Curriculum Vitae

Personal Data

Name	Paul Schwahn
Birthdate	14. Feb. 1999
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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: *Scattering theory for automorphic functions*
	Award of the *Robert Bosch GmbH* 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: *Einstein deformations on homogeneous spaces*
Jan 2021	Award of the *Freunde der Mathematik an der Universität Stuttgart* (Friends of mathematics at the University of Stuttgart) for best M.Sc. degree
Jul 2021	Award of the *Freunde der Universität Stuttgart* (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 *summa cum laude* with a Dr.rer.nat. at the University of Stuttgart. Doctoral thesis: *Stability of Einstein metrics on homogeneous spaces*

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 *SPP 2026 Geometry at Infinity*
	Assistance for the courses *Analysis*; *Geometry for Teachers*; *Advanced Mathematics* (for engineering students)
2023–2024	Postdoctoral researcher at *Laboratoire de mathématiques d'Orsay*, Université Paris-Saclay. Funded by the *BRIDGES* collaboration, ANR-21-CE40-0017. Partially funded by the *Procope* program, 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 Cargése

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, UFSCar, Unicamp)
Nov 2024	Geometry seminar of IMECC, Unicamp
Mar 2025	Geometry seminar of ICMC, University of São Paulo

Conference posters

Jul 2021   Poster and online talk at *Mathematical Congress of the Americas*

Mar 2024   Poster at the conference *Special Holonomy and Geometric Structures on Complex Manifolds*, IMPA

Conference talks

Aug 2022   *Spaces, Structures, Symmetries*, Università degli Studi di Bari Aldo Moro

Jun 2023   BRIDGES workshop *Special geometries and gauge theories*, University of Pau

Jul 2023   *Einstein Spaces and Special Geometry*, Institut Mittag-Leffler

Jul 2024   BRIDGES meeting in *Gauge Theory, extremal structures and stability*, Institut d'Études Scientifiques de Cargèse

Jul 2024   Junior Meeting *Einstein Geometry and Special Holonomy*, CAU Kiel

Feb 2025   *MAM III* on Quaternion-Kähler manifolds and the LeBrun–Salamon Conjecture, Philipps-Universität Marburg

Jun 2025   Problem-solving workshop *Computational Geometric Analysis*, City University of New York

Organization of events

Sep 2023   *Sesquinar*, a student seminar about tensors, University of Stuttgart

Oct 2023   International conference *The Crazy World of Arthur L. Besse: a workshop on Einstein manifolds*, University of Stuttgart

Sep 2024   *Semi-L∃∀N-ear*, a student seminar about formalization of mathematics, University of Stuttgart.

Miscellaneous

2015–2020   Commitment in the Faculty Student Group 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 Student Parliament 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

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

Aug 2023   *Stability of the Non-Symmetric Space* $E_7/\mathrm{PSO}(8)$, Adv. Math. 432, 109268, joint with Uwe Semmelmann and Gregor Weingart.

DOI: 10.1016/j.aim.2023.109268

Sep 2023   Doctoral thesis: *Stability of Einstein metrics on homogeneous spaces*.

DOI: 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

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

Preprints

Sep 2024   *Submersion constructions for geometries with parallel skew torsion*, joint with Andrei Moroianu, arXiv: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.

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.

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
`uwe.semmelmann@mathematik.uni-stuttgart.de`

Prof. Andrei Moroianu, CNRS, Laboratoire de mathématiques d'Orsay
`andrei.moroianu@math.cnrs.fr`

Prof. Viviana Jorgelina del Barco, Universidade Estadual de Campinas
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Campinas, May 27, 2025