

# Curriculum Vitae

## Personal Data

Name	Paul Schwahn
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Position	Postdoctoral researcher at IMECC, Unicamp

## Education

2014–2017	B.Sc. studies at the University of Stuttgart
Oct 2017	Graduation with a B.Sc. in Mathematics at the University of Stuttgart. Bachelor's thesis: <i>Scattering theory for automorphic functions</i>  Award of the <i>Robert Bosch GmbH</i> for excellent B.Sc. degree
2017–2020	M.Sc. studies at the JLU Gießen and the University of Stuttgart
Apr 2020	Graduation with a M.Sc. in Mathematics at the University of Stuttgart. Master's thesis: <i>Einstein deformations on homogeneous spaces</i>
Jan 2021	Award of the <a href="#">Freunde der Mathematik an der Universität Stuttgart</a> (Friends of mathematics at the University of Stuttgart) for best M.Sc. degree
Jul 2021	Award of the <a href="#">Freunde der Universität Stuttgart</a> (Friends of the University of Stuttgart) for extraordinary scientific accomplishments
2020–2023	Doctoral studies in Mathematics under the supervision of Prof. Uwe Semmelmann
Jul 2023	Graduation <i>summa cum laude</i> with a Dr.rer.nat. at the University of Stuttgart. Doctoral thesis: <a href="#">Stability of Einstein metrics on homogeneous spaces</a>

## Work experience & Funding

2016–2020	Student assistant/tutor for various mathematics courses at the University of Stuttgart
2020–2023	Research associate/teaching assistant at the Institute of Geometry and Topology, University of Stuttgart. Partially funded by <a href="#">SPP 2026 Geometry at Infinity</a>  Assistance for the courses <i>Analysis</i> ; <i>Geometry for Teachers</i> ; <i>Advanced Mathematics</i> (for engineering students)
2023–2024	Postdoctoral researcher at <i>Laboratoire de mathématiques d'Orsay</i> , Université Paris-Saclay. Funded by the <i>BRIDGES</i> collaboration, <a href="#">ANR-21-CE40-0017</a> . Partially funded by the <a href="#">Procope program</a> , Project No. 48959TL

as of 2024                      Postdoctoral researcher at IMECC, Unicamp. Fellow of *FAPESP*, [Project 2024/08127-4](#), under the *BRIDGES* collaboration

### Schools, seminars, stays

Sep 2016                      [Ferienakademie](#) (summer school) of FAU Erlangen-Nürnberg, TU Munich and University of Stuttgart

Oct 2020                      Working seminar at Philipps-Universität Marburg, Department of Mathematics

Jul 2021                      Summer school course [Riemannian foliations and Lie group actions](#), Scuola Matematica Interuniversitaria, Cortona

May 2022                      Research stay at CUNY with Renato Bettiol

Sep 2022                      Block seminar [Construction and degeneration of Einstein 4-manifolds](#), University of Regensburg

Nov 2022                      Oberwolfach Graduate Seminar [Geometry and Topology of Compact Homogeneous Spaces](#)

Jun 2024                      Summer school of the [BRIDGES meeting 2024](#), Institut d'Études Scientifiques de Cargèse

### Seminar talks

Sep 2021                      Differential Geometry Seminar, Universidad Nacional de Córdoba

Nov 2021                      [Geometry & Topology Seminar](#), University of Stuttgart

May 2022                      [CUNY Geometric Analysis Seminar](#)

May 2022                      [Geometry Seminar](#), University of Florence

Jul 2022                      [London Geometry & Topology Seminar](#)

May 2023                      [Riemannian Topology Seminar](#), University of Stuttgart

May 2023                      Online talk at the [Virtual Seminar on Geometry with Symmetries](#)

Jul 2023                      [Working group seminar](#) of the differential geometry group, University of Regensburg

Oct 2023                      *Séminaire Géométrie Topologie Dynamique*, Université Paris-Saclay

Dec 2023                      [Research Seminar Differential Geometry and Analysis](#) of Philipps-Universität Marburg

Mar 2024                      Geometry seminar of Université Claude-Bernard Lyon

Apr 2024                      [ULB geometry seminar](#), Université Libre de Bruxelles

Jul 2024                      [Geometry & Topology Seminar](#), University of Stuttgart

Jul 2024                      [Seminar Geometry](#), KU Leuven

Oct 2024                      *Seminário SP de Geometria*, São Carlos (joint meeting of ICMC, IME, UFS-Car, Unicamp)

Nov 2024                      Geometry seminar of IMECC, Unicamp

Mar 2025                      [Geometry seminar](#) of ICMC, University of São Paulo

## Conference posters

Jul 2021	Poster and <a href="#">online talk</a> at <a href="#">Mathematical Congress of the Americas</a>
Mar 2024	Poster at the conference <a href="#">Special Holonomy and Geometric Structures on Complex Manifolds</a> , IMPA

