CURRICULUM VITAE

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Education

1966–1969	Grundschule Melanchthonstraße, Bremen
1969–1979	Gymnasium am Waller Ring, Bremen
Abitur, Gymnasium am Waller Ring, Bremen, 1979	
1979–1981	Study of Physics at the University of Bremen
1981–1983	Study of Physics at University of Göttingen
1983–1985	Study of Physics at the University of Bremen
1985	Degree in Physics, University of Bremen
1989	Ph.D. in Mathematics, University of Bremen

Academic Career

1989–1992	Assistent Professor, Free University of Berlin
1992–1994	Assistent Professor, RWTH Aachen
1994–1995	Visiting Assistent Professor, Department of Mathematics, University of South Carolina
1995–1996	Assistent Professor, RWTH Aachen
1996	Habilitation, Department of Mathematics, RWTH Aachen
WS 96/97–SS 97	Associate Professor, RWTH Aachen
Dez. 97	Visiting Professor, TU Chemnitz
1998 – 2001	Research Grant from the German National Science Foundation, RWTH Aachen
SS 2000	Associate Professor, University of Gießen
2001 – 2002	Senior Lecturer, Leader of the Reseach Group “Wavelet Analysis and Approximation Theory”, ZeTeM, , University of Bremen
since April 2002	Full Professor, Philipps–University of Marburg

Publications

Theses:

1. S. Dahlke, Invariante Mannigfaltigkeiten für Produkte zufälliger Diffeomorphismen, Dissertation, refereed by Prof. Dr. L. Arnold and Prof. Dr. H. F. Münzner, University of Bremen 1989, 1–106.

2. S. Dahlke, Wavelets: Construction Principles and Applications to the Numerical Treatment of Operator Equations, Habilitation thesis, RWTH Aachen, refereed by Prof. Dr. W. Dahmen (Aachen), Prof. Dr. R. DeVore (Columbia, South Carolina) and Prof. Dr. H. Esser (Aachen), Shaker Verlag, Aachen, 1997, ISBN 3-8265-2549-3, 1–181.

Publications in Journals:

1. S. Dahlke and I. Weinreich, Wavelet–Galerkin methods: An adapted biorthogonal wavelet basis, *Constructive Approximation* **9** (1993), 237–262.

2. S. Dahlke and I. Weinreich, Wavelet bases adapted to pseudodifferential operators, *Applied and Computational Harmonic Analysis* **1** (1994), 267–283.

3. S. Dahlke, A note on generalized Weyl–Heisenberg frames, *Applied Mathematics Letters* **7(3)** (1994), 79–82.

4. S. Dahlke, W. Dahmen, and V. Latour, Smooth refinable functions and wavelets obtained by convolution products, *Applied and Computational Harmonic Analysis* **2** (1995), 68–84.

5. S. Dahlke, W. Dahmen, E. Schmitt, and I. Weinreich, Multiresolution analysis and wavelets on S^2 and S^3, *Numerical Functional Analysis and Optimization* **16(1&2)** (1995), 19–41.

6. S. Dahlke and P. Maass, The affine uncertainty principle in one and two dimensions, *Computers and Mathematics with Applications* **30(3–6)** (1995), 293–305.

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8. S. Dahlke and P. Maass, Continuous wavelet transforms with applications to analyzing functions on spheres, *Journal of Fourier Analysis and Applications* **2(4)** (1996), 379–396.

9. S. Dahlke, Invariant manifolds for products of random diffeomorphisms, *Journal of Dynamics and Differential Equations* **9(1)** (1997), 157–210.

10. S. Dahlke, V. Latour, and M. Neeb, Generalized cardinal B–Splines: Stability, linear independence, and appropriate scaling matrices, *Constructive Approximation* **13** (1997), 29–56.

11. S. Dahlke and R. DeVore, Besov regularity for elliptic boundary value problems, *Communications in Partial Differential Equations* **22(1&2)** (1997), 1–16.

12. S. Dahlke, W. Dahmen, R. Hochmuth, and R. Schneider, Stable multiscale bases and local error estimation for elliptic problems, *Applied Numerical Mathematics* **23(1)** (1997), 21–48.

13. S. Dahlke and P. Maass, Interpolating refinable functions and wavelets for general scaling matrices, *Numerical Functional Analysis and Optimization* **18(5&6)** (1997), 521–539.

14. S. Dahlke, Besov regularity for elliptic boundary value problems with variable coefficients, *Manuscripta Mathematica* **95** (1998), 59–77.

15. S. Dahlke, Besov regularity for interface problems, *Zeitschrift für Angewandte Mathematik und Mechanik* **79(6)** (1999), 383–388.

16. S. Dahlke, Besov regularity for elliptic boundary value problems on polygonal domains, *Applied Mathematics Letters* **12(6)** (1999), 31–38.

17. S. Dahlke, K. Gröchenig, and P. Maass, A new approach to interpolating scaling functions, *Applicable Analysis* **72(3–4)** (1999), 485–500.

18. S. Dahlke, R. Hochmuth, and K. Urban, Adaptive wavelet methods for saddle point problems, *Mathematical Modelling and Numerical Analysis (M2AN)* **34(5)** (2000), 1003–1022.

19. A. Barinka, T. Barsch, P. Charton, A. Cohen, S. Dahlke, W. Dahmen, and K. Urban, Adaptive wavelet schemes for elliptic problems – Implementation and numerical experiments, *SIAM Journal on Scientific Computing* **23(3)** (2001), 910–939.

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22. A. Barinka, T. Barsch, S. Dahlke, M. Konik, and M. Mommer, Quadrature formulas for refinable functions and wavelets II: Error analysis, *Journal of Computational Analysis and Applications* **4(4)** (2002), 339–362.

23. S. Dahlke, P. Maass, and G. Teschke, Interpolating scaling functions with duals, *Journal of Computational Analysis and Applications* **6(1)** (2004).

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65. S. Dahlke, M. Fornasier, U. Friedrich, and T. Raasch, Multilevel preconditioning for sparse optimization of functionals with nonconvex fidelity terms, *Journal of Inverse and Ill–Posed Problems* **23(4)** (2015), 393–414.

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67. S. Dahlke, F. de Mari, E. de Vito, D. Labate, G. Steidl, G. Teschke, and S. Vigogna, Coorbit spaces with voice in a Frechet space, *Journal of Fourier Analysis and Applications* **23(1**] (2017), 141–206.)

68. S. Dahlke, L. Diening, C. Hartmann, B. Scharf, and M. Weimar, Besov regularity of solutions to the p–Poisson equation, *Nonlinear Analysis Series A: Theory, Methods & Applications* **130** (2016), 298–329, DOI 10.1016j.na.2015.10.015.

69. P. Cioica-Licht, S. Dahlke, N. Döhring, U. Friedrich, S. Kinzel, F. Lindner, T. Raasch, K. Ritter, and R. Schilling, On the convergence analysis of the inexact linearly implicit Euler scheme for a class of SPDEs, *Potential Analysis* **44(3)**(2016), 473–495, DOI 10.1007/s11118-015-9510-5.

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91. S. Dahlke, F. De Mari, E. De Vito, M. Hansen, M. Hasannasab, M. Quellmalz, G. Steidl, and G. Teschke, Continuous wavelet frame on the sphere: The group theoretic approach revisited, *Applied and Computational Harmonic Analysis* **56** (2022), 123–149.

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Book Chapters:

1. S. Dahlke, W. Dahmen, and R. DeVore, Nonlinear approximation and adaptive techniques for solving elliptic operator equations, in: "Multiscale Wavelet Methods for Partial Differential Equations" (W. Dahmen, A. Kurdila, and P. Oswald, Eds.), Academic Press, San Diego, 1997, 237–283.

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6. S. Dahlke, Variational problems for wavelets, in: K. Böhmer, "Numerical Methods for Nonlinear Elliptic Differential Equations", Oxford University Press, 2010, 635–669.

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8. R. Ressel, P. Dülk, S. Dahlke, K.S. Kazimierski, and P. Maass, Regularity of the parameter–to–state map of a parabolic partial differential equation, in: "Extraction of Quantifiable Information from Complex Systems" (S. Dahlke, W. Dahmen, M. Griebel, W. Hackbusch, K. Ritter, R. Schneider, C. Schwab und H. Yserentant, Eds.) "Lecture Notes in Computational Sciences and Engineering" Vol. 102, Springer 2014, 53–67.

