

# Moritz Doll

## Education

- 2018 **Dr. rer. nat.**, *Mathematics*, Leibniz Universität Hannover
- 2015 **M.Sc.**, *Mathematics*, Georg-August Universität Göttingen
- 2014 **B.Sc.**, *Mathematics*, Georg-August Universität Göttingen

## Positions

- Jun. 2025 – **Postdoctoral Fellow**, Macquarie University  
current Sydney, Australia
- Nov. 2022 – **Postdoctoral Fellow**, University of Melbourne  
Mar. 2025 Melbourne, Australia
- Oct. 2018 – **Wissenschaftlicher Mitarbeiter (PostDoc)**, Universität Bremen  
Oct. 2022 Bremen, Germany
- Sep. 2015 – **Wissenschaftlicher Mitarbeiter (PhD student)**, Leibniz Universität Hannover  
Sep. 2018 Hannover, Germany

## Extended visits

- Mar. 2025 – **University of Melbourne**  
current Hosted by Leo Tzou
- Jun.–Jul. 2023 **Erwin Schrödinger Institut, Wien**
- Sep. 2022 **University of California, Berkeley**  
Hosted by Maciej Zworski
- Feb.–Apr. 2020 **Hausdorff Institute of Mathematics, Bonn**
- Oct.–Dec. 2016 **Northwestern University, Evanston**  
Hosted by Jared Wunsch

## Funding

- 2020–2023 **ZF Eigene Stelle**, Universität Bremen  
Position + 15.500 €

## Publications

### Journal articles

- [1] *Refined Weyl Law for Homogeneous Perturbations of the Harmonic Oscillator* (with O. Gannot and J. Wunsch), *Comm. Math. Phys.*, 362 (2018)

- [2] *Recurrence of Singularities for Second Order Isotropic Pseudodifferential Operators*, Math. Nachr. 292 (2019)
- [3] *Lagrangian distributions on asymptotically Euclidean manifolds* (with S. Coriasco and R. Schulz), Ann. Mat. Pura Appl. 198 (2019)
- [4] *A Partial Data Problem in Linear Elasticity* (with A. Froehly and R. Schulz), Inverse Problems 36 (2020)
- [5] *Schrödinger Trace Invariants for Homogeneous Perturbations of the Harmonic Oscillator* (with S. Zelditch), J. Spectr. Theory 10 (2020)
- [6] *Weyl Law on Asymptotically Euclidean Manifolds* (with S. Coriasco), Ann. Henri Poincaré 22 (2021)
- [7] *Scattering Theory with Unitary Twists* (with K. Fedosova and A. Pohl), J. d'Analyse Math. 153 (2024)
- [8] *Counting Resonances on Hyperbolic Surfaces with Unitary Twists* (with K. Fedosova and A. Pohl), Comm. Anal. Geom. 32 (2024)

#### Preprints

- [9] *The Klein-Gordon equation on asymptotically Minkowski spacetimes: causal propagators* (with D. Baskin and J. Gell-Redman).
- [10] *The Klein-Gordon equation on asymptotically Minkowski spacetimes: the Feynman propagator* (with D. Baskin and J. Gell-Redman).
- [11] *Formalizing Schwartz functions and tempered distributions.*

#### In preparation

- [12] *Selberg Trace Formula on Infinite Area Surfaces with Unitary Twists* (with A. Pohl).

#### Thesis

*Fourier Integral Operators on Non-Compact Manifolds*, Diss., 2018

### Events

#### Talks

- 2016 **GRK1463 Retreat Meeting**, Goslar
- 2017 **PhD Seminar**, Leibniz Universität Hannover
- 2017 **Oberseminar Analysis und Theoretische Physik**, Leibniz Universität Hannover
- 2017 **GRK1463 Retreat Meeting**, Braunlage
- 2017 **Workshop on Analysis and PDE**, Leibniz Universität Hannover
- 2018 **Analysis Seminar**, Northwestern University
- 2018 **Oberseminar Analysis/Numerik**, Universität Oldenburg
- 2018 **MicroLocal and Time-Frequency Analysis**, Università degli Studi di Torino
- 2018 **Oberseminar Geometrie und Dynamische Systeme**, Universität Bremen
- 2019 **Analysis Seminar**, Universität Stuttgart
- 2019 **Séminaire de Physique Mathématique**, Université Grenoble Alpes
- 2019 **Oberseminar Angewandte Analysis**, Universität Bremen
- 2019 **Asymptotic analysis & Spectral theory**, Université Paris Sud

