Curriculum Vitae of Gitta Kutyniok

Contact and Personal Data

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Educational Background

Sept. 1978 – July 1982	Weerth–Schule in Detmold
Sept. 1982 – July 1991	Stadtgymnasium in Detmold
May 1991	Abitur
Oct. 1991 – March 1996	Studies in Mathematics and Computer Science, Universität Paderborn
March 1996	Diploma in Mathematics and Computer Science, Universität Paderborn

Employment History

April 1996 – July 2001	Wissenschaftliche Assistentin *(Scientific Assistant)*, Universität Paderborn
Nov. 2000	Dr.rer.nat. in Mathematics, Universität Paderborn
Aug. 2001 – Dec. 2001	Visiting Assistant Professor, Georgia Institute of Technology, Atlanta, USA
Jan. 2002 – March 2004	Wissenschaftliche Assistentin *(Scientific Assistant)*, Universität Paderborn
April 2004 – Sept. 2004	Wissenschaftliche Assistentin *(Scientific Assistant)*, Justus–Liebig–Universität Giessen
Oct. 2004 – March 2005	Fellowship holder of the German Research Foundation, Washington University in St. Louis, USA
April 2005 – Sept. 2005	Fellowship holder of the German Research Foundation, Georgia Institute of Technology, Atlanta, USA
Oct. 2005 – March 2007	Wissenschaftliche Assistentin *(Scientific Assistant)*, Justus–Liebig–Universität Giessen
Juni 2006	Habilitation in Mathematics, Justus–Liebig–Universität Giessen
April 2007 – Sept. 2007	Heisenberg-Fellow of the German Research Foundation, Princeton University, USA
Oct. 2007 – March 2008	Heisenberg-Fellow of the German Research Foundation, Stanford University, USA

April 2008 – Sept. 2008	Heisenberg-Fellow of the German Research Foundation, Yale University, USA
Oct. 2008 – Sept. 2011	Full Professor for Applied Analysis, Universität Osnabrück, and Head of the Applied Analysis Group (AAG)
Oct. 2011 – Sept. 2020	Einstein-Chair in Mathematics at the Technische Universität Berlin
Sept. 2014 – Dec. 2014	Visiting Professorship at the ETH Zürich
May 2018 – Sept. 2020	Professor of Computer Science and Electrical Engineering (by courtesy) at the Technische Universität Berlin
Since May 2019	Adjunct Professor in Machine Learning at the University of Tromsø
Since Oct. 2020	Bavarian AI Chair for Mathematical Foundations of Artificial Intelligence at the Ludwig-Maximilians-Universität München

Honors and Awards

1998 Weierstraß Preis des Fachbereichs Mathematik/Informatik der Universität Paderborn für hervorragende Lehre
(Weierstraß Prize for outstanding teaching of the University of Paderborn)

2003 Forschungspreis der Universität Paderborn
(Research Prize of the University of Paderborn)

2004 Forschungsstipendium der DFG
(Research Fellowship of the German Research Foundation)

2006 Preis der Justus–Liebig–Universität Gießen
(Prize of the University of Gießen)

2006 Heisenberg–Stipendium der DFG
(Heisenberg–Fellowship of the German Research Foundation)

2007 von Kaven-Ehrenpreis der DFG
(von Kaven Prize of the German Research Foundation)

2010 Nomination by the University of Osnabrück for the Alfried Krupp-Förderpreis für junge Hochschullehrer
(Nomination by the University of Osnabrück for the Alfried Krupp-Advancement Award for Young Professors)