9. N. Chegini, S. Dahlke, U. Friedrich, and R. Stevenson, Piecewise tensor product wavelet bases by extension and approximation rates, in: "Extraction of Quantifiable Information from Complex Systems" (S. Dahlke, W. Dahmen, M. Griebel, W. Hackbusch, K. Ritter, R. Schneider, C. Schwab, and H. Yserentant, Eds.) "Lecture Notes in Computational Sciences and Engineering" Vol. 102, Springer 2014, 69–81.

10. P. Cioica, S. Dahlke, N. Döhring, S. Kinzel, F. Lindner, T. Raasch, K. Ritter, and R. Schilling, Adaptive wavelet methods for SPDEs, in: "Extraction of Quantifiable Information from Complex Systems" (S. Dahlke, W. Dahmen, M. Griebel, W. Hackbusch, K. Ritter, R. Schneider, C. Schwab, and H. Yserentant, Eds.) "Lecture Notes in Computational Sciences and Engineering" Vol. 102, Springer 2014, 83–107.

11. G.S. Alberti, S. Dahlke, F. De Mari, E. De Vito, and H. Führ, Recent progress in shearlet theory: Systematic construction of shearlet dilation groups, characterization of wavefront sets, and new embeddings, in: "Novel methods in harmonic analysis with applications to numerical analysis and data processing" (I. Pesenson, H. Mhaskar, A. Mayeli, and Q.T. Le Gia, Eds.), Birkhäuser, 2017, 127–160.

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1. S. Dahlke and C. Schneider, Besov regularity of non-linear parabolic PDEs on non-convex polyhedral domains, arXiv:2105.13355.

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1. A. Barinka, S. Dahlke, and N. Mulders, The IGPM–Villemoes machine, IGPM–Bericht Nr. 184, RWTH Aachen, 2000.

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9. S. Dahlke, G. Steidl, and G. Teschke, Shearlet coorbit spaces I: General setting (in arbitrary space dimensions), *Oberwolfach Reports* **44** (2010), DOI: 10.4171/OWR/2010/44

10. S. Dahlke, G. Steidl, and G. Teschke, Shearlet coorbit spaces I: General setting (in arbitrary space dimensions), *Oberwolfach Reports* **17** (2011), DOI: 10.4171/OER/2011/17

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15. S. Dahlke, Quarklet frames in adaptive numerical schemes, *Oberwolfach Reports* **4/2017** 10–12, DOI: 10.4171/OWR/2017/4.

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Non-Mathematical Publications:

1. S. Dahlke, *Seelenspiegelungen*, Gedichte, Verlag Blaues Schloss, ISBN 978-3-943556-62-9.

2. S. Dahlke, Abschied, in: *Die besten Gedichte 2009/2010,* Frankfurter Literaturverlag, 2009, ISBN 978-3837205275, S. 38.

3. S. Dahlke, Skelette, Gleichnisse, in: *Unbeirrt: Lyrik in Marburg* Marburg-Tbilissi 2023, ISBN 978-9941-8-5170-4.

4. S. Dahlke, *Träume in Petrol*, Gedichte, Verlag Blaues Schloss, 2025, ISBN 978-3-96577-071-3.

Teaching Experiences

Lectures:

- *Riemannian Geometry*, FU Berlin, SS 1990
- *Wavelets: Theory and Applications I*, FU Berlin, WS 1990/91
- *Wavelets: Theory and Applications II*, FU Berlin, SS 1991
- *Ergodic Theory*, FU Berlin, WS 1991/92
- *Wavelets: Theory and Applications*, RWTH Aachen, WS 1996/97
- *Differential Equations and Numerical Analysis*, RWTH Aachen, SS 97
- *Wavelet Methods in Signal Analysis/Compression*, RWTH Aachen, SS 98
- *Regularity Theory for Partial Differential Equations*, RWTH Aachen, SS 99
- *Optimization*, Justus–Liebig–University of Gießen, SS 00
- *Wavelet Analysis and Applications,* Justus–Liebig–University of Gießen, SS 00
- *Mathematics for Engineers*, University of Bremen, WS 01/02
- *Numerical Analysis I*, SS 02, SS 05, SS 08, SS 11, SS 13, SS 15
- *Wavelet Analysis I*, SS 02, SS 04, WS 06/07, SS 12, SS 16, WS 18/19
- *Numerical Analysis II*, WS 02/03, WS 04/05, WS 05/06, WS 08/09, WS 11/12, WS 13/14, WS 14/15, WS 15/16, WS 16/17, WS 17/18, WS 18/19, WS 20/21
- *Wavelet Analysis II*, WS 02/03, WS 04/05, SS 07, WS 10/11
- *Specific Problems in Numerical Analysis*, SS 03
- *Analysis I*, WS 03/04
- *Analysis II*, SS 04
- *Applied Functional Analysis*, WS 06/07, SS 09, SS 16, WS 19/20
- *Linear Algebra II*, SS 07, SS 12, SS 17
- *Analysis III*, WS 07/08
- *Computer Aided Geometric Design*, WS 07/08, WS 20/21

- *Regularity Theory for Partial Differential Equations*, SS 08, WS 14/15, WS 16/17, SS 20

- *Numerical Treatment of Elliptic Partial Differential Equations*, SS 09, SS 11, SS 13, SS 15, SS 17, SS 19

- *Approximation Theory* , WS 09/10, WS 12/13, SS 19

- *Adaptive Numerical Methods for Operator Equations*, WS 09/10, WS 11/12, WS 13/14, WS 15/16, WS 17/18, WS 19/20

- *Wavelets*, SS 20

Seminars:

- *Seminar on Wavelets and Applications*, FU Berlin, WS 1991/92

- *Post-Graduate Seminar on Multilevel Methods*, RWTH Aachen, WS 1996/97

- *Seminar on Numerical Analysis*, RWTH Aachen, SS 97

- *Seminar on Multilevel Methods and Wavelets*, RWTH Aachen, WS 97/98, SS 98, WS 98/99, SS 99, WS 99/00, WS 00/01

- (with P. Maass) *Post-Graduate Seminar on Wavelet Analysis and Inverse Problems*, WS 01/02

- (with W. Gromes and B. Schmitt) *Seminar on Numerical Analysis*, SS 02, WS 02/03, SS 03, WS 03/04, SS 04, WS 04/05, SS 05, WS 05/06, WS 06/07

- (with W. Gromes and B. Schmitt) *Post-Graudate Seminar on Wavelet Analysis*, WS 04/05, SS 05, WS 05/06

- (with E. Kostina and B. Schmitt) *Post-Graduate Seminar on Numerical Analysis and Optimization*, WS 06/07, SS 07, WS 07/08, SS 09, WS 09/10, WS 11/12, SS 12

- (with E. Kostina and B. Schmitt) *Seminar on Numerical Analysis and Optimization*, WS 06/07, SS 07, WS 07/08, SS 08, SS 09, SS 11

- Proseminar *Fourier Transformation*, SS 05

- (with K. Böhmer, M. Buhmann, R. Eckhorn, T. Sauer, and B. Schmitt) *Post-Graduate Seminar Marburg - Giessen on Approximation Theory and Numerical Analysis*, WS 02/03, SS 03, WS 03/04, SS 04, WS 04/05, SS 05, SS 06, WS 06/07

- (with E. Kostina and B. Schmitt) *Mathematical Models in Biology*, WS 08/09

- (with B. Eckhardt and H. Upmeier) *Symplectic Geometry and Hamiltonian Systems*, WS 08/09

- (with H. Holzmann, E. Kostina, and B. Schmitt) *Sparse Solutions and Sparse Modelling*, WS 09/10

- (with B. Schmitt) *Seminar on Numerical Analysis*, WS 10/11, WS 11/12, SS 12, WS 12/13, SS 13, WS 13/14, SS 15

- (with B. Schmitt and S. Dereich), *Post-Graduate Seminar on Stochastics and Numerical Analysis*, WS 10/11

- (with S. Dereich and K. Ritter), *Seminar on Stochastic Partial Differential Equations*, WS 10/11

- (with H. Holzmann and B. Schmitt), *Seminar on Inverse Problems*, WS 14/15

- (with B. Schmitt and M. Weimar) *Post-Graduate Seminar on Numerical Analysis*, WS 14/15, SS 15, WS 15/16

