

Curriculum Vitae

Karsten Bohlen

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 93053 Regensburg
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Education

PhD Mathematics, University of Hannover, March 2015,
 summa cum laude, Supervisor: Elmar Schrohe.

 Thesis: *Boutet de Monvel's calculus via groupoid actions*

Diplom Mathematics, University of Trier, July 2011.

 Areas of focus: *Analysis, Mathematical Finance, Computer Science*

Abitur BBSW Schule, Trier, 2006.

Positions

Research associate University of Hannover, Germany,
 September 2011 – September 2015.

Postdoctoral fellow Oberwolfach Research Institute, Germany.

Postdoc (DFG-Project) University of Wuppertal, Germany, until March 2017.

Research associate University of Regensburg, Germany,
 March 2017 - October 2019.

R & D Lead AI planfocus Software GmbH,
 current position.

Selected Publications

- The K -theory of bisingular pseudodifferential algebras, [link](#), J. Pseudo-Differ. Oper. Appl. (2015) 6:361-382.
- On the η -function for bisingular pseudodifferential operators, [link](#), Math. Nachr. 290 (2017), 169-186.
- Boutet de Monvel operators on Lie manifolds with boundary, [link](#), Adv. Math. 312 (2017), 234-285.
- Getzler rescaling via adiabatic deformation and a renormalized index formula, with Elmar Schrohe, [link](#), J. Math. Pures Appl. (9) 120 (2018), 220–252.
- Boutet de Monvel operators on singular manifolds, [link](#), C. R. Acad. Sci. Paris, Ser. I 354 (2016), 239-243.

Selected Talks

- March 24 – 28, 2014 Workshop Geometric and Singular Analysis at University of Potsdam, talk: **“Boutet de Monvel operators on Lie manifolds with boundary”**.
- September 24 – 26, 2014 Klausurtagung of the Graduiertenkolleg 1463, talk: **“Deformation groupoids and index theory”**.
- February 9 - 13, 2015 Workshop Geometric and Singular Analysis at University of Potsdam, talk: **“On tensor products of pseudodifferential operators”**.
- June 1 – 5, 2015 Conference on Noncommutative methods in Topology and Geometry in Lyon, France, talk: **“Boutet de Monvel's calculus via groupoid actions”**.
- January 7, 2016 Talk in Oberseminar Geometry University of Regensburg, **“Fredholm conditions and a generalized analytic index on manifolds with boundary”**.
- April 28, 2016 Talk in Functional Analysis group Wuppertal, **“Boundary value problems and noncommutative geometry”**.
- November 2 – 5, 2016 Invited speaker, Géométrie non commutative et applications, University of Metz Lorraine, **“Renormalized local index theory on Lie manifolds”**.
- December 16, 2016 Talk in Seminar of the group GAAO, Clermont Ferrand, **“Renormalized local index theory on Lie manifolds”**.
- May 29 – June 2, 2017 Invited speaker, Index Theory and Singular Structures, University of Toulouse, **“Calculating the Fredholm index on Lie manifolds”**.
- February 19 – 23, 2018 Workshop Geometric and Singular Analysis Potsdam, **“Noncommutative completion of embeddings”**.
- October 4 – 5, 2018 Invited speaker, IECL Metz, **“K-homology and index theory on Lie manifolds”**.

October 15 – 19, 2018	Invited speaker, ANR Workshop Index Theory.
March 4 – 8, 2019	Microlocal and Global Analysis, Interactions with Geometry Potsdam, “K-homology and index theory on Lie manifolds” .
March 19, 2019	Talk Seminar Geometry at Université Paris Diderot, “K-homology and index theory on Lie manifolds” .
July 5, 2019	AWS research institute Saarbrücken, “Die Gruppoid-Topologie integrierter neuronaler Schaltungen” / “The groupoid topology of integrated neural circuits” .

Selected research visits

August 10 – 23, 2014	Research stay University of Metz Lorraine, UFR Mathématiques, on invitation of Professor Victor Nistor.
September 14 – 17, 2014	Visit to Université Paris Diderot. UFR de Mathématiques, on invitation of Professor Georges Skandalis.
December 4- 16, 2016	Visit to Clermont Ferrand, Université Blaise Pascal, on invitation of Professor Jean-Marie Lescure.

Teaching

Summer term 2011	Elements of Analysis I: exercise sessions.
Winter term 2011 / 12	Analysis A: exercise sessions.
Summer term 2012	Index Theory: composition of problem sets and teaching.
Winter term 2012 / 13	Analysis B: exercise sessions.
Summer term 2013	Pseudo differential operators / Boundary value problems: exercise sessions, composition of problem sets. Complex Analysis: exercise sessions.
Winter term 2013 / 14	Analysis I, III: exercise sessions.
Summer term 2014	Dynamical measure theory: composition of problem sets and teaching.
Winter term 2014 / 15	Research seminar on groupoid techniques in index theory and analysis: organizer of the seminar, Analysis III: exercise sessions.
Summer term 2015	Operator Theory: composition of problem sets. Mathematics for Physicists II: exercise sessions, composition of problem sets.
Winter term 2016	Spezialvorlesung Elemente der globalen Analysis.
Summer term 2017	Seminar Ricci-Fluss. Proseminar für Studienanfänger. Vorlesung “Der Atiyah-Singer Indexsatz”.
Summer term 2018	The Yamabe problem, exercise sessions.
Winter term 2018	Lecture course Differential Geometry.

Supervision of Bachelor and Master theses.

Memberships

Graduiertenkolleg 1463: Analysis, Geometry and String Theory University of Hannover, September 2011 - September 2014. Associated member DFG-project *Geometry at Infinity* SPP 2026.

Awards and Prizes

Leibniz fellowship, Oberwolfach research institute, September – December 2015.

Language Skills

English (fluent), German (native speaker), Persian (beginner), French, Latin.

Computer Science Expertise

Software Development and Design, Robotics (ROS), Cognitive Modeling & NLP, Metaoptimization & Metaheuristics, Machine Learning & Neural Networks, Algebraic Semantics & Symbolic Dynamics, Database: Oracle, sqlplus, Computer Algebra Systems & Numerics (Maple, Mathematica, Matlab), Programming & markup languages: C++, Java, Shell Script, Python, R, Pascal, LaTeX.

Mathematical Expertise

Partial differential equations and boundary value problems, Index theory, Noncommutative Geometry, Mathematical Physics, Stochastic Processes, Mathematical Finance.

Letters of Recommendation:

Prof. Dr. Elmar Schrohe, Leibniz University Hannover, schrohe@math.uni-hannover.de.

Prof. Dr. Victor Nistor, Université de Lorraine (Metz-Nancy), victornistormath@yahoo.com.

Prof. Dr. Julie Rowlett, Chalmers University of Technology and University of Gothenburg, julie.rowlett@chalmers.se.

Dr. Jean-Marie Lescure, Université Blaise Pascal, Clermont-Ferrand, jm.lescure@uca.fr.

Prof. Dr. Bernd Ammann, University Regensburg, ammann@berndammann.de.