

# Sebastian Boldt - CURRICULUM VITAE

## PERSONAL DATA

SURNAME	BOLDT
NAME	SEBASTIAN
DATE OF BIRTH	19.07.1985

## QUALIFICATIONS

### DEGREE

Diplom-Mathematiker (equivalent to Master's in mathematics), grade: 1,0 (very good), Humboldt-Universität zu Berlin, Germany, 29.09.2011, thesis title: "Eigenschaften des Dirac-Spektrums auf Linsenräumen" ("Properties of the Dirac-spectrum on lens spaces")

### DOCTORAL DEGREE OR EQUIVALENT QUALIFICATION EARNED IN ITALY OR ABROAD

Dr. rer. nat. (Doctor in the natural sciences), Humboldt-Universität zu Berlin, Germany, 27.10.2017 (day of defense), thesis title: "The height of compact nonsingular Heisenberg-like Nilmanifolds", score: magna cum laude

### RESEARCH CONTRACTS, RESEARCH FELLOWSHIP CONTRACTS, POSTDOCTORAL SCHOLARSHIPS OR SIMILAR CONTRACTS

- 01.01.2012 - 31.12.2016: Humboldt-Universität zu Berlin, Germany, 5 years, research contract as part of the project "SFB 647 - Space - Time - Matter. Analytic and Geometric Structures" funded by the German Research Foundation (DFG); member of projects B6 (Analytic and Spectral Properties of Geometric Operators) und C2 (Differential Geometry: Geometric and Spectral Invariants of Riemannian, Lorentzian and Conformal Manifolds)
- 01.10.2017 - 30.09.2018: Humboldt-Universität zu Berlin, Germany, 1 year, Postdoctoral contract in the working group "Differential Geometry and Global Analysis" of Prof. Dr. Helga Baum
- 01.10.2018 - 30.09.2023: Universität Leipzig, Germany, 5 years, Academic Assistant (comparable to nontenured assistant professor) in the working group "Differential geometry" of Prof. Dr. Hans-Bert Rademacher
- 01.10.2023 - 30.09.2025: Technische Universität Chemnitz, Germany, 1+ years, Postdoctoral contract, member of the working group "Analysis" of Prof. Dr. Peter Stollmann

### TEACHING ACTIVITIES AT ITALIAN OR FOREIGN UNIVERSITIES

Entire courses taught (all at Universität Leipzig):

- Winter term 2022 / 23: lecture + tutorial (2+2 hours per week) "Advanced Differential Geometry II - Spin Geometry"; master's course for mathematicians and mathematical physicists
- Summer term 2022: lecture + tutorial (4+2 hours per week) "Mathematics 2 for Physicists"; bachelor's course for physicists
- Winter term 2021 / 22: lecture (4 hours per week) "Riemann surfaces"; master's course for mathematicians
- Winter term 2020 / 21: lecture + tutorial (2+2 hours per week) "Advanced Differential Geometrie II - Spin Geometry"; master's course for mathematicians and mathematical physicists

Seminars taught (all at Universität Leipzig, 2 hours per week each):

- Summer term 2023: “structure and representation theory of nilpotent Lie groups”
- Winter term 2022 / 23: “Index Theory”

Tutorials taught (hours per week indicated refer only to my part of the course):

- Summer term 2024:

- “Dirichlet forms, Markov processes and semigroups”; master’s course for mathematicians; 2 hours per week
- „Vector analysis and ordinary differential equations“; bachelor’s course for mathematicians, economists and finance mathematicians; 2 hours per week

- Winter term 2023 / 24:

- “Metric measure spaces”; master’s course for mathematicians; 2 hours per week
- “Higher mathematics I”; bachelor’s course for chemists, engineers and computer scientists; 2 hours per week

- Summer term 2023:

- “Linear algebra for computer scientists”; bachelor’s course for computer scientists; 2+2 hours per week

- Winter term 2021 / 22: “Mathematics 1 for Physicists”; bachelor’s course for physicists; 2+2 hours per week
- Summer term 2021: „Mathematics 4 for Physicists“; bachelor’s course for physicists; 2+2 hours per week
- Summer term 2020: “Linear algebra 2”; bachelor’s course for mathematicians; 2+2 hours per week
- Winter term 2019 / 20:

- “Linear algebra I”; bachelor’s course for mathematicians; 2 hours per week
- „Differential geometry I“; master’s course for mathematicians; 2 hours per week

- Summer term 2019: “Analysis II”; bachelor’s course for mathematicians and future teachers; 2+2 hours per week
- Winter term 2018 / 19:

- “Linear algebra I”; bachelor’s course for mathematicians and future teachers; 2 hours per week
- “Differential geometry I”; master’s course for mathematicians; 2 hours per week