2011 Einstein Chair at the Technische Universität Berlin

2013 Miller's Scholar, University of Missouri, Columbia

2013 Noether Lecturer at the ÖMG-DMV-Kongress 2013 in Innsbruck

2014 Visiting Professorship (Nachdiplomlecturer), ETH Zürich

2015 J. Tinsley Oden Faculty Fellow, University of Texas at Austin

2016 Hans Schneider ILAS Lecturer at IWOTA 2016 in St. Louis

2016 Elected Member of the Berlin-Brandenburg Academy of Sciences and Humanities (BBAW)

2017 Offer of Full Professor "Applied Mathematics", RWTH Aachen

2018 Offer of Full Professor "Applied Mathematics", University of Paderborn

2019 SIAM Fellow

2019 Offer Adjunct Professor "Machine Learning", University of Tromsø
2019 IEEE Senior Member
2020 Offer of Chair "Mathematical Aspects of Data Science", University of Warwick
2020 Offer of Full Professor for Mathematics, Johns Hopkins University
2020 Francqui Chair, Belgium
2020 Bavarian AI Chair, LMU Munich
2021 Simons Fellow, Isaac Newton Institute for Mathematical Sciences
2021 Plenary Talk at the 8th European Congress of Mathematics in Portoroz, Slovenia
2022 Lecturer of the London Mathematical Society (LMS) Invited Lecture Series
2022 Invited Lecture at the International Congress of Mathematics (ICM) 2022
2022 EURASIP Best Paper Award for Signal Processing: Image Communication Journal
2022 Elected Member of the European Academy of Sciences (EurASc)
2023 Lecturer in the Distinguished Lecture Series at UCLA
2023 Invited Lecture at the International Congress on Industrial and Applied Mathematics (ICIAM) 2023

Grants

2006 – 2008 DAAD-Project "Complex and Harmonic Analysis for Time-Frequency Analysis (CHATIFA)" (313-PPP-N.07-lk) (PPP Germany-Norway) (joint with H. Führ, K. Gröchenig, and K. Seip)
2008 – 2014 DFG-SPP-1324, KU 1446/13-1: "Numerical and harmonic analysis of problems with anisotropic features, directional representation systems and the solution of transport equations" (joint with W. Dahmen and C. Schwab)
2010 – 2012 DFG Grant, KU 1446/14: "Multiscale representation systems for optimally sparse encoding and analysis of geometric features in 3-dimensional signals for both the continuous and digital setting"
2011 – 2014 SFB-Project, SFB 944 Physiology and Dynamics of Cellular Microcompartments: "Mathematical Image Analysis and Processing" (canceled earlier due to move to TU Berlin)
2012 – 2013 MATHEON-Project B26: "Information Extracting Sensor Networks"
2013 – 2016 SFB-Project A10, SFB/TR 109 Discretization in Geometry and Dynamics: "Riemannian Manifold Learning via Shearlet Approximation"
2013 – 2014 Extension of A10: "Shearlet Discretization and Imaging Science on Manifolds"
2013 DFG-Conferences Support for "Compressed Sensing and its Applications", December 2013, Berlin
2014 – 2016 ECMath Project CH2: "Sparse Compressed Sensing based Classifiers for -omics data" (joint with T. Conrad, C. Schütte, and J. Vybiral)
2014 – 2016 ECMath Project SE4: "Mathematical modeling, analysis and novel numerical concepts for anisotropic nanostructured materials" (joint with D. Knees, C. Kraus, and B. Wagner)

2015 – 2018 DFG-SPP-1798, KU 1446/23-1, Coordination of the DFG-Priority Programm "Compressed Sensing in Information Theory", SPP 1798 (joint with R. Mathar)

2015 – 2016 DFG Projekt, KU 1446/18: "Discrete-Valued Sparse Signals – Theory, Algorithms, and Applications" (joint with R. Fischer and G. Pfander)

2015 – 2016 EXIST-Projekt "Teraki" (Compressed Sensing for Internet of Things) (Mentor; CEO D. Richart)

2015 – 2018 EU-FET-Project, "Data Learning on Manifolds and Future Challenges" (joint with CEA, FORTH, UCL, and SAGEM)

2015 DFG-Conferences Support for the 2. International MATHEON Conference on "Compressed Sensing and its Applications", December 2015, Berlin

2015 – 2018 DFG-SPP-1798, KU 1446/21-1, "Compressive Sensing Algorithms for Structured Massive MIMO" (joint with G. Caire and G. Wunder)

2016 IMoS ("Interdisziplinäres Zentrum für Modellierung und Simulation"), 91b-Proposal to the Federal Government of Germany for a Research Building (as Co-PI)

2016 – 2020 SFB-Project C02, SFB/TR 109 Discretization in Geometry and Dynamics: "Digital representations of data on manifolds" (joint with F. Krahmer)

2016 – 2020 SFB-Project C03, SFB/TR 109 Discretization in Geometry and Dynamics: "Shearlet approximation of brittle fracture evolutions" (joint with M. Fornasier)

2017 – 2018 Extension of C03: "Quantization and Geometrically Structured High-Dimensional Functions"