- *Seminar on Numerical Analysis*, WS 15/16

- (with G. Pfander) *Seminar on Numerical Analysis*, SS 16, WS 16/17

- (with G. Pfander and M. Weimar) *Post-Graduate Seminar on Numerical Analysis*, SS 16

- (with G. Pfander) *Post-Graduate Seminar on Numerical Analysis*, WS 16/17

- (with T. Surowiec) *Post-Graduate Seminar on Numerical Analysis*, SS 17, WS 17/18, WS 18/19, SS 19

- (with T Surowiec) *Seminar on Numerical Analysis*, SS 17, WS 17/18, WS 18/19

- (with H. Holzmann) *Seminar on Time–Frequency–Analysis*, SS 19

- (with C. Rieder and T. Surowiec) *Seminar on Nonlinear Functional Analysis*, SS 20

- (with C. Rieder), *Seminar on Sparse Grids*, WS 20/21

Further Teaching Experiences:

- WE–Heraeus Summer School: *Mathematische Methoden und Computeralgebra in der Physik*, Martin–Luther–University of Halle–Wittenberg, 14. – 25. September 1998

- *Wavelet–Analysis: Theory and Applications*, Potsdam Summer School, 5. – 9. October 1998, jointly with A. Cohen and P. Maass

- WE–Heraeus Summer School *Nichtlineare Dynamik in der Physik der Umwelt*, University of Potsdam, 4. – 15. September 2000

- Annual Meeting DFG Priority Program 1114 “Mathematical Methods in Time Series Analysis and Digital Image Processing” Reisenburg, Günzburg, 25. February – 2. March 2002

- *An Introduction to Chaos Theory*, Preparatory Course, WS 02/03

- Workshop *Approximation, Complexity, and Function Spaces* of the Graduate College "Approximation und algorithmische Vefahren", Friedrich–Schiller–University of Jena, 7. – 11. October 2004

- Workshop *Applied Harmonic Analysis*, University of Genova, 2. – 6. September 2013

- Joint ICTP–TWAS School on *Coherent State Transforms, Time–Frequency and Time–Scale Analysis, Applications*, Triest, 2. – 20. June 2014

- *Four Lectures on Shearlet Coorbit Theory*, Philipps–University of Marburg, 4. – 10. October 2016

Supervision of Diploma Theses

- Manuela Doniat, *Wavelets auf Mannigfaltigkeiten*, RWTH Aachen, 2003

- Markus Jürgens, *Adaptive Wavelet–Verfahren auf allgemeinen Gebieten,* RWTH Aachen, 2001

- Niklas Wolf von der Sahl, *Auswertung von Radar–Daten mittels Wavelets*, University of Bremen, 2003

- Elmar Völker, *Adaptive Wavelet–Verfahren für Integralgleichungen auf dem Torus*, Philipps–University of Marburg, 2004

- Markus Hampel, *Entrauschen mittels Frames*, Philipps–University of Marburg, 2005

- Manuel Werner, *Adaptive Frame-Verfahren für elliptische Randwertprobleme*, Philipps–University of Marburg, 2005

- Sarah Rose, *Wavelet-Verfahren zur statistischen Analyse und Prognose von Zeitreihen*, Philipps–University of Marburg, 2005

- Regina Hesse, *Adaptive Gittersteuerung bei gewöhnlichen Differentialgleichungen*, Philipps–University of Marburg, 2005

- Silvia Ockenfels, *Die Anpassung von Wavelets an Differentialoperatoren*, Philipps–University of Marburg, 2005

- Danny Lützelberger, *Numerische Behandlung spezieller Modelle für Investitions–Optionen*, Philipps–University of Marburg, 2005

- Benjamin Hofmann, *Adaptive Frame-Verfahren für elliptische partielle Differentialgleichungen vierter Ordnung,* Philipps–University of Marburg 2007

- Andreas Schneider, *Konstruktion von Multiwavelets und Anwendungen bei adaptiven numerischen Verfahren*, Philipps–University of Marburg 2007

- Katrin Röder, *Kapazitätsplanung virtualisierter IT-Ressourcen*, Philipps–University of Marburg 2007

- Ulrich Friedrich, *Nichtüberlappende Gebietszerlegungsverfahren für elliptische partielle Differentialgleichungen,* Philipps–University of Marburg 2008

- Thomas Meinl, *Konstruktion multivariater Skalierungsvektoren*, Philipps–University of Marburg 2007

- Thomas Künzel, *Nichtlineare Diffusionsverfahren: Theoretische Analysis und Anwendungen bei Strömungsimulationen,* Philipps–University of Marburg 2007

- Simone Geisel, *Entrauschungsverfahren mittels nichtseparabler Wavelets für allgemeine Skalierungen*, Philipps–University of Marburg 2008

- Simon Wiesler, *Lokale Regularitätsabschätzungen mittels stetiger Wavelet–Transformation*, Philipps–University of Marburg 2008

- Simon Göbel, *Multifraktale Eigenschaften von Levi-Prozessen*, Philipps–University of Marburg 2008

- Amin Khodabakhsh, *Stochastische Modellierung des Spotpreisprozesses und Bewertung von virtuellen Gasspeicherkapazitäten*, Philipps–University of Marburg 2009

- Petru Cioica, *Konvergenzraten von Raum-Zeit-Approximationen für stochastische Evolutionsgleichungen*, Philipps–University of Marburg 2009

- Dominik Lellek, *Adaptive Frame–Verfahren für elliptische Operatorgleichungen: Verfeinerungen und neue Strategien,* Philipps–University of Marburg 2010

- Frank Eckhard, *Besov–Regularität elliptischer Randwertprobleme*, Philipps-University of Marburg 2011

- Rebecca Ramb, *Graphical Models in Time Series: From Basic Concepts to Latent Variables*, Philipps–University of Marburg 2011

- Svenja Schenkel, *Comparison and Analysis of Modern Models for Evaluating Synthetic Collateralized Debt Obligations*, Philipps–University of Marburg 2011 2011

- Fabian Feise, *Struktur und Eigenschaften von Shearlet Coorbit Räumen* Philipps–University of Marburg 2012

- Lufeng Yan, *Analyse und Implementierung divergenzfreier Waveletbasen*, Philipps–University of Marburg 2013

- Xiaoyin Chen, *Zur Konstruktion und Theorie divergenzfreier Waveletbasen* Philipps–University of Marburg 2013

- Lydia Großhennig, *Konstruktion des Daubechies–Wavelets*

Supervision of Master Theses

- Evgenia Heiner, *Stochastische Evolutionsgleichungen in Banachräumen*, Philipps–University of Marburg 2013

- Christoph Nell, *Analyse von EKG-Daten mittels Wavelets*, Philipps–University of Marburg 2012

- Verena Horn, *Konstruktion glatter verfeinerbarer Funktionen mittels Faltungen*, Philipps–University of Marburg 2013

- Noci Jorde, *Die Anwendung von ISTA auf inverse Probleme in der Elektroimpedanz-tomographie* , Philipps–University of Marburg 2013

- Philipp Keding, *Charakterisierung von Besov–Räumen mittels Wavelet–Entwicklungen*, Philipps–University of Marburg 2014

- Catarina Lippmann, *Shearlet-Coorbit-Räume: Gruppentheoretische Grundlagen und Spursätze*, Philipps–Universität Marburg 2014

- Johann Cordes, *Besov–Regularität elliptischer Randwerte in polygonalen Gebieten*, Philipps–University of Marburg 2015

- Henning Zickermann, *Strategien zur Optimalität von adaptiven Wavelet–Verfahren fr lineare Operatorgleichungen*, Philipps–University of Marburg 2015

- Christian Lange, *Zur asymptotischen Optimalitt des additiven Schwarz-Verfahrens* , Philipps–University of Marburg, 2015

- Katharina Dunst, *Optimierungsprobleme in der Logistik*, Philipps–University of Marburg, 2015

- Charlotte Prenzer, *Optimale Approximation elliptischer Probleme*, Philipps–University of Marburg, 2015

- Lukas Sawatzki, *Whitney-Ungleichungen bei lokaler anisotroper Polynomapproximation*, Philipps–University of Marburg, 2016

- Anna–Katharina Kröck, *Adaptive Quarklet–Verfahren für periodische Randwertprobleme* Philipps–University of Marburg, 2017