## Conference talks

Aug 2022	<a href="#">Spaces, Structures, Symmetries</a> , Università degli Studi di Bari Aldo Moro
Jun 2023	BRIDGES workshop <a href="#">Special geometries and gauge theories</a> , University of Pau
Jul 2023	<a href="#">Einstein Spaces and Special Geometry</a> , Institut Mittag-Leffler
Jul 2024	BRIDGES meeting in <a href="#">Gauge Theory, extremal structures and stability</a> , Institut d'Études Scientifiques de Cargèse
Jul 2024	<a href="#">Junior Meeting Einstein Geometry and Special Holonomy</a> , CAU Kiel
Feb 2025	<a href="#">MAM III</a> on Quaternion-Kähler manifolds and the LeBrun–Salamon Conjecture, Philipps-Universität Marburg
Jun 2025	Problem-solving workshop <a href="#">Computational Geometric Analysis</a> , City University of New York

## Organization of events

Sep 2023	<a href="#">Sesquinar</a> , a student seminar about tensors, University of Stuttgart
Oct 2023	International conference <a href="#">The Crazy World of Arthur L. Besse: a workshop on Einstein manifolds</a> , University of Stuttgart
Sep 2024	<a href="#">Semi-LEVEN-ear</a> , a student seminar about formalization of mathematics, University of Stuttgart.

## Miscellaneous

2015–2020	Commitment in the <a href="#">Faculty Student Group</a> in Stuttgart
2022–2023	Elected representative of doctoral students in the Faculty Council (Mathematics and Physics), Chairman of Faculty Student Council and member of the <a href="#">Student Parliament</a> in Stuttgart

## Skills and interests

Research	Riemannian geometry, curvature, special holonomy, geometric analysis, manifolds with symmetries, Lie theory
Languages	English (fluent), French (basic), German (native), Portuguese (basic)
Programming	C++, LiE, Matlab, Python, SageMath
Hobbies	Climbing, Piano, Pen&Paper RPGs, Game development, Formalization of mathematics/computer-assisted proofs

## Publications

- Nov 2021      *Stability of Einstein metrics on symmetric spaces of compact type*, Ann. Glob. Anal. Geom. 61, pp. 333–357.  
DOI: [10.1007/s10455-021-09810-4](https://doi.org/10.1007/s10455-021-09810-4)
- Sep 2022      *Coindex and Rigidity of Einstein Metrics on Homogeneous Gray Manifolds*, J. Geom. Anal. 32, no. 302.  
DOI: [10.1007/s12220-022-01061-4](https://doi.org/10.1007/s12220-022-01061-4)
- Aug 2023      *Stability of the Non-Symmetric Space  $E_7/PSO(8)$* , Adv. Math. 432, 109268, joint with Uwe Semmelmann and Gregor Weingart.  
DOI: [10.1016/j.aim.2023.109268](https://doi.org/10.1016/j.aim.2023.109268)
- Sep 2023      Doctoral thesis: *Stability of Einstein metrics on homogeneous spaces*.  
DOI: [10.18419/opus-13515](https://doi.org/10.18419/opus-13515)
- Jul 2024      *The Lichnerowicz Laplacian on normal homogeneous spaces*, J. Reine Angew. Math. (Crelle’s Journal) Vol. 2024, no. 814, pp. 91–115  
DOI: [10.1515/crelle-2024-0038](https://doi.org/10.1515/crelle-2024-0038)
- Mar 2025      *On the rigidity of the complex Grassmannians*, Trans. Amer. Math. Soc. 378, no. 6, pp. 4335–4367 (2025), joint with with Stuart J. Hall and Uwe Semmelmann.  
DOI: [10.1090/tran/9402](https://doi.org/10.1090/tran/9402)

## Preprints

- Sep 2024      *Submersion constructions for geometries with parallel skew torsion*, joint with Andrei Moroianu, [arXiv:2409.14421](https://arxiv.org/abs/2409.14421).
- Dec 2024      *Sandwich operators and Einstein deformations of compact symmetric spaces related to Jordan algebras*, joint with Stuart J. Hall and Uwe Semmelmann, [arXiv:2412.08770](https://arxiv.org/abs/2412.08770).
- May 2025      *Formalizing a classification theorem for low-dimensional solvable Lie algebras in Lean*, joint with Viviana del Barco, Gustavo Infanti, and Exequiel Rivas, [arXiv:2505.19975](https://arxiv.org/abs/2505.19975).
- July 2025      *Einstein metrics, moduli spaces and their stability* (survey), joint with Uwe Semmelmann, [arXiv:2507.18463](https://arxiv.org/abs/2507.18463).

## Other

- Sep 2023      *Spinors, Dirac Operators and Metric Variations*, English translation of the article by Jean-Pierre Bourguignon and Paul Gauduchon: *Spineurs, opérateurs de dirac et variations de métriques*, Commun. Math. Phys. 144, pp. 581–599 (1992)

## Professional References

Prof. Uwe Semmelmann, University of Stuttgart (doctoral advisor)  
`uwe.semmelmann@mathematik.uni-stuttgart.de`

Prof. Christoph Böhm, Universität Münster (thesis referee)  
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Prof. Emilio A. Lauret, Universidad Nacional del Sur (thesis referee)  
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Prof. Andrei Moroianu, CNRS, Laboratoire de mathématiques d'Orsay (post-doctoral supervisor)  
`andrei.moroianu@math.cnrs.fr`

Prof. Viviana Jorgelina del Barco, Universidade Estadual de Campinas (postdoctoral supervisor)  
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Campinas, July 26, 2025