2017 Gene Golub Summer School on "Data Sparse Approximations and Algorithms", SIAM, June 2017, Berlin (joint with J. Liesen and V. Mehrmann)

2017 – 2018 ECMath Project CH14: "Understanding cell trajectories with sparse similarity learning" (joint with T. Conrad and C. Schütte)

2017 – 2021 GRK BIOQIC, Project 4 "Deep Learning for Quantitative Medical Imaging" (joint with T. Schaeffter)

2017 – 2021 GRK BIOQIC, Project 9 "Sparse Approximation with Anisotropic Systems for Quantitative Medical Imaging"

2018 – 2022 SFB-Project B07, SFB 1114 Scaling Cascades in Complex Systems: "Self-similar structures in turbulent flows and the construction of LES closures" (joint with R. Klein and V. Vercauteren)

2018 – 2023 DFG-RTG DAEDALUS (Main PI)

2018 – 2023 DFG-RTG DAEDALUS, Project P1 "Finding multiscale structures in high-dimensional data" (joint with K.-R. Müller and C. Schütte)

2018 – 2023 DFG-RTG DAEDALUS, Project P3 "Multiscale sparsity models" (joint with J. Eisert, F. Noé, and C. Schütte)

2018 – 2021 DFG-SPP-1798, KU 1446/27-2, Koordination des DFG-SPP "Compressed Sensing in der Informationsverarbeitung", SPP 1798 (joint with R. Mathar)

2018 – 2021 DFG-SPP-1798, KU 1446/21-2, "Compressed Sensing Algorithms for Structured Massive MIMO (Phase II): From Massive MIMO to Massive Wireless Networks" (joint with G. Caire and G. Wunder)

2018 – 2022 Berlin Center for Maschine Learning (BZML) (joint with 20 PIs)

2018 – 2022	Berlin Center for Maschine Learning (BZML), Project AP4 "Multimodal Compressed Sensing"
2018 – 2025	MATH+ - The Berlin Mathematics Research Center (joint with 24 PIs)
2018 – 2021	MATH+ Project AA1x2, "Learning Transition Manifolds and Effective Dynamics of Biomolecules" (joint with P. Koltai, S. Klus, K.-R. Müller and C. Schütte)
2018 – 2021	MATH+ Project EF1x1, "Quantifying Uncertainties in Explainable AI" (joint with K.-R. Müller and W. Samek)
2018 – 2021	MATH+ Project EF1x4, "Extracting Dynamical Laws by Deep Neural Networks: A Theoretical Perspective" (joint with F. Noé and B. Zwicknagl)
2019	BMS Summer School 2019 on "Mathematics of Deep Learning"
2020 – 2023	BMBF-Project MaGriDo, "Mathematik für maschinelle Lernmethoden für Graph-basierte Daten mit integriertem Domänenwissen" (joint with J. Garcke, J. Hamaekers, and D. Lorenz)
2021 – 2025	SFB-Project C09, SFB/TR 109 Discretization in Geometry and Dynamics: "Deep Learning for Shape Reconstruction" (joint with D. Cremers)
2021	6-Month Programme "Mathematics of Deep Learning" at the Isaac Newton Institute for Mathematical Sciences (Main Organizer; joint with P. Bartlett, A. Hansen, A. Jentzen, and C. Schönlieb)
2021–2027	DFG-SPP-2298 "Theoretical Foundations of Deep Learning" (Main Coordinator; joint with M. Burger, M. Hein, S. Pokutta, and I. Steinwart)
2021–2024	DFG-SPP-2298, KU 1446/31-1, Coordination of the DFG-Priority Programm "Theoretical Foundations of Deep Learning"
2021–2024	DFG-SPP-2298, KU 1446/32-1, Project "Deep-Learning basierte Regularisierung inverser Probleme" (joint with M. Burger)
2021–2023	Research Focus "Next Generation AI" at the Center for Advanced Studies (CAS) at LMU Munich (Spokesperson; joint with 7 colleagues)
2022–2024	Research Focus "Physics and Security" at the Center for Advanced Studies (CAS) at LMU Munich (Member of the Core Team)
2022–2025	ONE Munich Strategy Forum Project "Next generation Human-Centered Robotics: Human embodiment and system agency in trustworthy AI for the Future of Health" (Spokesperson joint with S. Haddadin; 14 additional PIs)
2022–2027	Konrad Zuse School of Excellence in Reliable AI (relAI) (Co-Director on LMU-side, joint with S. Günnemann as Director on TUM-side)

