

Sylvie Paycha

Institut für Mathematik
Universität Potsdam
Campus Golm, Haus 9 Karl-Liebknecht-Str. 24-25
D-14476 Potsdam (Germany)
Telephone/Fax: (00 49) (0) 33 19 77 11 86
Email: paycha@math.uni-potsdam.de

Professor (W3), on long-time leave from the University Clermont-Auvergne, Clermont-Ferrand, France

Academic education

- 1994 Habilitation thesis (Habilitation à diriger des recherches), University Louis Pasteur, Strasbourg
- 1988 Ph.D., Ruhr University of Bochum (Supervisor: S. Albeverio)
- 1982 Agrégation de Mathématiques
- 1984 D.E.A. de Mathématiques, University Paris 7, Paris (Supervisor: Michel Balabane)

Professional career

- since 10/2011 Professor for Analysis (W3), University of Potsdam
- since 10/2011 on leave from the University Blaise Pascal in Clermont-Ferrand
- 09/1995–08/2011 Full Professor, University Blaise Pascal in Clermont-Ferrand
- 09/1989–08/1994 Assistant Professor (Maître de Conférences), University Louis Pasteur, Strasbourg
- 10/1985–09/1989 Lecturer at the Ruhr University of Bochum (Germany)
(Wiss. Hilfskraft until 1988, Wiss. Mitarbeiterin as from 10/1988)

Research areas

- Pseudodifferential analysis
- Regularisation and renormalisation methods
- Index theory
- Infinite dimensional geometry
- Stochastic processes on infinite dimensional manifolds

Awards/distinctions (selection)

- 1999/2000 von Humboldt fellowship, University of Bonn
- May 2003 Emmy Noether Professorship, University of Göttingen
- July 2003 Silla Sanford Professorship, University of Los Andes, Bogotá, Colombia
- 2013-2015 (Honorary Position) Associate Honorary Professor, University los Andes, Bogotá, Colombia
- April 2014 Promoted "Chevalier de la Légion d'Honneur" in France

Academic responsibilities (a selection)

- Jan. 2006- Dec. 2009 Chair of the EMS committee Women and Mathematics
- Jan. 2010- Dec. 2013 Vice-chair for EMS committee Women and Mathematics
- Jan. 2011–Dec. 2013 Member of the EMS committee for meetings
- Sept. 2005- June 2011 Member of the standing committee of the French Mathematical Society (SMF)
- Jan. 2010- Aug. 2011 Coordinator and initiator) of a CNRS National Research Network (<http://www.renorm.math.cnrs.fr>) on *Renormalization* which now encompasses some 50 members. (I resigned due to my moving from Clermont-Ferrand to Potsdam)
- Nov. 2015– Member of the French National University Council (Conseil National Universitaire)
- Sept. 2011– Member of the standing committee of *European Women in Mathematics* (EWM)

Conference and summer school organization (a selection)

- Jul. 1997– Jul. 2017 (every other year) Coorganizer of Summer Schools "Geometric and topological methods in quantum field theory", Villa de Leyva, Colombia
- Coorganizer of several scientific meetings at the MFO, Oberwolfach (1988, 2002, 2006)
- Coorganizer of several scientific meetings at the CIRM, Marseille (2000, 2004, 2012)
- Coorganizer of two scientific meetings at the MPI, Bonn (2005, 2010)
- Coorganizer of a conference *Motives, Quantum Field Theory and Pseudodifferential Operators*, Boston University 2008
- Coorganizer of a Masterclass on *Quantum theory's influences on topology, analysis and geometry*, Copenhagen 2013
- Coorganizer of an international conference *Renormalisation from Quantum Field Theory to Random and Dynamical Systems*, Potsdam 2013
- Coorganizer of a summer school *Fourier integral operators and applications*, Ouagadougou, Burkina Faso 2015 (funded by the Volkswagen Stiftung)
- Coorganizer of an international conference *Paths in, from and to renormalisation. At the confluence of rough paths, analysis, algebra and geometry*, Potsdam 2016
- Coorganizer of an international conference *Mathematics and Physics meet in La Habana*, Havana, Cuba 2017
- Coorganizer of an international conference *Women at the intersection of mathematics and high energy physics*, Mainz 2017

Evaluations (a selection)

- ★ Referee (on a regular basis) e.g. for Acta Mathematica, Ann. of Math., Annals of Math., Int. Math. Research Notices, J. Diff. Geom., J. Geom. and Phys., J. Math. Phys., Proc. Amer. Math. Soc.
- ★ Member of various hiring committees e.g. Strasbourg, Clermont-Ferrand, Potsdam (all three on various occasions), Berlin (TU), Stockholm (KTH) (twice), Metz (twice), Montpellier.

Editorial activities (a selection)

- (2001–2017) Coeditor of 8 volumes of proceedings *Geometric, algebraic and topological methods in quantum field theory* published by Amer. Math. Soc., Cambridge Univ. Press, Springer Verlag and World Scientific (<https://villadeleyvaschool.wordpress.com/>)
- Coeditor with F. Dumas, J.-Y. Le Dimet *Nouveaux invariants en géométrie et en topologie*, in “Panoramas et synthèses” N.11 (2001)
- Coeditor with S. Albeverio, M. Marcolli, and J. Plazas *Traces in geometry, number theory and quantum field theory* Aspects of Mathematics E38, Vieweg (2008)
- Coeditor with A. Carey, D. Ellwood, S. Rosenberg *Motives, Quantum Field Theory and Pseudodifferential Operators* (Ed. AMS/ Clay Mathematics Proceedings, Vol. **12** (2010)
- Coeditor with V. Mathai, S. Rosenberg, *Geometry and Quantum Field Theory*, Journal of the Australian Mathematical Society Vol. **90**, Issues 01 and 02 (2011)
- Editor *Fourier integral operators*, **to appear** in “Lectures in pure and applied mathematics”, Publication of the University of Potsdam.

