Conference funding, Bernoulli Center EPFL (17.500CHF)
06.2024: Junior researcher promotion grant, German Mathematical Society (2.000€)
06.2023-02.2024: Walter Benjamin fellowship, German Research Foundation ($\sim$ 25.362€)
10.2019: Award for best tutor in mathematics, Bielefeld University

09.2019:	Best talk-award at DMV 2019 student conference (prize: Oberwolfach research stay)
10.2018	Award for best Master's degree, Faculty of Mathematics, Bielefeld University
10.2016	Award for best Bachelor's degree, Faculty of Mathematics, Bielefeld University
10.2015-09.2017:	Academic excellence scholarship, Ministry for Education and Research ($\sim$ 7.200€)

Talks

- The p-Laplace operator and p-Brownian motion (LiBERA Online seminar, Apr26)
- The Leibenson equation as a nonlinear Fokker–Planck equation and its associated nonlinear Markov process (Bielefeld, Jan26)
- The Leibenson equation as a nonlinear Fokker–Planck equation and its associated nonlinear Markov process (Bucharest, Sep25)
- The p-Laplace operator and p-Brownian motion (Berlin, Jul25)
- The p-Laplace operator and p-Brownian motion (Dresden, Jun25)
- The p-Laplace operator and p-Brownian motion (Bielefeld, Feb25)
- The p-Laplace operator and p-Brownian motion (Augsburg, Dec24)
- The p-Laplace operator and p-Brownian motion (Berlin, Nov24)
- Weighted L^1-semigroup approach for nonlinear Fokker–Planck equations and generalized Ornstein–Uhlenbeck processes (Bochum, Aug24)
- Nonlinear Fokker–Planck equations as gradient flows on the space of probability measures (Växjö, Jul24)
- Probabilistic representation of nonlinear Fokker-Planck equations and nonlinear PDEs by nonlinear Markov processes (Berlin, Jun24)
- Nonlinear Fokker–Planck equations as gradient flows on the space of probability measures (Bielefeld, Jun24)
- Nonlinear Fokker–Planck equations as gradient flows on the space of probability measures (Hagen, Jun24)
- Nonuniqueness of stochastic Leray-solutions for 3D fractional NSE (Bielefeld, May24)
- Convex Integration and Spontaneous Stochasticity for fluid dynamical equations (Clausthal, May24)
- Nonlinear Fokker-Planck equations as gradient flows on a space of measures (Bedlewo, Apr24)
- On nonlinear Markov processes in the sense of McKean (Berlin, Feb24)
- On nonlinear Markov processes in the sense of McKean (Leipzig, Jan24)
- Weighted L^1-semigroup approach for nonlinear Fokker–Planck equations and generalized Ornstein–Uhlenbeck processes (Bielefeld, Nov23)
- Nonlinear Fokker–Planck–Kolmogorov equations as gradient flows on the space of probability measures (Hammamet, Oct23)
- On nonlinear Markov processes in the sense of McKean (Hofgeismar, Aug23)
- On nonlinear Markov processes in the sense of McKean (Lisbon, Jul23)
- On nonlinear Markov processes in the sense of McKean (Wilmington, Jun23)
- On nonlinear Markov processes in the sense of McKean (Münster, Jun23)
- On nonlinear Markov processes in the sense of McKean (Essen, Mar23)
- On nonlinear Markov processes in the sense of McKean (Pisa, Feb23)
- On nonlinear Markov processes in the sense of McKean (Bielefeld, Feb23)
- Superposition for deterministic and stochastic nonlinear Fokker-Planck-Kolmogorov equations (Hammamet, Oct22)

- Linearization and a superposition principle for deterministic and stochastic nonlinear Fokker-Planck-Kolmogorov equations (Bielefeld, Sep22)
- Emergence of phase-locked states for a Winfree model with inertia (Bielefeld, Jul22)
- Nonuniqueness in law for stochastic hypodissipative Navier–Stokes equations (Barcelona, May22)
- Flow selection for (nonlinear) Fokker-Planck-Kolmogorov equations (Bielefeld, Jan22)
- Nonuniqueness in law for stochastic hypodissipative Navier–Stokes equations (Seoul, May21)
- Superposition principle for stochastic nonlinear Fokker–Planck–Kolmogorov equations (Seoul, May21)
- From Interacting Particle Systems to Nonlinear Fokker-Planck equations (Bielefeld, Oct20)
- On Cherny's results in infinite dimensions: A theorem dual to Yamada-Watanabe (Karlsruhe, Sep19)
- Introduction to quasi-stationary distributions and first general properties (Bielefeld, Aug19)
- Existence of flows for linear FPK-equations and its connection to well-posedness (Essen, Jun19)
- On Cherny's results in infinite dimensions: A theorem dual to Yamada-Watanabe (Bielefeld, Mar19)

