

Rudolf Zeidler

Curriculum vitae

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Institutional address:

Mathematisches Institut

Einsteinstr. 62

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Education

2016 Dr. rer. nat. in Mathematics, University of Göttingen, summa cum laude

2013 MSc. in Mathematics, University of Vienna, with distinction

2011 BSc. in Mathematics, University of Vienna, with distinction

Academic Positions

since 2016 Postdoc research associate (*Akademischer Rat auf Zeit*), University of Münster

4–9/2020 *Vertretungsprofessor* (W2), University of Göttingen (on leave from Münster)

Third-party funding

2021–2023 Project leader in the DFG project “[Duality and the coarse assembly map](#)”, part of the second funding period of the SPP 2026 “Geometry at Infinity”, jointly with C. Wulff. 18000 € total, 9000 € for each PI

Scholarships, grants and awards

2019– [Investigator](#) in the Cluster of Excellence “Mathematics Münster: Dynamics – Geometry – Structure”, [Research Area B](#)

2013–2016 Doctoral scholarship funded by the DFG via the RTG 1493 “Mathematical structures in modern quantum physics” in Göttingen

08/2015 Participation in 3rd Heidelberg Laureate Forum

2014 Oberwolfach Leibniz Graduate Student Travel Grant

2013 Award of the Austrian Federal Ministry of Science and Research for excellent Master degree (*Würdigungspreis*)

2009–2012 Performance awards (*Leistungsstipendien*) of the University of Vienna for four consecutive academic years

Invitations for conference and workshop talks

- 06/2022 [Differential Geometry in the Large](#), Karlsruhe Institute for Technology
- 10/2021 [The 4th Geometric Analysis Festival](#)
- 2020 Plenary Speaker in the [2020 Virtual Workshop on Ricci and Scalar Curvature](#) in honor of Misha Gromov
- 2020 Noncommutative Geometry Festival, Dartmouth College [cancelled due to COVID-19]
- 09/2019 The first Geometry Conference for Friendship of Japan and Germany, Chuo University, Tokyo
- 06/2019 K-theory and noncommutative geometry, Fudan University, Shanghai
- 06/2018 Secondary and delocalized index invariants, University of Copenhagen
- 04/2017 27th NRW Topology Meeting, University of Wuppertal
- 09/2016 Summer school on coarse index theory, University of Freiburg (4 lectures given)

Invited research seminar talks

- 01/2022 Not Only Scalar Curvature Seminar, organized by M. Gromov, B. Hanke, C. Sormani, G. Yu
- 06/2021 Topology Seminar, University of Bonn
- 05/2021 Forschungsseminar Differentialgeometrie, University of Potsdam
- 03/2021 Pure Mathematics colloquium, University of Southampton
- 09/2020 Global Noncommutative Geometry Seminar
- 07/2020 RTG 2229 colloquium, Karlsruhe Institute for Technology
- 07/2019 Oberseminar Globale Analysis, University of Regensburg
- 03/2019 Noncommutative Geometry Seminar, Texas A&M University
- 05/2017 Oberseminar Topologie, University of Fribourg
- 05/2017 Oberseminar Differentialgeometrie, University of Augsburg
- 03/2017 Noncommutative Geometry Seminar, Pennsylvania State University
- 03/2017 Noncommutative Geometry Seminar, Texas A&M University
- 06/2016 Topology Seminar, University of Bonn
- 05/2016 Centro de Ciencias Matemáticas, UNAM Morelia, Mexico (3 lectures given)
- 05/2016 Oberseminar Differentialgeometrie, University of Augsburg
- 01/2016 Operator Algebra Seminar, University of Copenhagen
- 11/2015 Arbeitsgruppenseminar Bunke, University of Regensburg
- 06/2015 Arbeitsgruppenseminar Ammann, University of Regensburg
- 03/2015 Geometry and Analysis on Groups Research Seminar, University of Vienna