PhD (○) and postdoc (●) supervision, with next affiliations (na)

- Catherine Ducourtioux, Clermont-Ferrand, 2001, na Assistant professor, Université de Corte
- Jean-Pierre Magnot, Clermont-Ferrand, 2002, na High school teacher, Clermont-Ferrand
- Alexander Cardona, Clermont-Ferrand, 2002, na Assistant professor, Universidad de Los Andes, Bogotá
- Marie-Françoise Ouedraogo, Clermont-Ferrand, 2009, na Assistant professor, Université de Ouagadougou, Burkina Faso
- (cosupervision) Carolina Neira, Bonn, 2010, na Assistant professor, Universidad Nacional, Bogotá
- Cyril Lévy, Potsdam, Oct. 2011- Sept. 2013, na Assistant professor, Université d’Albi, Frankreich
- (cosupervision 90/100) Cesar del Corral, Universidad Los Andes, Bogotá, 2016, na Tutorials, Universidad de Los Andes Bogotá
- (currently) Sara Azzali, Potsdam, since April 2014
- **(currently)** Pierre Clavier, Potsdam, since October 2015 (DFG project “The Euler-Maclaurin formula and Birkhoff-Hopf factorisation”)
- **(currently)** Youness Boutaib, Potsdam, since October 2016 (DFG project “FOR”)
- **(currently) as from Sept. 2017** (cosupervision 90/100) Diego Lopez, Universidad Nacional, Manizales, Colombia

Member of doctoral (◦) and habilitation (●) defense committees, a selection

- (examiner), Pierre Gosselin, Strasbourg, 1998
- (examiner), Moulay Benameur, Lyon, 2002
- (examiner), Paul Lescot, Amiens, 2002
- (referee and examiner), Clara Aldana, Bonn, 2009
- (referee and examiner), Cyril Lévy, Marseille-Luminy, 2009
- (referee and examiner), Arnaud Lathuille, Chambéry, 2009
- (referee and examiner), Alexandre Rey Alcantara, Metz, 2011
- (single examiner/opponent), Henri Lipponen, Helsinki, 2013
- (referee and examiner), Kevin Falk, Marseille, 2015
- (referee and examiner), Elisabeth Grieger, London, 2015
- (referee and examiner) Ngo Quoc Hoan (referee and examiner), Paris XIII, Dec. 2016

A selection of publications (◦) including books (●)

Books

- S.Albeverio, J. Jost, S. Paycha, S.Scarlatti; A mathematical introduction to string theory-variational problems, geometric and probabilistic methods, Cambridge University Press (1997)
- Regularised integrals, sums and traces; analytic aspects, American Mathematical Society University Lecture Notes, Vol. 59 (2012)

A selection of articles

- (with M.Arnaudon) *Factorisation of semi-martingales on principal fibre bundles*, Stochastics and Stochastic Reports **53**, p.81-107 (1995)
- (with M. Arnaudon) *Stochastic tools on Hilbert manifolds; Interplay with geometry and physics*, Commu. Math Phys. **187**, p.243-260 (1997)
- (with S. Rosenberg) *Curvature on determinant bundles and first Chern forms*, Journ. Geom. Phys. **45**, p.393-429 (2003)
- (with S. Scott) *A Laurent expansion for regularised integrals of holomorphic symbols*, Geom. And Funct. Anal. (2) **17** p. 491-536 (2007)
- *(Second) quantised resolvents and regularised traces* Journ. Geom. Phys. **57** p. 1345-1369 (2007)
- (with J. Mickelsson) *Renormalised Chern-Weil forms associated with families of Dirac operators*, Journ. Geom. Phys. **57** p. 1789-1814 (2007)
- (with L. Guo, B.-Y. Xie, B. Zhang) *Double shuffle relations and renormalization of multiple zeta values*, Proceedings of the Conference on *Algebraic cycles* held at the Ohio State University in 2008, Clay Math. Proc. , Vol. **12** (2009)
- *Renormalised multiple integrals of symbols with linear constraints*, Comm. Math. Phys. **266**, p. 495-540 (2006)
- (with D. Manchon) *Nested sums of symbols and renormalised multiple zeta values*, Int. Math. Research Notices, Vol 2010, N. 24, p. 4628-4697
- (with L.Guo and B. Zhang) *Renormalization by Birkhoff factorization and by generalized evaluators; a study case in "Noncommutative Geometry, Arithmetic and Related Topics"*, (Ed. A. Connes, K. Consani) John Hopkins Univ. Press p. 183– 211 (2011)
- (with L. Guo and B. Zhang) *Conical zeta values and their double subdivision relations*, Adv. in Math. **252** p. 343-381 (2014)
- (with C. Lévy and C. Neira-Jimenez) *The canonical trace and the noncommutative residue on the noncommutative torus*, Trans. Amer. Math. Soc., **368**, N. 2, 1051-1095 (2016)
- (with L. Guo and B. Zhang) *Algebraic Birkhoff Factorization and the Euler-Maclaurin formula on cones*, Duke Math. Journ. **166** p. 537–571 (2016)
- (with L. Guo and B. Zhang) *Renormalised conical zeta values*, **to appear** in a publication (Springer Verlag) of the Scuola Normale Superiore in Pisa
- (with S. Azzali) *Spectral ζ -invariants lifted to coverings*, **to appear** in Trans. of the London Math. Soc.

Updated August 2017