- 2019 **Seminar: Microlocal Analysis**, *MSRI, Berkeley*
- 2020 **Hanseatic Dynamic Systems Days 4**, *Jacobs Universität Bremen*
- 2020 **Seminar Topology and Numbers**, *HIM, Bonn*
- 2020 **Workshop on Microlocal analysis and PDEs**, *University College London*  
postponed due to Covid19
- 2021 **Microlocal and Global Analysis, Interactions with Geometry**, *Universität Potsdam*  
online
- 2021 **Oberseminar Differentialgeometrie**, *Universität Freiburg*  
online
- 2021 **Oberseminar Geometrie und Dynamische Systeme**, *Universität Bremen*
- 2022 **Oberseminar Geometrische Analysis und Zahlentheorie**, *Universität Paderborn*
- 2022 **Hanseatic Dynamic Systems Days 5**, *Universität Kiel*
- 2022 **Oberseminar Geometrie und Dynamische Systeme**, *Universität Bremen*
- 2022 **Workshop on Microlocal analysis and PDEs**, *University College London*
- 2022 **Harmonic Analysis and Differential Equations Seminar**, *University of California, Berkeley*
- 2022 **Asymptotic analysis & Spectral theory**, *Universität Oldenburg*
- 2023 **Analysis Seminar**, *University of Melbourne*
- 2023 **Pure Mathematics Seminar**, *University of Melbourne*
- 2023 **ESI Thematic Program: Spectral Theory and Mathematical Relativity**, *Erwin Schrödinger Institut*
- 2024 **PDE and Analysis Seminar**, *Australian National University, Canberra*
- 2025 **Mathematical Physics Seminar**, *Kyushu University, Fukuoka*
- 2025 **Analysis Seminar**, *Monash University, Melbourne*
- 2025 **Three days workshop on analysis and dynamics**, *Longeville-sur-Mer, France*

#### [Organization](#)

- 2019 **Bremen-Oldenburg Analysis Seminar**, *Universität Bremen*
- 2019 **Hanseatic Dynamical Systems Days 3**, *Universität Bremen*

#### [Selected Participations](#)

- 2017 **Clay Research School: Microlocal Analysis and Applications**, *Cardiff*
- 2018 **Quantum fields, scattering and spacetime horizons**, *Les Houches*
- 2019 **MFO Seminar: Anisotropic Spaces and their Applications to Hyperbolic and Parabolic Systems**, *Oberwolfach*
- 2019 **MSRI Workshop: Recent Advances in Microlocal Analysis**, *Berkeley*
- 2020 **HIM Trimester: Topology and Numbers**, *Bonn*
- 2022 **ICERM Workshop: Lean for the Curious Mathematician**, *Providence*
- 2023 **BIRS Workshop: Formalization of Cohomology Theories**, *Banff*
- 2023 **ESI Thematic Program: Spectral Theory and Mathematical Relativity**, *Wien*

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## Teaching

### Georg-August Universität Göttingen

- 2014 **Mathematik für Physiker**, Teaching assistant
- 2014 **Funktionale Programmiersprachen in den Naturwissenschaften**, Assistant
- 2014–2015 **Partielle Differenzialgleichungen**, Teaching assistant

### Leibniz Universität Hannover

- 2015–2016 **Funktionalanalysis**, Teaching assistant
- 2016 **Partielle Differenzialgleichungen**, Assistant
- 2017 **Distributionentheorie**, Assistant
- 2017–2018 **Analysis 1**, Teaching assistant
- 2018 **Analysis 2**, Teaching assistant

### Universität Bremen

- 2018–2019 **Seminar “Differentialgeometrie”**, Lecturer
- 2019 **Seminar “Spektral- und Streutheorie”**, Lecturer
- 2019 **Ergodentheorie**, Assistant
- 2019–2020 **Seminar “Differentialgeometrie”**, Lecturer
- 2020 **Spektralgeometrie**, Lecturer
- 2021–2022 **Semiklassische Analysis**, Lecturer

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## Supervision

### Second Referee

- 2019 **BSc.**, Einbettungssätze für Funktionen von beschränkter Variation  
Principal referee: Hendrik Vogt
- 2019 **BSc.**, Existenz von Nash-Gleichgewichten  
Principal referee: Ingolf Schäfer

### Miscellaneous Supervision

- 2019 **Reading Course**, Black Box Scattering
- 2022 **Project at ICERM workshop**, Formalizing symplectic linear algebra
- 2022 **Undergraduate Internship**, Formalizing the Basel problem

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## Service

- 2019–current **Reviewer**, Analysis & PDE, Comm. Math. Phys., Contemp. Math., J. Evol. Equ., J. Math. Phys.
- 2022–current **Member of the reviewer team of Mathlib**