- Alexander Sieber, *Adaptive Quarklet–Verfahren für Dirichlet–Randwertprobleme* Philipps–University of Marburg, 2017

- Deborah Gahururu, *Adaptive Wavelet-Verfahren fr parabolische partielle Differentialgleichungen* Philipps–University of Marburg, 2017

- Lukas Peter, *Adaptive Frame-Verfahren für elliptische partielle Differentialgleichungen*, Philipps–University of Marburg, 2017

- Martina Seibert, *Das Shearlet–Unschärferprinzip*, Philipps–University of Marburg, 2017

- Hannah Jeckel, *Mathematical Modells of Bacterial Swarm Dynamics*, Philipps–University of Marburg, 2018

- Sven Heuer, *Entwicklung von Algorithmen zur Fußgängerdetektion mittels CNN und Shearlets* Philipps–University of Marburg, 2018

- Lukas Becker, *Adaptive Quarklet–Verfahren für Neumann–Randwertprobleme*, Philipps–University of Marburg, 2018

- Marcus Meyer, *Ein Vergleich verschiedener Shearlet-Verfahren zur Kantenerkennung.* Philipps–University of Marburg, 2018

- Frankziska Vauper, *Adaptive Quarklet–Verfahren für Neumann–Probleme auf dem Kubus*, Philipps–University of Marburg, 2019

- Jennifer Lippert, *Besov–Regularität für elliptische Randwertprobleme zweiter Ordnung mit variablen Koeffizienten*, Philipps–University of Marburg, 2019

- Johanna Grütering, *Adaptive Quarklet–Verfahren: Die Methode des steilsten Abstiegs*, Philipps–University of Marburg, 2019

- Leonie Löcherbach, *Regularitätsabschätzungen verfeinerbarer Funktionen mittels des Transfer–Operators*, Philipps–University of Marburg, 2019

- Anne Kopsch, *Zur Konstruktion multivariater Wavelets*, Philipps–University of Marburg, 2019

- Daniela Fecher, *Zur Stabilität verallgemeinerter kardinaler B–Splines*, Philipps–University of Marburg, 2020

- Dorian Vogel, *Zur exponentiellen Konvergenz adaptiver Quarklet–Approximationen*, Philipps–University of Marburg, 2020

- Henning Krug, *Grundlagen der Born-Jordan-Transformation*, Philipps–University of Marburg, 2020

- Daniel Schaaf, *Gabortransformation auf nicht-quidistanten Sttzstellen*, Philipps–University of Marburg, 2021

- Jaqueline Beinecke, *Optimierung neuronaler Netze zur Klassifikation von Vogelstimmen*, Philipps–University of Marburg, 2021

- Andreas Preis, *Kombination von Shearlet- und Gabor-Transformation zur Klassifikation von Vogelstimmen*, Philipps–University of Marburg, 2021

Supervision of Bachelor Theses

- Stefan Laun, *Bernstein-Polynome und Brownsche Bewegung*, Philipps–University of Marburg 2008

- Rhena Helmus, *Die stetige Shearlet-Transformation*, Philipps–University of Marburg 2009

- Philipp Werth, *Adaptive Approximation reeller Funktionen*, Philipps–University of Marburg 2011

- Catharina Lippmann, *Die Töplitz–Shearlet–Transformation*, Philipps–University of Marburg 2012

- David Göttlicher, *Existenz und Eigenschaften von Gabor–Frames*, Philipps–University of Marburg 2012

- Michael Leupold, *Effiziente Berechnung von Produkten von Splinefunktionen*, Philipps-University of Marburg 2012

- Johann Cordes, *Zur Konditionsproblematik bei Differenzenverfahren*, Philipps-University of Marburg 2012

- Christian Lange, *Sobolev–Regularitätsabschätzungen für elliptische partielle Differentialgleichungen*, Philipps–University of Marburg 2012

- Laura Fee Schneider, *Ein mathematisches Modell für quasiperiodische Oszillationen von Proteinen in Bakterien*, Philipps–University of Marburg 2012

- Rabea Fee Griese, *Das Antagonisten-Szenarium für Proteinoszillationen in Bakterien*, Philipps–University of Marburg 2012

- He Hong, *Konvergenzanalyse inexakter Iterationsverfahren zur Lsung von linearen Gleichungssystemen,* Philipps–University of Marburg 2013

- Sasha Zhou, *Grundlagen der Shearlet-Theorie*, Philipps–University of Marburg 2013

- Martina Seibert, *Das affine Unschärfeprinzip*, Philipps–University of Marburg 2013

- Margarita Roth, *Rekonstruktion von Reflexionsdichten mittels Wavelets*, Philipps–University of Marburg 2013

- Alexander Siebert, *Konstruktion stochastischer Prozesse in Besov-Räumen mittels Wavelet-Entwicklungen*, Philipps–University of Marburg 2014

- Richard Eggert, *Zur Konvergenz von Fourier-Reihen*, Philipps–University of Marburg, 2015

- Jana Holznigenkemper, *Zur Konstruktion von Spline-Wavelets*, Philipps–University of Marburg, 2015

- Lukas Becker, *Das inexakte Newton-Verfahren*, Philipps–University of Marburg, 2015

- Joachim Lübbers, *Parameterstudien bei dynamischen Modellen zur Proteinoszillation*,Philipps–University of Marburg, 2015

- Sven Heuer, *Konvergenz von Schwarz–Gebietszerlegungsverfahren*, Philipps–University of Marburg, 2015

- Julia Michaely, *Zur Konvergenzanalyse des geometrischen Multigrid–Verfahrens*, Philipps–University of Marburg, 2015

- Elena Piks, *Rekonstruktion von Reflexionsdichten im Narrowband-Regime,* Philipps–University of Marburg, 2016

- Julia Turetska, *Coherent States bei Quotienten von affinen Weyl-Heiseberg Gruppe,n* Philipps–University of Marburg, 2016

- Jiao Liu, *Die Babuska–Shen–Basis*, Philipps–University of Marburg, 2016

- Annika Reinhardt, *Unschrferelationen in der Zeit-Frequenz-Analyse,* Philipps-Universität Marburg 2016

- Franziska Vaupel, *Regularittsabschätzungen verfeinerbarer Funktionen,* Philipps-Universitẗ Marburg 2016

- Tabea Henning, *Die Grundlagen der Distributionentheorie,*, Philipps-Universität Marburg 2016

- Jennifer Lippert, *Finite-Differenzen-Methode für ein Testmodell zur Proteinlokalisation in Bakterien,* Philipps-Universität Marburg 2016

- Johanna Grütering, *Ein Vergleich verschiedener Iterationsverfahren.* Philipps-Universität Marburg 2016

- Fabian Schaum, *Spline-Wavelets fürr gewöhnliche Differentialgleichungen*, Philipps-Universität Marburg 2016

- Henrike Adrian, *Das Wiener-Lemma*, Philipps-Universität Marburg 2017

- Leonie Löcherbach, *Zur Konstruktion interpolierender Skalierungsfunktionen*, Philipps-Universität Marburg 2017

- Carolin Umathum, *Zur Konstruktion kompakt getragener Spline Wavelets*, Philipps-Universität Marburg 2017

- Muyi Li, *Interpolierende verfeinerbare Funktionen fr allgemeine Skalierungsmatrizen*, Philipps-Universität Marburg 2017

- Christoph Schwab, *Räume mit reproduzierendem Kern*, Philipps-Universität Marburg 2017

- Cinja Kollmus-Heege, *Numerische Behandlung nichtlinearer Probleme im Rahmen mikrobiologischer Simulationen*, Philipps-Universität Marburg 2017

- Mike Theiß, *Wavelets auf lokal–kompakten Abelschen Gruppen,* Philipps-Universität Marburg 2017

- Anna Kopsch, *Orthogonalitätskriterien für kompakt getragene Skalierungsfunktionen*, Philipps-Universität Marburg 2017

- Stella Joswigs, *Fehlerabschätzungen bei Wavelet–Entwicklungen,* Philipps-Universität Marburg 2017

- Fabian Lötschert, *Stetige Wavelet–Transformation und stetige Multiskalen–Analyse*, Philipps-Universität Marburg 2017

- Christoph Kötzsche, *Zur Theorie und Numerik steifer Systeme*, Philipps-Universität Marburg 2017