Contributed talks

- 06/2021 Oberwolfach Workshop: Analysis, Geometry and Topology of Positive Scalar Curvature Metrics
- 07/2019 Workshop on Curvature and Global Shape, University of Münster
- 07/2019 Geometry of Scalar Curvature 2019, Cortona, Italy (working seminar talk)
- 06/2018 International Conference on Manifolds, Groups and Homotopy, Skye, Scotland
- 08/2017 Oberwolfach Workshop: Analysis, Geometry and Topology of Positive Scalar Curvature Metrics
- 06/2017 Analysis and Topology in Interaction, Cortona, Italy
- 07/2016 Oberwolfach Workshop: Topologie
- 03/2016 Measured group theory, Erwin Schrödinger Institute, Vienna
- 01/2016 Banach Methods in Noncommutative Geometry II, University of Münster
- 08/2015 Young Mathematicians in C^* -algebras, University of Copenhagen
- 07/2015 Young Topologists Meeting 2015, EPF Lausanne
- 06/2015 Noncommutative methods in Topology and Geometry, University of Lyon

Further event participation (selected)

- 10/2018 Bivariant K-theory in Geometry and Physics, Erwin Schrödinger Institute, Vienna
- 05/2015 NCGOA Spring Institute 2015, Vanderbilt University, Nashville
- 01/2015 Oberwolfach workshop: Geometric topology (reporter)
- 06/2014 K-theory and index theory, Université de Lorraine, Metz
- 02/2013 Young geometric group theory conference II, Technion, Haifa

Short international research visits

- 03/2019 Texas A&M University, USA
- 03/2017 Texas A&M University, USA
- 05/2016 Centro de Ciencias Matemáticas, UNAM Morelia, Mexico

Teaching experience

University of Münster

- Tutorials for Analysis III, assistant (Winter 2021/22)
- Seminar “Seiberg-Witten theory”, co-organizer (Winter 2021/22)
- Tutorials for Analysis II, assistant (Summer 2021)
- Seminar “Generalized soap bubbles and scalar curvature”, co-organizer (Winter 2020/21)
- Tutorials for Analysis I, assistant (Winter 2020/21)

University of Göttingen

- Research seminar “Topology and Geometry”, co-organizer (Summer 2020)
- Lecture course “Mathematics for physics students II”, lecturer (Summer 2020)

University of Münster

Seminar “Positive scalar curvature”, co-organizer	(Winter 2019/20)
Tutorials for Algebra (teaching degree), assistant	(Winter 2019/20)
Seminar “The world of conic sections” (teaching degree), co-organizer	(Summer 2019)
Tutorials for Group theory (teaching degree), assistant	(Winter 2018/19)
Seminar “Vector bundles and K-theory”, co-organizer	(Summer 2018)
Tutorials for Linear Algebra II, assistant	(Summer 2018)
Lecture course “Coarse index theory”, lecturer	(Winter 2017/18)
Tutorials for Linear Algebra I, assistant	(Winter 2017/18)
Tutorials for Foundations of Analysis, Topology and Geometry, assistant	(Summer 2017)
Seminar “Topics from Analysis” (teaching degree), co-organizer	(Summer 2017)
Tutorials for Algebra (teaching degree), assistant	(Winter 2016/17)

University of Vienna

Introduction to computer infrastructure for mathematicians (4x), teaching assistant	(2010–2012)
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Supervised Bachelor theses (Münster)

<i>Curvature of surfaces and the Gauß–Bonnet theorem</i>	(2019)
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Departmental Service (Münster)

2021–	Executive board of the Cluster of Excellence “Mathematics Münster”
2019–2021	Early Career Committee of the Cluster of Excellence “Mathematics Münster”
2019–2020	Appointment committee for a professorship
2018–2019	Design and technical management for a successful institute-wide grant proposal (CRC 1442 Geometry: Deformations and Rigidity)