Patents

2013	"A System for Details Synthesis in Image Upsamling" (joint with H. Lakshman, H. Schwarz, D. Marpe, T. Wiegand, and W.-Q Lim), Japanese Patent, FhG Code HHI 2 - 2013FS4151; Indian Patent, IN Patent 396935.
2014	"Upsampling and Image Enhancement" (joint with H. Lakshman, H. Schwarz, D. Marpe, T. Wiegand, and W.-Q Lim), WO Patent Publication No. 14/173970 (April 23, 2014).

Invited Research Visits (of at least 1 week length)

2001

- Georgia Institute of Technology, Atlanta, Position as a Visiting Assistant Professor (5 months).

2002

- University of Missouri, Columbia, Invitation by Prof. P. G. Casazza (1 month).
- Washington University, St. Louis, Invitation by Prof. G. L. Weiss (2 weeks).

2003

- University of Arkansas, Fayetteville, Invitation by Prof. J. A. Hogan (1 week).
- Washington University, St. Louis, Invitation by Prof. G. L. Weiss (3 weeks).

2004

- Washington University, St. Louis, Invitation by Prof. G. L. Weiss (3 months).

2005

- Washington University, St. Louis, Invitation by Prof. G. L. Weiss (3 months).
- Georgia Institute of Technology, Atlanta, Invitation by Prof. C. Heil (6 months).
- University of Missouri, Columbia, Invitation by Prof. P. G. Casazza (1 week).
- Vanderbilt University, Nashville, Invitation by Prof. A. Aldroubi (1 week).

2006

- University of Missouri, Columbia, Invitation by Prof. P. G. Casazza (2 weeks).
- Universität Wien, Vienna, Invitation by Prof. H. G. Feichtinger (2 weeks).
- San Francisco State University, San Francisco, Invitation by Prof. S. Li (1 week).

2007

- University of South Carolina, Columbia, Invitation by Prof. W. Dahmen and Prof. P. Petrushev (1 week).
- Princeton University, Princeton, Invitation by Prof. I. Daubechies (6 months).
- Stanford University, Stanford, Invitation by Prof. D. L. Donoho (3 months).
- RWTH Aachen, Aachen, Invitation by Prof. W. Dahmen (1 week).
- Harvard University, Cambridge, Invitation by Prof. V. Tarokh (1 week).

2008

- Stanford University, Stanford, Invitation by Prof. D. L. Donoho (4 months).
- Yale University, New Haven, Invitation by Prof. R. Coifman (5 months).
- Princeton University, Princeton, Invitation by Prof. A. Pezeshki (1 week).
- Georgia Institute of Technology, Atlanta, Invitation by Prof. C. Heil (1 week).
- Cambridge University, Isaac Newton Institute for Mathematical Sciences, Programm "Statistical Theory and Methods for Complex, High-Dimensional Data", Invitation by Prof. D. M. Titterington (1 month).
- University of South Carolina, Columbia, Invitation by Prof. W. Dahmen und Prof. P. Petrushev (1 week).
- Institute for Mathematical Sciences, National University of Singapore, Invitation by Prof. Z. Shen (1 week).

2009

- Colorado State University, Fort Collins, Invitation by Prof. A. Pezeshki (1 week).
- National University of Singapore, Singapore, Invitation by Prof. Z. Shen (1 week).
- University of Missouri, Columbia, Invitation by Prof. P. G. Casazza (1 week).

- Renaissance Technologies, East Setauket, Invitation by Prof. D. L. Donoho (1 month).
- Stony Brook University, Stony Brook, Invitation by Prof. D. Geller (1 month).
- University of Houston, Houston, Invitation by Prof. B. G. Bodmann and Prof. D. Labate (1 week).
- Oxford University, Oxford, Invitation by Prof. R. Hauser (1 week).

