

# Philipp REISER

## Curriculum Vitae

EMAIL [philipp.reiser.math@mailbox.org](mailto:philipp.reiser.math@mailbox.org)  
ORCID [0000-0002-7997-7484](https://orcid.org/0000-0002-7997-7484)  
WEBSITE [philipp-reiser.github.io](https://philipp-reiser.github.io)

RESEARCH INTERESTS Riemannian geometry and geometric topology. In particular: Riemannian manifolds of positive Ricci curvature, various other lower curvature bounds (scalar, sectional intermediate Ricci curvature), generalised notions of Ricci curvature, spaces and moduli spaces of Riemannian metrics, surgery, torus actions and Lie group actions with low-dimensional orbit space

LANGUAGES German (native), English (fluent), French (intermediate), Chinese (intermediate)

## 1. EDUCATION

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Feb 2019 - Aug 2022	Karlsruhe Institute of Technology Degree: PhD in Mathematics (Dr. rer. nat.) Thesis: <i>Generalized Surgery on Riemannian Manifolds of Positive Ricci Curvature</i> , <a href="https://doi.org/10.5445/IR/1000150280">doi:10.5445/IR/1000150280</a> Supervisors: Prof. Wilderich Tuschmann, Prof. Fernando Galaz-García
Oct 2016 - Feb 2019	Karlsruhe Institute of Technology Degree: Master of Science in Mathematics (M.Sc.) Thesis: <i>Spaces and Moduli Spaces of Riemannian Metrics with Positive Scalar Curvature</i> Supervisor: Prof. Fernando Galaz-García
Oct 2013 - Sep 2016	Karlsruhe Institute of Technology Degree: Bachelor of Science in Mathematics (B.Sc.) Thesis: <i>The Plateau Problem and Conformal Parameters</i> Supervisor: Prof. Tobias Lamm

## 2. EMPLOYMENT

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Sep 2023 - Aug 2025	Department of Mathematics, University of Fribourg Position: Postdoc Supervisor: Prof. Anand Dessai
Sep 2022 - Aug 2023	Department of Mathematics, University of Fribourg Position: Postdoc within the SNSF-Project 200020E_193062 and the DFG-Priority programme SPP 2026 Supervisor: Prof. Anand Dessai
Oct 2019 - Aug 2022	Department of Mathematics, Karlsruhe Institute of Technology Position: Research associate within the RTG 2229 “Asymptotic Invariants and Limits of Groups and Spaces” Supervisor: Prof. Wilderich Tuschmann

## 3. PUBLICATIONS

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10. P. Reiser and D.J. Wraith, *Positive intermediate Ricci curvature on fibre bundles*. SIGMA Symmetry Integrability Geom. Methods Appl. (to appear). [arXiv:2211.14610](https://arxiv.org/abs/2211.14610).

9. P. Reiser and D.J. Wraith, *Positive intermediate Ricci curvature on connected sums*. Algebr. Geom. Topol. (to appear). [arXiv:2310.02746](#).
8. P. Reiser and F. Galaz-García, *Free torus actions and twisted suspensions*. Forum Math. Sigma (to appear). [arXiv:2305.06068](#).
7. P. Reiser, *Examples of tangent cones of non-collapsed Ricci limit spaces*. Nonlinear Anal. 252 (2025), Paper No. 113699. [doi:10.1016/j.na.2024.113699](#).
6. P. Reiser, *Metrics of Positive Ricci Curvature on Simply-Connected Manifolds of Dimension  $6k$* . J. Topol. 17(4) (2024), Paper No. e70007, 50. [doi:10.1112/topo.70007](#).
5. P. Reiser, *Positive Ricci Curvature on Twisted Suspensions*. Int. Math. Res. Not. IMRN 22 (2024), 14115–14137, [doi:10.1093/imrn/rnae231](#).
4. P. Reiser and D.J. Wraith, *Intermediate Ricci curvatures and Gromov’s Betti number bound*. J. Geom. Anal. 33 (2023), 364, [doi:10.1007/s12220-023-01423-6](#).
3. P. Reiser, *Generalized Surgery on Riemannian Manifolds of Positive Ricci Curvature*. Trans. Amer. Math. Soc. 376 (2023), 3397–3418, [doi:10.1090/tran/8789](#).
2. G. Frenck, F. Galaz-García, and P. Reiser, *Cohomogeneity One Manifolds and Homogeneous Spaces of Positive Scalar Curvature*. Bull. Lond. Math. Soc. 54 (2022), no.1, 71–82, [doi:10.1112/blms.12557](#).
1. P. Reiser, *Moduli Spaces of Metrics of Positive Scalar Curvature on Topological Spherical Space Forms*. Canad. Math. Bull. 63 (2020), no. 4, 901–908, [doi:10.4153/s0008439520000132](#).