- Vania Zhang, *Zur Theorie der Greedy Algorithmen*, Philipps–Universität Marburg 2017

- Sophie Döpp, *Approximationseigenschaften von Multi-Skalierungsfunktionen*, Philipps–Universität Marburg 2017

- Dorian Vogel, *Zur Schrittweitensteuerung bei gewöhnlichen Differentialgleichungen*, Philipps–Universität Marburg 2017

- Melanie Herchenhahn, *Anwendung einer Zeitreihenanalyse zur Umsatzvorhersage einer Beratung, die Dienstleistung auf Stundenbasis in Rechnung stellt*, Philipps–Universität Marburg 2017

- Alexander Michel, *Schrittweitensteuerung bei Mehrschrittverfahren*, Philipps–Universität Marburg 2018

- Ann-Christin Schmidt, *Diagonalisierung von homogenen linearen Operatoren mittels biorthogonaler Wavelet-Basen*, Philipps–Universität Marburg 2018

- Merve Simsek, *Dualitätsrelationen bei trigonometrischen Wavelets*, Philipps–Universität Marburg 2018

- Lukas Reuter, *Zur Theorie des Compressed Sensing*, Philipps–Universität Marburg 2018

- Luise Schrader, *Zur Prony–Methode*, Philipps–Universität Marburg 2019

- Katharina Effertz, *Analyse von Vogelstimmen mittels Gabor–Transformation,* Philipps–Universität Marburg 2019

- Denise Remy, *Zeit-Frequenz-Analyse von Störgeräuschen*, Philipps–Universität Marburg 2020

Ph.D. Students

Former Ph.D. Students:

- (with P. Maass), Gerd Teschke, *Waveletkonstruktion über Unschärferelationen und Anwendungen in der Signalanalyse*, University of Bremen, 2001

- (with P. Maass), Mathias Lindemann, *Nichtlineare Approximationsmethoden mittels Wavelets und Multiwavelets für allgemeine Skalierungsmatrizen*, University of Bremen, 2005

- Karsten Koch, *Interpolating Scaling Vectors and Multiwavelets in* $\mathbb{R}^d$, Philipps–University of Marburg, 2006

- Thorsten Raasch, *Adaptive Wavelet and Frame Schemes for Elliptic and Parabolic Equations*, Philipps–University of Marburg, 2007

- Martin Ehler, *The Construction of Nonseparable Wavelet Bi–Frames and Associated Approximation Schemes*, Philipps–Universität Marburg, 2007

- Manuel Werner, *Adaptive Wavelet Frame Domain Decomposition Methods for Elliptic Operator Equations,* Philipps–University of Marburg, 2009

- Jens Kappei, *Adaptive Frame Methods for Nonlinear Elliptic Problems*, Philipps–University of Marburg, 2011

- Petru Cioica, *Besov–Regulartität der Lösungen stochastischer partieller Differentialgleichungen*, Philipps–University of Marburg, 2014

- Ulrich Friedrich, *Adaptive Wavelet Methods for Inverse Problems: Acceleration Strategies, Adaptive Rothe Method and Generalized Tensor Wavelets,* Philipps-University of Marburg, 2015

- Dominik Lellek, *Adaptive Wavelet Frame Schwarz Methods for Nonlinear Elliptic Partial Differential Equations*, Philipps-University of Marburg, 2015

- Stefan Kinzel, *Adaptive Wavelet-Verfahren für stochastische partielle Differentialgleichungen*, Philipps-University of Marburg, 2015

- Frank Eckhardt, *Besov Regularity of Solutions to Navier–Stokes Equations*, Philipps-University of Marburg, 2016

- Haleh Karbalaali, *Channel Edge Detection in 3D Seismic Data Using Shearlet Transforms in Hydrocarbon Resource Exploration*, Amir Kabir University of Technology, Iran, 2018 (Advisory Board: A. Javaherian, S. Dahlke, S. Torabi)

- Christoph Hartmann, *The p-Poisson Equation: Regularity Analysis and Adaptive Wavelet Frame Approximation*, Philipps-University of Marburg, 2018

- Philipp Keding, *Quarklets: Construction and Application in Adaptive Frame Methods*, Philipps-University of Marburg, 2018

- Lienhard Pfeifer, *Pedestrian Detection Algorithms using Shearlets*, Philipps University of Marburg, 2018

- Lukas Sawatzki, *Generalized Coorbit Theory and Applications to Shearlets*, Philipps University of Marburg, 2020

- Alexander Sieber, *Adaptive Quarklet Schemes: Approximation, Compression, Function Spaces*, Philipps University of Marburg, 2020

- Mojdeh Hemmatidaryon, *Construction of Interpolating and Orthonormale Scaling Functions and Wavelets on the Intervall*, Philipps University of Marburg, 2022

- Anne Kopsch, *On the Construction of Wavelets and Multiwavelets for General Dilation Matrices*, Philipps University of Marburg, 2023

- Lara Connelly, *Mechanism of Spatial Organisation Within Bacterial Cells*, Philipps University of Marburg, 2023

- Dorian Vogel, Adaptive Quarklet Schemes: Tree Approximation and Optimal Convergence, Philipps Universit of Marburg, 2024

Current Ph.D. Students:

- Jens Winkler, *Zur matrixfreien Approximation führender Singulärvektoren über Krylov-Unterraum Verfahren*

Habilitations:

- Cornelia Schneider, *Besov Regularity of Partial Differential Equations, and Traces in Function Spaces*, Philipps University of Marburg, 2020

- Markus Hansen, *Beyond Classical Function Spaces: On Non-Standard Smoothness Spaces and Some of Their Applications*, Philipps University of Marburg, 2022

- Marc Hovemann, Adaptive Quarklet Methods for the Numerical Solution of Elliptic PDEs, ongoing

Grants

- Promotionsstipendium der Universität Bremen, 1986–1989

- Habilitationsstipendium der DFG, 1994–1995

- Member of the DFG Priority Program 1114 “Mathematical Methods of Time Series Analysis and Digital Image Processing”, 2001–2007

- DFG–Project “Multivariate Wavelet Analysis: Constructions, Specific Applications, and Data Structures”, 2001–2003

- DFG–Project “Multivariate Wavelet Analysis II”, 2003–2005

- DFG–Project “Multivariate Wavelet Analysis III”, 2005–2007

- "Wavelets in Banach Spaces", DAAD Project, 2001

- Member of the TMR Research Network "Harmonic Analysis and Statistics for Signal and Image Processing", 2002–2006

- DFG–Project "Adaptive Wavelet Methods for Inverse Problems and Inverse Parabolic Equations" (with P. Maass), 2006–2009

- Coordinator of the DFG Pirority Program 1324 "Extraction of Quantifiable Information from Complex Systems", since April 2007

- DFG–Project "Adaptive Wavelet Methods for Stochastic Partial Differential Equations" (with K. Ritter and R. Schilling), 2009–2011

- DFG–Project "Adaptive Frame Methods for Operator Equations: Sparse Grids, Vector-Valued Spaces and Applications to Nonlinear Inverse Problems" (with P. Maass and R. Stevenson), 2008–2011

- DFG–Project "Extraction of Quantifiable Information from Complex Systems", Coordinator Project, 2008–2011

- Member of the LOEWE-Center "Synthetic Microbiology", initiated by Philipps-University of Marburg and Max-Planck-Society

- Project: "Sensitivitätsanalyse, Parameterbestimmung und Modellvalidierung für komplexe biologische Prozesse" (with B. Eckhardt and E. Kostina), LOEWE–Center "Synthetic Microbiology"

- Project: "Dynamik regulatorischer Netzwerke für Zellpolarität" (with B. Eckhardt, P. Lenz, and L. Sogaard–Andersen), LOEWE–Center "Synthetic Microbiology"

- DFG–Project "Adaptive Wavelet Methods for Stochastic Partial Differential Equations II" (with K. Ritter and R. Schilling), 2012–2014

- DFG–Project "Adaptive Frame Methods for Operator Equations: Sparse Grids, Vector-Valued Spaces and Applications to Nonlinear Inverse Problems II" (with P. Maass and R. Stevenson), 2011–2013

- DFG–Project "Extraction of Quantifiable Information from Complex Systems", Coordinator Project, 2011,–2014

- DFG–Project "Optimal Adaptive Finite Element and Wavelet Methods for p–Poisson Equations" (with H. Egger, L. Diening, and M. Fornasier), 2012–2015

- D-A-CH-Project "Adaptive Wavelet and Frame Techniques for Acoustic BEM" (with P. Balazs, H. Harbrecht, and W. Kreuzer), 2013–2016

- DFG–Project "Regularity Theory of Stochastic Partial Differential Equations in (Quasi-) Banach Spaces, 2014–2016.