Languages

German	native
English	fluent

Technical skills

Python, SageMath, Mathematica, LaTeX, Git

List of publications

Peer-reviewed articles

- [1] S. Cecchini and R. Zeidler. “Scalar and mean curvature comparison via the Dirac operator”. In: *Geom. Topol.* (to appear). →G&T forthcoming issues. arXiv: 2103.06833 [math.DG].
- [2] R. Zeidler. “Band width estimates via the Dirac operator”. In: *J. Differential Geom.* (to appear). →JDG accepted papers. arXiv: 1905.08520 [math.DG].
- [3] Z. Xie, G. Yu, and R. Zeidler. “On the range of the relative higher index and the higher rho-invariant for positive scalar curvature”. In: *Adv. Math.* 390 (2021). DOI: 10.1016/j.aim.2021.107897.
- [4] M. Nitsche, T. Schick, and R. Zeidler. “Transfer maps in generalized group homology via submanifolds”. In: *Doc. Math.* 26 (2021), pp. 947–979. DOI: 10.25537/dm.2021v26.947-979.
- [5] A. Engel, C. Wulff, and R. Zeidler. “Slant products on the Higson–Roe exact sequence”. In: *Ann. Inst. Fourier* 71.3 (2021), pp. 913–1021. DOI: 10.5802/aif.3406.
- [6] R. Zeidler. “Width, largeness and index theory”. In: *SIGMA* 16 (2020), 127, 15 pages. DOI: 10.3842/SIGMA.2020.127. Contribution to the Special Issue on Scalar and Ricci Curvature in honor of Misha Gromov on his 75th Birthday.
- [7] N. Bárcenas and R. Zeidler. “Positive scalar curvature and low-degree group homology”. In: *Ann. K-Theory* 3.3 (2018), pp. 565–579. DOI: 10.2140/akt.2018.3.565.
- [8] R. Zeidler. “An index obstruction to positive scalar curvature on fiber bundles over aspherical manifolds”. In: *Algebr. Geom. Topol.* 17.5 (2017), pp. 3081–3094. DOI: 10.2140/agt.2017.17.3081.
- [9] R. Zeidler. “Positive scalar curvature and product formulas for secondary index invariants”. In: *J. Topol.* 9.3 (2016), pp. 687–724. DOI: 10.1112/jtopol/jtw005.
- [10] R. Zeidler. “Coarse median structures and homomorphisms from Kazhdan groups”. In: *Geom. Dedicata* 180 (2016), pp. 49–68. DOI: 10.1007/s10711-015-0090-8.

Preprints

- [11] S. Cecchini and R. Zeidler. *The positive mass theorem and distance estimates in the spin setting*. Submitted. arXiv: 2108.11972 [math.DG].

Survey

- [12] S. Cecchini and R. Zeidler. “Scalar curvature and generalized Callias operators”. In: *Perspectives in Scalar Curvature*. Ed. by M. Gromov and B. Lawson. To appear. World Scientific, 2022.

Short contributions to workshop proceedings

- [13] R. Zeidler. “Secondary large-scale index theory and positive scalar curvature”. In: *Oberwolfach Rep. 36/2017: Analysis, Geometry and Topology of Positive Scalar Curvature Metrics*. 2017, pp. 2259–2262. DOI: 10.4171/OWR/2017/36.
- [14] R. Zeidler. “Primary and secondary obstructions to positive scalar curvature via submanifolds”. In: *Oberwolfach Rep. 35/2016: Topologie*. 2016, pp. 2040–2042. DOI: 10.4171/OWR/2016/35.

Theses

- [15] R. Zeidler. “Secondary large-scale index theory and positive scalar curvature”. Doctoral thesis, advisor: T. Schick. University of Göttingen, 2016. DOI: [11858/00-1735-0000-0028-8826-7](https://doi.org/10.11858/00-1735-0000-0028-8826-7).
- [16] R. Zeidler. “Coarse median structures on groups”. Master thesis, advisor: G. Arzhantseva. University of Vienna, 2013. DOI: [10.25365/thesis.28999](https://doi.org/10.25365/thesis.28999).