#### 4. PREPRINTS

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4. D. Maximo, P. Reiser and D. Semola, *Ricci curvature and minimal hypersurfaces with large Betti numbers*. [arXiv:2507.17305](#) (2025).
3. P. Reiser and F. Tripaldi, *Surgery and positive Bakry-Émery Ricci curvature*. [arXiv:2410.18859](#) (2024).
2. P. Reiser, *Positive Ricci curvature on connected sums of fibre bundles*. [arXiv:2406.02274](#) (2024).
1. P. Reiser and D.J. Wraith, *A generalization of the Perelman gluing theorem and applications*. [arXiv:2308.06996](#) (2023).

#### 5. AWARDS AND HONORS

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Nov 2019	Faculty award for outstanding achievements in the Master’s programme in mathematics Karlsruhe Institute of Technology
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#### 6. GRANTS AND FELLOWSHIPS

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Jul 2024	Mathematics Münster programme <i>Young Research Fellow</i> to visit Dr. Masoumeh Zarei at the University of Münster
Mar 2022 - Jun 2022	Karlsruhe House of Young Scientists (KHYS) <i>Research Travel Grant</i> to visit Prof. David Wraith at Maynooth University
Dec 2019 - Oct 2020	Research Assistantship with Prof. Fernando Galaz-García at Durham University, funded by DFG grant GA 2050 2-1 within the SPP 2026 “Geometry at Infinity”
Feb 2019 - Aug 2019	DAAD Scholarship to visit Prof. Yihu Yang at Shanghai Jiao Tong University

Oct 2016 - | Scholarship *Deutschlandstipendium*  
 Sep 2018

## 7. INVITED TALKS

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May 2025	<i>Manifolds of positive Bakry-Émery Ricci curvature</i> Peking-Westlake Geometric Analysis Seminar, held online
Apr 2025	<i>Tangent cones of non-collapsed Ricci limit spaces</i> Geometric Analysis Seminar, University of Vienna
Nov 2024	<i>Positive Ricci curvature and connected sums</i> Geometry and Topology Seminar, Durham University
Nov 2024	<i>Positive Ricci curvature and connected sums</i> Geometry Seminar, University of Leeds
Sep 2024	<i>Twisted suspensions, torus actions, and positive Ricci curvature</i> Virtual seminar on geometry with symmetries, held online
Jul 2024	<i>Manifolds of positive Bakry-Émery Ricci curvature</i> Differential Geometry Research Seminar, University of Münster
Jun 2024	<i>Manifolds of positive Bakry-Émery Ricci curvature</i> Differential Geometry Research Seminar, Karlsruhe Institute of Technology
Feb 2024	<i>Connected sums and lower curvature bounds</i> Colloquium of the Department of Mathematics and Statistics, Maynooth University
Feb 2024	<i>Surgery on weighted Riemannian manifolds of positive Bakry-Émery Ricci curvature</i> Geometry and Topology Seminar, Durham University
Nov 2023	<i>Positive intermediate Ricci curvature, surgery and Gromov's Betti number bound</i> Geometry Research Seminar, University of Freiburg i.Br.
Jul 2023	<i>Positive intermediate Ricci curvature, surgery and Gromov's Betti number bound</i> Workshop: Modern Techniques in Riemannian Geometry 2023, Universidad Nacional Autónoma de México (UNAM), held online
May 2023	<i>Surgery and positive intermediate Ricci curvature</i> Differential Geometry Research Seminar, University of Münster
May 2023	<i>Positive intermediate Ricci curvature, surgery and Gromov's Betti number bound</i> Differential Geometry Research Seminar, Karlsruhe Institute of Technology
May 2023	<i>Positive intermediate Ricci curvature: an introduction and new examples</i> Riemannian Topology Seminar, University of Stuttgart
Apr 2023	<i>Surgery and positive intermediate Ricci curvature</i> Geometry and Topology Seminar, Syracuse University
Feb 2023	<i>Positive intermediate Ricci curvature on fibre bundles</i> Oregon Topology/Geometry Zoom Seminar, held online
Dec 2022	<i>Surgery on Riemannian Manifolds of Positive Ricci Curvature</i> Conference: Young Mathematicians in Geometry and Analysis, Université de Haute-Alsace (UHA), Mulhouse

Nov 2022	<i>Generalized Surgery on Riemannian Manifolds of Positive Ricci Curvature</i> Geometry and Topology Seminar, Durham University
Feb 2022	<i>Generalized Surgery on Riemannian Manifolds of Positive Ricci Curvature and Applications in Dimension 6</i> Irish Geometry Seminar, held online
Mar 2021	<i>Generalized Surgery on Riemannian Manifolds of Positive Ricci Curvature</i> Oregon Topology/Geometry Zoom Seminar, held online
Jan 2021	<i>Positive Ricci Curvature and Surgery</i> Augsburg-Fribourg-Karlsruhe (A-Fri-Ka) Riemannian Topology Research Seminar, held online
Jan 2020	<i>Moduli Spaces of Riemannian Metrics with Positive Scalar Curvature on Topological Spherical Space Forms</i> Geometry and Topology Seminar, Durham University
Oct 2019	<i>Moduli Spaces of Riemannian Metrics with Positive Scalar Curvature on Topological Spherical Space Forms</i> Topology Seminar, University of Fribourg