- D-A-CH-Project "New Function Spaces on Domains and Their Discrete Characterization" (with H. Feichtinger and P. Grohs), 2018–2021

- DFG–Project " Adaptive High-Order Quarklet Frame Methods for Elliptic Operator Equations", 2021–2023

- Member of the LOEWE–Schwerpunkt: "Natur 4.0 - Flächendeckendes Naturschutzmonitoring durch vernetzte Sensorik und integrative Datenanalyse", 2019–2023

- Project "Transformation, Regularisierung und Klassifikation". LOEWE-Schwerpunkt "Natur 4.0".

Participant of

- TMR Research Network *Wavelets and Multiscale Methods in Numerical Analysis*

- Vigoni–Programm 1997 – 98, DAAD

Invitations

- University of Potsdam, July 1994, July 1997

- Department of Mathematics, University of South Carolina, October 1994 – Juli 1995

- Université Paris VI Jussieu, November 1995, April 1997

- Mathematisches Forschungsinstitut Oberwolfach, Research in Pairs – Program, December 1996

- TU Chemnitz, December 1997

- C.I.R.M., Luminy, Marseille, August 1998

- Istituto di Analisi Numerica del C.N.R., Pavia, December 1998

- University of Bremen, July, October 1999, January, July, October 2000,
  September 2003, April 2004, April, August, October 2005, July 2006, March 2007,
  February 2009, September 2009, April/May 2010

- TU Chemnitz, September 2001

- Philipps–University of Marburg, October 2001

- University of Mannheim, April 2003, March 2009

- University of Jena, April 2003, March 2004, February, August 2005, May 2006, March 2007, October 2007, February 2008, July 2010, May 2014, March 2017, May 2018, January 2025

- University of Vienna, Special Semester "Modern Methods of Time–Frequency Analysis", June 2006

- University of Kiel, March 2006

- University of Vienna, April 2005, June 2006, April 2007, August 2008, March 2010, July 2011, March 2019

- Erwin-Schrödinger-Institut, University of Vienna, December 2006

- TU Dresden, January 2010

- Johann Radon Instiut (RICAM), Linz, March 2010

- FH Neubrandenburg, June 2010, September 2015

- University of Amsterdam, August 2010, January 2011

- University of Aalborg, June 2012

- TU Kaiserslautern, June 2013, August 2014, Juli 2018

- Acoustic Research Institute, Vienna, August 2013, July 2014, May 2016

- University of Basel, November 2013, April 2015

- University of Genova, September 2013, April 2014, February 2015, June 2015, June 2017, Jamuary 2023

- C.I.R.M., Luminy, Marseille, September 2014, April 2015

- University of Ulm, July 2015

- University of Osnabrück, February 2016

- Hausdorff Research Institute for Mathematics, Bonn, Special Trimester "Mathematics of Signal Processing", March 2016

- RWTH Aachen, May 2016

- Invitation to: ESI Programme on "Tractability of High Dimensional Problems and Discrepancy", Erwin Schrödinger Institute, Vienna, October 2017

- TU Berlin, November 2019

Conferences

Organized Conferences:

- Mini–Symposion "Multiskalenmethoden, Integralgleichungen und inverse Probleme" (with W. Dahmen), RWTH Aachen, 7. – 8. March 1994

- Workshop "Wavelet Transforms on Spheres" (with P. Maass), University of Potsdam, 22. – 26. January 1996

- (with M. Hanke–Bourgois, P. Kloeden, J. Lang, V. Michel, K. Ritter, and G. Steidl), Rhein-Main Arbeitskreis "Mathematics of Computation", SS 03, WS 03/04, SS 04, WS 04/05, SS 05, WS 05/06, SS 06, WS 06/07, SS 07, WS 07/08, SS 08, WS 08/09, SS 09, WS 09/10, SS 10, WS 10/11, SS 11, WS 11/12, SS 12

- Workshop "Recent Progress in Wavelet Analysis and Frame Theory" (with P. Maass), University of Bremen, 23. – 26. January 2006

- "Algorithms and Complexity for Continuous Problems" (with J. Traub, I. Sloan, and K. Ritter), Schloss Dagstuhl - Wadern, 26. – 29. September 2006

- Workshop "Nichtlineare Approximationsverfahren" (with K. Ritter), TU Darmstadt, 29. – 30. June 2007

- Workshop "Adaptive Numerical Methods for Inverse Problems" (with P. Maass and G. Teschke), University of Bremen, 27. – 29. August 2007

- "Structured Decompositions and Efficient Algorithms" (with I. Daubechies, M. Elad, G. Kutyniok, and G. Teschke), Schloss Dagstuhl - Wadern, 30. November – 05. December 2008

- "Tag des Wissenschaftlichen Rechnens", (with E. Kostina und U. Friedrich, Philipps-University Marburg, 23. January 2009

- "SPDEs 09: Modelling, Analysis, and Approximation" (with S. Larsson, K. Ritter, R. Schilling, W. Stannat, and J. Zabczyk), TU Darmstadt, 24. – 28. August 2009

- Workshop "Nonlinear and Adaptive Approximation", A workshop in honor of Wolfgang Dahmen on the occasion of his 60th birthday, (with R. Hochmuth, A. Kunoth, S. Müller, and K. Urban), 30. September. – 3. October 2009.

- "Nonlinear Approximation", (with U. Friedrich and S. Kinzel), Philipps–University of Marburg, 27. – 28. May 2010

- "Sparse Representation and Efficient Sensing of Data", (with M. Elad, Y. Elder, G. Kutyniok, and G. Teschke), Schloss Dagstuhl - Wadern, February 2011

- "A Computational Approach to Harmonic Analysis" (with H. Feichtinger, U. Friedrich, D. Onchis, and T. Raasch), Philipps–University of Marburg, 22. – 26. August 2011

- Colloquium on the occasion of the 60th. birthday of Prof. Dr. P. Oswald, (with G. Pfander and P. Zheltov), Bremen, 24. November 2011

- "Mathematical Modeling of Microbiological Systems" (with B. Eckhardt, A. Herzog, E. Kostina, P. Lenz, and P. Rashkov), Philipps-University of Marburg, 1. – 5. July 2012

- "Applied Coorbit Theory" (with H. Feichtinger), Erwin Schrödinger Institut, Vienna, 17. – 22. September 2012

- "Wavelets in Scientific Computing" (with M. Fornasier), Erwin Schrödinger Institut, Wien, 12. – 17. November 2012

- 18th. ÖMG Congress and Annual DMV Meeting, University of Innsbruck, 23. – 27. September 2013, Section "Functional Analysis, Real and Complex Analysis", (with Hans Feichtinger)

- Final Meeting of the DFG Pirority Program 1324 "Extraction of Quantifiable Information from Complex Systems", Marburg, 24. – 28. November 2014 (with Frank Eckhardt)

- Oberwolfach–Workshop "New Discretization Methods for the Numerical Approximatin of PDEs", (with G. Kutyniok, R. Stevenson, and E. Süli), 11. – 17. January 2015

- Oberwolfach–Workshop "Innovative Approaches to the Numerical Approximatin of PDEs", (with G. Kutyniok, R. Nochetto, and R. Stevenson), 1. – 7. September 2019

Plenary Talks:

- "Fourth Conference on Discrete Mathematics", Potsdam, 27. September – 1. October 1993

- "Wavelet–Approximation und Anwendungen", Lübeck, 25. – 27. May 1995

- "Spectral Methods in Medical Signal Processing", München, 25. – 28. February 1998

- DMV–Annual Meeting, Section "Numerische Mathematik/Wissenschaftliches Rechnen/Industriemathematik" , Dresden, 18. – 22. September 2000

- Symposium on "Managing and Analyzing Data Streams: Towards Unifying Approaches from Mathematical Statistics and Computer Sciences", Philipps–University of Marburg, 13. – 15. June 2002.