- Summer term 2018: “Analysis II”; bachelor’s course for mathematicians, computer scientists and future teachers; 2+2 hours per week
- Winter term 2017 / 18: “Analysis I”; bachelor’s course for mathematicians, computer scientists and future teachers; 2+2 hours per week
- Summer term 2016: “Analysis I”; bachelor’s course for mathematicians, computer scientists and future teachers; 2 hours per week
- Winter term 2013 / 14: “Analysis I”; bachelor’s course for mathematicians, computer scientists and future teachers; 2 hours per week
- Winter term 2012 / 13: “Analysis I\*”; bachelor’s course for mathematicians; 2 hours per week

## ORGANISATION, SUPERVISION AND COORDINATION OF NATIONAL AND INTERNATIONAL RESEARCH GROUPS, OR PARTICIPATION IN THEM

01.01.2012 - 31.12.2016: PhD student, Humboldt-Universität zu Berlin, Germany, 5 years, research contract as part of the project “SFB 647 - Space - Time - Matter. Analytic and Geometric Structures” funded by the German Research Foundation (DFG); member of projects B6 (Analytic and Spectral Properties of Geometric Operators) und C2 (Differential Geometry: Geometric and Spectral Invariants of Riemannian, Lorentzian and Conformal Manifolds)

## SPEAKING AT NATIONAL AND INTERNATIONAL CONFERENCES AND CONVENTIONS

- October 2023: conference “Recent results on analysis and geometry of (families of) Dirichlet spaces”, organized by Technical University Chemnitz, 5 days
- December 2021: Oberwolfach Workshop “Variable Curvature Bounds, Analysis and Topology on Dirichlet Spaces”, 5 days
- January 2020: bi-annual “n-cities seminar“, organised by Universität Leipzig, Universität Potsdam, Technische Universität Chemnitz, 1 day, held at Max-Planck-Institute for Mathematics in the Natural Sciences
- September 2015: Annual conference of the German Mathematics Association (DMV), organized by Universität Hamburg, 5 days
- September 2012: Annual conference of the German Mathematics Association (DMV), organized by Universität des Saarlandes, 5 days

## NATIONAL AND INTERNATIONAL AWARDS AND ACCOLADES FOR RESEARCH ACTIVITY

- Award for best master’s thesis in the category “Geometry and topology” at the students conference 2012, part of the annual conference of the German Mathematics Association (DMV)
- Award for best talk in the category “Geometry and topology” at the students conference 2012, part of the annual conference of the German Mathematics Association (DMV)

## QUALIFICATIONS UNDER ART.24, PARAGRAPH 3.a AND 3.b, OF LAW No.240/2010 OF 30 DECEMBER 2010

Having never held any position in Italy, I qualify for the position I apply for.

## SCIENTIFIC PRODUCTION

### SCIENTIFIC PUBLICATIONS

- *A Chern-Simons transgression formula for supersymmetric path integrals on spin manifolds.* With Sergio Luigi Cacciatori and Batu Güneysu. J. Geom. Phys., vol. 195, 2024. <https://doi.org/10.1016/j.geomphys.2023.105041>
- *Feynman-Kac formula for perturbations of order  $\leq 1$  and noncommutative geometry.* With Batu Güneysu. Stoch PDE: Anal Comp (2023) 11:1519-1552. <https://doi.org/10.1007/s40072-022-00269-3>
- *Relatively compact sets of Heisenberg manifolds.* Differential Geometry and its Applications, Vol. 76 (2021). <https://doi.org/10.1016/j.difgeo.2021.101739>
- *Scattering Theory and Spectral Stability under a Ricci Flow for Dirac Operators.* With Batu Güneysu. To appear in Ann. Fac. Sci. Toulouse, Math.
- *Properties of the Dirac spectrum on three dimensional lens spaces.* Osaka J. Math. 54 (2017), No. 4, 747-765.
- *An explicit formula for the Dirac multiplicities on Lens spaces.* With E. A. Lauret. J. Geom. Anal. 27, No. 1, 689-725 (2017). <https://doi.org/10.1007/s12220-016-9695-x>

### Book (chapters):

- Contributions to the spectral geometry of locally homogeneous spaces. With Dorothee Schüth. Book chapter in Space - Time - Matter. Analytic and Geometric Structures. Brüning, J. (Ed.), Staudacher, M. (Ed.), Fiedler, B., et al. (2018). Berlin, Boston: De Gruyter. <http://dx.doi.org/10.1515/9783110452150>

**Dissertation:**

- *The Height of compact nonsingular Heisenberg-like Nilmanifolds*. Dissertation, Berlin, 2017.  
<http://dx.doi.org/10.18452/18924>

Date

18.07.2024

Place

Leipzig, Germany