

Curriculum Vitae Dr. Boris Vertman

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Date of Birth 5. June 1982

Research Interests

Geometric Analysis on Singular Spaces, Torsion Invariants of Manifolds, Boundary Value Problems, b-calculus, Geometric Flows, Quantum Field Theory.

University Education

2006-2008 **University of Bonn**
Ph.D in Mathematics "Analytic Torsion on Manifolds with Boundary and Conical Singularities", under supervision of Prof. Dr. Matthias Lesch, magna cum laude, *Scholar of "Graduate School of Cologne"*

2004-2005 **University of Cambridge**
Masters in Mathematics (Part III of Mathematical Tripos), Masters Essay under supervision of A.G. Kovalev, Distinction, awarded the title "*Scholar of the Downing College*"

2001-2006 **University of Cologne**
Diplom in Mathematics (M.Sc.) "Dirac Operators and the weak unique continuation property" under supervision of Prof. Dr. Matthias Lesch, Preliminary Diploma (Vordiplom) in Physics and Mathematics.

Academic Positions

since September 2010 **University of Bonn**
Akademischer Rat, Department of Mathematics (present).

2009-2010 **Stanford University**
Postdoctoral Fellow, Department of Mathematics.

2008-2009 **University of Bonn**
Wissenschaftlicher Mitarbeiter, Department of Mathematics.

List of Publications

Recent Advances on the Analytic Torsion of Singular Spaces

Oberwolfach Report of the Workshop on "Analysis and Geometric Singularities"

Regular-singular Sturm-Liouville operators and their zeta-determinants

with Matthias Lesch, submitted to Journal of Functional Analysis, arXiv:1005.0368, (2010)

Metric Anomaly at the Regular Boundary of Analytic Torsion for a Bounded Generalized Cone, I. Odd Dimensional Generalized Cone, arXiv:1004.2067, (2010)

Metric Anomaly at the Regular Boundary of Analytic Torsion for a Bounded Generalized Cone, II. Even Dimensional Generalized Cone, arXiv:1004.2069, (2010)

Gluing Formula for Refined Analytic Torsion

submitted to Proceedings of London Mathematical Society, arXiv:0808.0451, (2009)

Analytic Torsion of a Bounded Generalized Cone

Communications in Mathematical Physics, 290 (2009), no. 3, 813–860.

Zeta determinants for regular-singular Laplace-type operators

Journal of Mathematical Physics 50 (2009), no. 8, 083515, 23 pp

Refined analytic torsion on manifolds with boundary

Geometry and Topology 13 (2009), no. 4, 1989–2027.

Exotic Expansions and pathological properties of zeta-functions on conic manifolds

K. Kirsten, P. Loya, J. Park with an Appendix by Boris Vertman,

Journal of Geometric Analysis 18, (2008), 835-888.

Doctoral Thesis: *Analytic Torsion of Manifolds with Boundary and Conical Singularities*

University Bonn Press (2008)

Selected Presentations

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| July 2010 | <i>Recent Advances on the Analytic Torsion of Singular Spaces</i>
Oberwolfach Workshop on Analysis and Geometric Singularities,
Oberwolfach |
| March 2010 | <i>Zeta Determinants of Regular Singular Sturm Liouville Operators</i>
International Workshop on Operators on Spaces with Singularities,
Potsdam |
| February 2010 | <i>Heat Kernel and Analytic Torsion on Manifolds with Edges</i> , University
of Santa Barbara Geometry Seminar, Department of Mathematics |
| October 2009 | <i>The regular-singular Sturm-Liouville operators and their Zeta-Determinants</i> , Stanford
Geometry Seminar, Department of
Mathematics |