## 8. CONTRIBUTED TALKS

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Aug 2023	<i>Positive intermediate Ricci curvature, surgery and Gromov's Betti number bound</i> Workshop: Curvature and Global Shape, University of Münster
Jun 2021	<i>Positive Ricci Curvature and Generalized Surgery</i> Workshop: Analysis, Geometry and Topology of Positive Scalar Curvature Metrics, Oberwolfach

## 9. TEACHING EXPERIENCE

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Feb 2025 - May 2025	Lecture: <i>Linear Algebra II</i> , Lecturer University of Fribourg
Feb 2024 - May 2024	Lecture: <i>Algebra and Geometry II</i> , Teaching Assistant University of Fribourg
Sep 2023 - Dec 2023	Proseminar: <i>Knot Theory</i> , Lecturer University of Fribourg
Feb 2023 - May 2023	Lecture: <i>Linear Algebra II</i> , Teaching Assistant University of Fribourg
Sep 2022 - Dec 2022	Lecture: <i>Linear Algebra I</i> , Teaching Assistant University of Fribourg
Apr 2022 - Jun 2022	Seminar: <i>Lie Groups</i> , Lecturer Maynooth University
Mar 2019 - Apr 2019	Mini Lecture Series (4 sessions): <i>Spaces and Moduli Spaces of Riemannian Metrics with Positive Scalar Curvature</i> , Lecturer Shanghai Jiao Tong University
Oct 2018 - Feb 2019	Lecture: <i>Linear Algebra I</i> , Tutor Karlsruhe Institute of Technology

Apr 2018 - Sep 2018	Lecture: <i>Introduction to Algebra and Number Theory</i> , Tutor Karlsruhe Institute of Technology
Oct 2017 - Mar 2018	Lecture: <i>Analysis I</i> , Tutor Karlsruhe Institute of Technology
Oct 2016 - Mar 2017	Lecture: <i>Analysis III</i> , Tutor Karlsruhe Institute of Technology
Apr 2016 - Sep 2016	Lecture: <i>Analysis II</i> , Tutor Karlsruhe Institute of Technology
Oct 2015 - Mar 2016	Lecture: <i>Analysis I</i> , Tutor Karlsruhe Institute of Technology

## 10. EXTENDED VISITS

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Jul 2024	University of Münster Visiting Dr. Masoumeh Zarei
Mar 2022 - Jun 2022	Maynooth University Visiting Prof. David Wraith
Dec 2019 - Oct 2020	Durham University Visiting Prof. Fernando Galaz-García
Feb 2019 - Aug 2019	Shanghai Jiao Tong University Visiting Prof. Yihu Yang

## 11. SERVICE

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	Reviewer for <i>Pacific Journal of Mathematics, Topology and its Applications</i>
2025	Student co-supervision (with Prof. Anand Dessai): Axel Dafflon (M.Sc.), Thesis title: "Riemannian submersions and positive Ricci curvature"
Sep 2022 - today	Co-organiser of the topology research seminar University of Fribourg
Jan 2024	Member of the departmental advisory group for the hiring of a professor in mathematics University of Fribourg
Nov 2023	Co-organiser of the workshop <i>Riemannian Topology Meeting</i> University of Fribourg
Oct 2020 - Sep 2021	Speaker of the Ph.D. Students of the RTG 2229 "Asymptotic Invariants and Limits of Groups and Spaces" Karlsruhe Institute of Technology

## 12. CONFERENCES ATTENDED

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Nov 2024	<i>Young Mathematicians in Geometry and Analysis</i> Université de Haute Alsace (UHA), Mulhouse
Nov 2023	<i>Riemannian Topology Meeting</i> University of Fribourg

Aug 2023	<i>Curvature and Global Shape</i> University of Münster
Jul 2023	<i>Modern Techniques in Riemannian Geometry 2023</i> Universidad Nacional Autónoma de México (UNAM), participated online
Jun 2023	<i>Geometry and analysis of groups and manifolds</i> De Giorgi Center, SNS Pisa
Dec 2022	<i>Young Mathematicians in Geometry and Analysis</i> Université de Haute Alsace (UHA), Mulhouse
Aug 2022	<i>Metric Measure Spaces with Symmetry and Lower Ricci Curvature Bounds</i> Casa Matemática Oaxaca, participated online
May 2022	<i>Groups in Galway meets the Irish Geometry Conference</i> National University of Ireland, Galway
Aug 2021	<i>Curvature and Global Shape</i> University of Münster
Jun 2021	<i>Analysis, Geometry and Topology of Positive Scalar Curvature Metrics</i> Oberwolfach
Aug 2020	<i>Virtual Workshop on Ricci and Scalar Curvature in Honor of Misha Gromov's 75th Birthday</i> held online
Sep 2019	<i>Student Conference of the DMV Annual Meeting</i> Karlsruhe
Nov 2018	<i>Riemannian Topology Meeting</i> University of Fribourg