\+ further talks in local seminars, including the mini lecture series *Convex Integration for fluid dynamical PDEs and its origin in Nash's C^1 isometric embedding theorem* in Bielefeld

Attendance at Conferences and Seminars

- 12th International Conference on Stochastic Analysis and Its Applications (Bucharest, Sep25)
- 21st Oxford-Berlin Young Researcher Meeting on Applied Stochastic Analysis (Berlin, Jul25)
- The SPDEvent IV (Bielefeld, May25)
- 12th Bielefeld-SNU joint workshop in mathematics (Bielefeld, Feb25)
- Bernoulli-ims 11th World Congress in Probability and Statistics (Bochum, Aug24)
- New developments and challenges in Stochastic Partial Differential Equations (Lausanne, Aug24)
- Linnaeus Workshop on Stochastic Analysis and Applications 2024 (Växjö, Jul24)
- Young Summer School on Stochastic Analysis (Växjö, Jun24)
- 19th Annual Berlin-Oxford Young Researchers Meeting on Applied Stochastic Analysis (Berlin, Jun24)
- Gradient flows, large deviation theory and macroscopic fluctuation theory (Bielefeld, Jun24)
- Walkshop on Mathematical Physics (Hagen, Jun24)
- The SPDEvent III (Bielefeld, May24)
- Probability and Analysis (Bedlewo, Apr24)
- Turbulence on the Banks of the Arno (Pisa, Jan24)
- Stochastic in Mathematical Finance and Physics (Hammamet, Oct23)
- CRC 1283 Retreat 2023 (Hofgeismar, Aug23)
- 43th Conference on Stochastic Processes and Applications (Lisbon, Jul23)
- 13th AIMS International Conference on Dynamical Systems, Differential Equations and Applications (Wilmington, May23)
- German Statistics and Probability Days 2023 (Essen, Mar23)
- 10th Bielefeld-SNU Joint Workshop in Mathematics (Bielefeld, Feb23)
- Recent Developments in Stochastics with Applications in Mathematical Physics and Finance (Hammamet, Oct22)
- Japanese-German conference on stochastic analysis and applications (Münster, Sep22)
- The SPDEvent (Bielefeld, Sept22)
- Stochastic Analysis and SPDEs (Barcelona, May22)
- Workshop Fractional Differential Equations (Isaac Newton Institute, Cambridge, Apr22)
- Eighth Bielefeld-SNU Joint Workshop in Mathematics (Bielefeld, Feb20)
- Touch down of stochastic analysis in Bielefeld (Bielefeld, Sep2019)
- Annual DMV-Conference 2019 (Karlsruhe, Sep19)
- IRTG Summer School on probability theory and stochastic dynamics (Bielefeld, Aug19)
- 29. Jyväskylä Summer School on Selected Topics in the Theory of BSDEs (Jyväskylä, Aug19)
- Recent Trends in Stochastic Analysis and SPDEs (Pisa, Jul19)
- 41. Nordwestdeutsches Funktionalanalysis-Kolloquium (Essen, Jun19)
- Seventh Bielefeld-SNU Joint Workshop in Mathematics (Bielefeld, Feb19)
- Winter School on Stochastic PDEs and Mean Field Games (Bologna, Jan19)
- 9th International Conference on Stochastic Analysis and Its Applications (Bielefeld, Sep18)

Academic Service

- Participation in the *Bielefeld MINT information weeks*: Several presentations of mathematics at university level to high school students
- Reviewer for: Springer Lecture Series in Mathematics, J. Evol. Equ., Potential Anal., Stoch. Dyn.
- Member of a tenure track-professorship evaluation committee

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