October 2009	<i>Zeta-Determinants of regular singular operators</i> , AMS Sectional meeting on "Microlocal Analysis and Spectral Theory on Singular Spaces", Penn State University
Mai 2009	<i>Die Reidemeister-Franz und Ray-Singer Torsion</i> , Kolloquium des Graduiertenkollegs Göttingen, Department of Mathematics
Januar 2009	<i>Analytic Torsion on Manifolds with Conical Singularities</i> , International Workshop on Elliptic and Parabolic Equations on Manifolds, Potsdam
November 2008	<i>Analytic Torsion on Manifolds with Boundary and Conical Singularities</i> , Analysis Oberseminar, University Bonn. Department of Mathematics

Teaching Experience

Summer 2009	Übungen zur Vorlesung "Globale Analysis" (Prof. Matthias Lesch) Seminar "Topological Quantum Field Theory" with Dr. B. Himpel.
Winter 2008/09	Übungen zur Vorlesung "Lineare Algebra" (Prof. Werner Ballmann)
Winter 2007/08	Vorlesung und Übungen zu "Global Analysis I" 2-wöchige Krankheitsvertretung von Prof. Neumaier
Summer 2007	Übungsleiter zur Vorlesung "Funktionalanalysis II" (Prof. Frehse)
Winter 2006/07	Übungsleiter zur Vorlesung "Funktionalanalysis I" (Prof. Frehse)
2003-2004	Übungsleiter zur Vorlesung Analysis I, Analysis III, Linear Algebra I.

Participation at Conferences and Workshops

August 2010	<i>Topics in Spectral and Scattering Theory</i> , joint conference of Penn State and Göttingen University, Penn State University
July 2010	<i>Analysis and Geometric Singularities</i> , Oberwolfach Research Workshop
March 2010	<i>Global Analysis and Automorphic Forms</i> , On the Occasion of the 60th. Birthday of Werner Müller, The Hebrew University of Jerusalem
September 2008	<i>Analysis on Singular Spaces</i> , Workshop, Mathematical Sciences Research Institute, Berkeley
August 2008	<i>Geometry and Analysis, General Relativity</i> , Royal Institute of Technology in Stockholm
July 2008	<i>Noncommutative Geometry Conference</i> Workshop of the "Geometry and Physics" Trimester program at Hausdorff Institute in Bonn
May 2008	<i>New Paths Towards Quantum Gravity</i> , Summer School, Roskilde University

February 2008	<i>Partial Differential Equations and Analysis on Singular Spaces</i> , Joint Conference of the Max Planck Institut and Hausdorff Research Center in Bonn
November 2007	<i>Geometric Analysis and Spectral Theory</i> , A Conference in Honor of the 60th. birthday of Jochen Brüning, Humboldt Universität zu Berlin
June 2005	<i>Annual Meeting of Nobel Price Laureats in chemistry, physics, physiology and medicine</i> , Young Researcher Participant, Lindau
August 2005	<i>Bose Einstein Condensates</i> , Summer Academy of the German National Merit Foundation (Studienstiftung)

Honours and Awards

2009-2010	DFG Forschungsstipendium for Postdoctoral Research at Stanford University
2006-2008	Stipendium des Graduiertenkollegs Köln for Doctoral Research at University of Cologne, University of Bonn
2004-2005	DAAD Excellence Programm Scholarship for the Mathematical Tripos Part III at University of Cambridge
June 2005	Scholar of the Downing College at University of Cambridge , in recognition of Certificate of Advanced Studies in Mathematics (Masters) with Distinction
2001-2005	German National Merit Foundation (Studienstiftung) for academic studies at University of Cologne

Further Professional Activities

Referee	Mathematische Nachrichten, Journal of Geometry and Physics
Summer 2006	Visiting Associate at the Boston Consulting Group. Retail banking reconstruction for a German universal bank, profitability calculations for future business of the retail segment.
Summer 2004	Internship as an Actuary in Gerling Insurance. Monte-Carlo Simulations, Development and Evaluation of a new Risk Assessment Approach.
Winter 2003/04	Scientific Assistant at the Nuclear Institute of Physics, University of Cologne. Adaptation of a new digital measuring technology to existing equipment for nuclear desintegration experiments.

Bonn, 1. September 2010

Boris Vertman