- "Sechste Internationale Konferenz über Multivariate Approximation", Haus Bommerholz, 25. September – 1. Oktober 2005

- Invitation to: "Mathematical Methods in Engineering", University of Ankara, 27. – 29. April 2006

- "Multiscale Methods, Sparse Decompositions and Parsimonious Statistics (HASSIP 06)", GSF-IBB, Neuherberg München, 11. – 14. September 2006.

- "8th International Conference on Function Spaces, Differential Operators, and Nonlinear Analysis (FSDONA 2011)", Trabarz, 16. – 24. September 2011

- "Geomathematics 2013", St. Martin, Germany, 12. – 15. April 2013

- "Approximation Methods and Function Spaces", Hasenwinkel, Germany, 16. – 20. March, 2015

- "Aspects of Time–Frequency Analysis", Torino, Italy, 5. – 7. June, 2017

- "Geomathematics Meets Medical Imaging", Speyer, Germany, 5. – 8. September 2017
- Invitation to " Approximation Methods and Fast Algorithms" Hasenwinkel, Germany, 10. – 14. September 2018
- more than 15 invitations to Oberwolfach conferences
- seven invitations to Schloss-Dagstuhl conferences

Invited Talks:

- "Wavelets (Signalverarbeitung)", Mathematisches Forschungsinstitut Oberwolfach, 3. – 9. May 1992
- "Algebraische Methoden in der Numerischen Mathematik", Potsdam, 20. August 1993
- "Wavelets (Signalverarbeitung)", Mathematisches Forschungsinstitut Oberwolfach, 6. – 12. August 1995
- "Wavelets and Applications", Domaine du Rond–Chene, Esneux(Liege), 11. – 12. October 1996
- Foundations of Computational Mathematics, Minisymposium "Approximation and Partial Differential Equations", Rio de Janeiro, Brazil, 5. – 12. January 1997
- "Numerische Methoden in der Approximationstheorie", Mathematisches Forschungsinstitut Oberwolfach, 11. – 17. May 1997
- Seminar über "Partielle Differentialgleichungen", RWTH Aachen, 25. – 26. June 1997
- "Mathematische Methoden in der Geodäsie", Mathematisches Forschungsinstitut Oberwolfach, 28. March – 3. April 1999
- FoCM–Workshop "Multiresolution and Adaptivity in Numerical Solution of PDEs", Minneapolis, 5. – 14. August 2002
- "Algorithms and Complexity for Continuous Problems", Seminar 02401, Schloss Dagstuhl - Wadern, 29. September – 4. October 2002
- Workshop "Wavelets and their Generalizations", Aalborg University, Denmark, 15. – 16. August 2003
- Workshop "Wavelets and Applications", Domaine du Rond–Chene, Esneux(Liege), 9. – 10. September 2003
- "Geomathematik", Mathematisches Forschungsinstitut Oberwolfach, 23. – 29. May 2004
- "Algorithms and Complexity for Continuous Problems", Seminar 04401, Schloss Dagstuhl - Wadern, 26. September – 1. October 2004

- Workshop on “Sparsity and Applications”, Radon Institute for Computational and Applied Mathematics, University of Linz, 21. June 2006

- DMV Annual Meeting 2007, Minisymposium “Konvergenz adaptiver Diskretisierungsverfahren”, Humboldt–University of Berlin, 25. – 30. March 2007

- “Wavelet and Multiscale Methods”, Mathematisches Forschungsinstitut Oberwolfach, 29. Juli – 4. August 2007

- Workshop “Geomathematics”, TU Kaiserslautern, 2. – 4. July 2008

- “Algorithms and Complexity for Continuous Problems”, Seminar 09391, Schloss Dagstuhl - Wadern, 20. – 25. September 2009

- Workshop “Sparsity and Computation”, Haussdorff Center for Mathematics, Bonn, 7. – 11. June 2010

- “New Trends in Harmonic and Complex Analysis”, Jacobs University of Bremen, 29. June – 3. July 2010

- Mini–Workshop “Shearlets”, Mathematisches Forschungsinstitut Oberwolfach, 3. – 9. October 2010

- “From Abstract to Computational Harmonic Analysis”, Strobl, Austria, 13. – 19. June 2011

- Foundations of Computational Mathematics, Workshop “Information Based Complexity”, Budapest, 4. – 6. July 2011

- Workshop “High-Dimensional Aspects of Stochastic PDEs”, Hausdorff Research Institute, Bonn, 8. – 12. August 2011

- Workshop “Numerical Analysis of Multiscale Problems & Stochastic Modelling, RICAM, Linz, 12. – 16. December 2011

- Workshop on “Computational Stochastics”, Annweiler, 25. – 30. March 2012

- Workshop “Applied Harmonic Analysis and Sparse Approximation”, Mathematisches Forschungszentrum Oberwolfach, 10. – 16. June 2012

- 29.th. European Meeting of Statisticians, Budapest, Hungary, 25. – 25. July 2013, Session on “Approximation Numerical Approximation of SPDEs

- Workshop “Multiscale and High-Dimensional Problems”, Mathematisches Forschungszentrum Oberwolfach, 28. July – 3. August 2013

- ESI–Workshop “Time–Frequency–Analysis”, Erwin Schrödinger Institute for Mathematical Physics, Vienna, 13. – 17. January 2014.

- Mid-Term Workshop “BIOTOP: Adaptive Wavelet and Frame Techniques for Acoustic BEM”, Traunkirchen, 19. – 21. August 2014

- "Information Bases Complexity", Bedlewo, Poland, 26. April – 2. May 2015

- Workshop on "Harmonic Analysis, Graphs and Learning", Hausdorff Research Institute for Mathematics, 14. – 18. March 2016

- International Conference on "Multivaritate Approximation", Schloss Rauischholzhause, 31. March – 5. April, 2016

- IBC on the 70th Anniverary of Henryk Wozniakowski, Bedlewo, Poland, 28. Auguat – 2. September 2016

- Mini–Workshop "Adaptive Methods for Control Problems Constrained by Time–Dependent PDEs", Mathematisches Forschungszentrum Oberwolfach, 08. – 14. January 2017

- "Foundations of Computational Mathematics", Section "Multiresolution and Adaptivity in Numerical PDEs", Barcelona, 10. – 19. July 2017

- "Tractability of Hight Dimensional Problems", Erwin Schrödinger International Institute for Mathematics and Physics, Vienna, 09. – 13. October 2017.

- "12th ISAAC Congress", University of Aveiro, Portugal, 29. July – 2. August 2019.

- ENUMATH 2019, Session "Adaptivity, Regularity and Fast Approximation", Egmond ann Zee, 30. September – 4. October 2019

Contributed Talks:

- "12. Norddeutsches Kolloquium über Angewandte Analysis und Numerik", Rostock, 24. – 25. May 1991

- "DMV Annual Meeting", Berlin, 13. – 18. September 1992

- "Curves and Surfaces", Chamonix–Mont–Blanc, France, 10. – 16. June 1993

- "International Conference on Wavelets", Taormina, Sicily, Italy, 14. – 20. October 1993

- "Eighth International Conference on Approximation Theory", College Station, Texas, USA, 8. – 12. January 1995

- "The 899th Meeting of the AMS", Orlando, Florida, 17. – 18. March 1995

- Workshop "Multiscale Methods in Numerical Analysis", Laboratoire ASCI–IDRIS, Orsay, Paris, 13. – 15. March 1996

- Workshop "Wavelet Transforms on Spheres", Potsdam, 22. – 26. January 1996

- Workshop "Wavelets and Multiscale Methods in Numerical Analysis", Pavia, Italy, 4. – 6. September 1997

- "Wavelets and Multiscale Methods", Tanger, Morocco, 13. – 17. April 1998

- "International Conference on Multivariate Approximation", Haus Bommerholz, 28. September – 2. October 1998

- "2. Workshop Orthogonale Polynome", Ballenstedt, 23. – 26. April 1999

- GAMM–Workshop "Adaptive Methods – Error Estimators", Kiel, 21. – 23. January 2000

- 2001 International Conference "Preconditioned Robust Iterative Solution Methods for Problems with Singularities", Nijmegen, 21. – 23. May 2001

- The 5th International Conference "Function Spaces, Differential Operators, and Nonlinear Analysis", Teistungen, 28. June – 4. July 2001

- 20th IFIP TC7 Conference on "System Modelling and Optimization", Trier, 23. – 27. July 2001

- "2nd International Gabor Workshop in Vienna", 3. – 7. December 2001

- "HASSIP kickoff meeting", Marseilles, 14. – 16. November 2002

- "SampTA03", Strobl, Östereich, 26. – 30. May 2003

- Mecklenburger Workshop "Approximationsmethoden und schnelle Algorithmen", Hasenwinkel 4. – 6. July 2003

- International Conference "Modern Methods of Time–Frequency Analysis", Strobl, 23. – 28. May 2005

- International Conference "Trends in Harmonic Analysis", Strobl, 18. – 22. June 2007

- Workshop on "Function Spaces and Applications", Freyburg/Unstrut, 6. – 12. July 2008

- "Strobl 09 Conference on Time–Frequency Analysis", Strobl, 15. – 20. June 2009

- Workshop on "Compressed Sensing, Sparsity, and Inverse Problems", TU Braunschweig, 6- – 7. September 2010

- International Workshop on "Smoothness, Approximation, and Function Spaces", Oppurg, Thüringen, 10. – 16. October 2010

- 1. International Workshop on "Compressed Sensing Applied to Radar", University of Bonn, 14. – 16. May 2012

- International Conference "Modern Time–Frequency Analysis", Strobl, 2. – 6. June 2014

- International Conference "Time–Frequency Analysis and related Topics", Strobl, 6. – 10. June 2016

- "New Perspectives in the Theory of Function Spaces and their Applications", Bedlewo, 17. – 23. September 2017

- "Strobl18: Harmonic Analysis and Applications", Strobl, Austria, 04. –08. 2018

Talks at Colloquia

- GKSS Forschungszentrum Geesthacht, 10. November 1992
- University of Göttingen, 10. May 1994
- Université Paris VI Jussieu, Paris, 10. November 1995
- RWTH Aachen, 12. December 1995
- University of Kaiserslautern, 2. July 1996
- University of Erlangen, 10. September 1997
- University of Erlangen, 12. February 1998
- University of Magdeburg, 7. July 1998
- C.I.R.M., Luminy, Marseille, 12. August 1998
- University of Kaiserslautern, 5. January 1999
- FH Aachen, 12. April 1999
- University of Bayreuth, 13. July 1999
- University of Bremen, 27. October 1999
- University of Jena, 15. November 1999
- Université de Mons–Hainaut, Belgien, 27. March 2000
- University of Cambridge, 2. May 2000
- Technical University of Graz, 12. May 2000
- University of Dortmund, 22. Mai 2000
- Lund University, Schweden, 15. June 2000
- University of Bremen, 5. Juli 2000
- University of Marburg, 8. November 2000
- University of Innsbruck, 11. January 2001
- University of Bremen, 23. January 2001
- International University of Bremen, 5. April 2001
- University of Potsdam, 4. May 2001

- Medical University of Lübeck, 9. July 2001
- University of Siegen, 7. May 2002
- University of Jena, 2. April 2003
- University of Marburg, 4. June 2003
- GSF Neuherberg, München, 13. June 2003
- University of Frankfurt, 11. July 2003
- University of Duisburg, 21. January 2004
- TU Illmenau, 7. May 2004
- University of Jena, 19. May 2006
- University of Vienna, 19. June 2006
- International University of Bremen, 4. December 2006
- Erwin-Schrödinger-Institut, University of Vienna, 13. December 2006
- TU Dresden, 20. January 2010
- Johann Radon Institut (RICAM), Linz, 17. March 2010
- Acoustics Research Institute, Austrian Academy of Sciences, Vienna, 22. March 2010
- TU Kaiserslautern, 10. September 2010
- University of Vienna, 15. November 2010
- University of Göttingen, 9. January 2012
- TU München, 25. January 2012
- University of Aalborg, 28. June 2012
- TU Berlin, 10. July 2012
- University of Frankfurt, 27. November 2013
- University of Jena, 19. May 2014
- University of Genova, 24. February 2015
- Katholische Universität Eichstätt, 28. June 2017
- University of Jena, 4. May 2018
- University of Erlangen, 22. May 2018
- University of Jena, 30. June 2023

- University of Jena, 30. January 2025

Editorial Work

- Associate Editor *Journal of Complexity*
- Associate Editor *Journal of Fourier Analysis and Applications*
- Associate Editor *GEM – International Journal of Geomathematics*
- Guest Editor, Special Issue on *Wavelet and Fractal Methods in Science and Engineering*, Arabian Journal for Science and Engineering
- Guest Editor, Special Issue on *Analyis on the Sphere*, Journal of Fourier Analysis and Applications
- Guest Editor, *Special Issue on the Occasion of Wolfgang Dahmen's 60th Birthday*, Journal of Fourier Analysis and Applications
- Editor of the Book "Extraction of Quantifiable Information from Complex Systems", Lecture Notes in Computational Science and Engineering **102**, Springer, 2014
- Editor of the Book "Harmonic and Applied Analysis: From Groups to Signals", Birkhäuser Series Applied and Numerical Harmonic Analysis, Birkhäuser, 2014
- Guest Editor, Special Issue on *Space-time adaptive numerical methods for parabolic PDEs*, Journal of Complexity, 2023
- Guest Editor, *Special Issue on the Occasion of Karlheinz Gröchenig's 65th Birthday*, Journal of Fourier Analysis and Applications, 2023

Activity as Referee

Journals:

Acta Mathematica, Advances in Computational Mathematics, ANZIAMT (The Australian & New Zealand Industrial and Applied Mathematics Journal), Applied and Computational Harmonic Analysis, Applied Mathematics Journal of the Australian Math. Soc., Applied Mathematics Letters, Arabian Journal of Science and Engineering, Central European Journal of Mathematics, Constructive Approximation, Electronic Transactions of Numerical Analysis, Foundations of Computational Mathematics, IMA Journal of Numerical Analysis, International Journal of Wavelets, Multiresolution and Information Processing, Journal of Approximation Theory, Journal of Complexity, Journal of Computational Physics, Journal of Mathematical Imaging and Vision, Journal of Mathematical Physics, Journal of Wavelet Theory and Applications (JWTA), Linear Algebra and its Applications, Mathematics of Computation, Mathematics of Control, Signals, and Systems, Numerical Functional Analysis and Optimization, Numerical Methods for Partial Differential Equations, Proceedings

of the Royal Society, Rocky Mountain Journal of Mathematics, SIAM Journal on Numerical Analysis, Transactions of the American Mathematical Society, ZAMM, Computing and Visualization in Science, Contemporary Mathematics, Journal of Mathematical Analysis and Applications, Journal of Fourier Analysis and Applications, Stochastic Analysis and Applications, IEEE Signal Processing Letters, IEEE Transactions on Signal Processing, IEEE Transactions on Image Processing, Zeitschrift für Analysis und Anwendungen, Journal of Contemporary Mathematical Analysis, Applied Numerical Mathematics, Mathematische Nachrichten, Annals of Functional Analysis, Advances in Computational Mathematics, Thai Journal of Mathematics, Colloquium Mathematicum, Lecture Notes in Mathematics, Journal of Geodesy, Partial Differential Equations and Applications, Numerische Mathematik, several times for Book Projects

Further Activities:

- Referee for Fond zur Förderung
  der wissenschaftlichen Forschung, Austria
- Referee for Deutsche Forschungsgemeinschaft (DFG)
- Referee for Dutch National Science Foundation (NWO)
- Referee for German Academic Exchange Service (DAAD)
- Referee for Alexander von Humbold Foundation
- Referee for Austrian Academy of Sciences
- 2. Referee for fourteen Ph.D.-Theses
- 2. Referee for two Habilitation Theses

Miscellaneous

- March 2011: Offer of a Full Professorship (W3) for Mathematical Biology, TU Kaiserslautern, declined
- Coordinator of the DFG Priority Program 1324 “Extraction of quantifiable information from complex systems”
- Member of the Steering Committee of the LOEWE–Center for “Synthetic Microbiology”, 2010–2014
- Member of the Advisory Board of the EU-Project UNLOCX : “Uncertainty principles versus localization properties, function systems for efficient coding schemes”, 2010–2013
- Member of the Scientific Committee for the International Conference “New perspectives in the theory of function spaces and their applications”, Bedlewo, September 2017

- Spokesperson of the Ph.D. Program “Data Sciences: Mathematical Analysis, Scalable Algorithms, and Systems”, 2020–2022.