2010

- KAUST (King Abdullah University of Science and Technology), Jeddah, Invitation by Prof. Helmut Pottmann and Dr. Grohs (1 week).
- Vanderbilt University, Nashville, Invitation by Prof. A. Aldroubi (1 week).
- University of Heidelberg, Invitation by Prof. M. Leinert (2 weeks).
- University of Houston, Houston, Invitation by Prof. B. G. Bodmann and Prof. D. Labate (1 weeks).
- University of South Carolina, Columbia, Invitation by Prof. W. Dahmen und Prof. P. Petrushev (1 week).
- Princeton University, Princeton, Invitation by Prof. R. Calderbank and Prof. A. Pezeshki (1 week).
- Stanford University, Stanford, Invitation by Prof. D. L. Donoho (1 week).
- Colorado State University, Fort Collins, Invitation by Prof. A. Pezeshki (1 week).
- Stanford University, Stanford, Invitation by Prof. B. Rajaratnam (1 week).
- University of Missouri, Columbia, Invitation by Prof. P. G. Casazza (1 week).

2011

- University of Newcastle, Invitation by Prof. J. Hogan (1 week).
- Duke University, Invitation by Prof. M. Maggioni (1 week).
- Yale University, Invitation by Prof. R. Coifman (1 week).
- Colorado State University, Fort Collins, Invitation by Prof. A. Pezeshki (1 week).
- Stanford University, Stanford, Invitation by Prof. B. Rajaratnam (2 weeks).

2012

- University of Missouri, Columbia, Invitation by Prof. P. G. Casazza (2 weeks).
- Tel Aviv University, Invitation by Prof. A. Averbuch (1 week).
- Stanford University, Invitation by Prof. E. Candès (2 months).
- University of Houston, Invitation by Prof. B. Bodmann (1 week).
- Harvard University, Invitation by Prof. Lu (1 week).

2013

- University of Missouri, Columbia, Invitation by Prof. P. G. Casazza as *Miller's Scholar* (2 weeks).
- University of South Carolina, Columbia, Invitation by Prof. P. Petrushev (1 week).
- ETH Zürich, Invitation by Prof. P. Grohs (1 week).
- Chinese Academy of Science, Beijing by Prof. Zhiqiang Xu (1 week).
- Stanford University, Invitation by Prof. E. Candès (1 week).

2014

- UCLA, Invitation by Prof. A. Bertozzi (1 week).
- ICERM Research Fellow, ICERM, Program "Network Science and Graph Algorithms" (2 weeks).
- ETH Zürich, Visiting Professorship (3 months).

2015

- Colorado State University, Fort Collins, Invitation by Prof. A. Pezeshki (1 week).

- University of Texas at Austin, Institute for Computational Engineering and Sciences (ICES), J. Tinsley Oden Faculty Fellow (2 weeks).
- Centre de Recherche INRIA Rennes, France, Invitation by Prof. R. Gribonval (1 week).

2016

- Hausdorff Institute, Bonn, Invited Participant of Trisemester Program on "Mathematics of Signal Processing" (2 weeks).
- University of Houston, Distinguished Visitors Program, Invitation by Prof. B. Bodmann and Prof. D. Labate (1 month).
- Colorado State University, Fort Collins, Invitation by Prof. A. Pezeshki (1 week).
- Universität Wien, Invitation by Prof. P. Grohs (1 month).

2017

- University of Texas at Austin, Institute for Computational Engineering and Sciences (ICES), Invitation by Prof. C. Bajaj (1 week).
- Stanford University, Invitation by Prof. E. Candès (3 weeks).
- University of Hawaii, Invitation by Prof. T. Hangelbröck (1 week).
- New York (Columbia University, Courant Institute, and Center for Data Science), Invitations by Prof. A. Badeira, Prof. S. Güntürk, and Prof. A. Maleki (1 week).
- University of California, San Diego, Invitation by Prof. R. Saab (1 week).

2018

- Erwin Schrödinger International Institute for Mathematics and Physics, Wien, Austria, Programm "Numerical Analysis of Complex PDE Models in the Sciences", Invitation by Prof. A. Buffa, Prof. T. Y. Hou, Prof. J. M. Melenk, Prof. I. Perugia, and Prof. C. Schwab (2 weeks).

2019

- California Institute of Technology, Invitation by Prof. J. Tropp (1 week).
- Colorado State University, Fort Collins, Invitation by Prof. A. Pezeshki (1 week).
- University of South Carolina, Columbia, Einladung von Prof. W. Dahmen (1 Woche).
- Cambridge University, Isaac Newton Institute for Mathematical Sciences, UK, Programm "Approximation, sampling and compression in data science", Invitation by Prof. A. Shadrin, Prof. A. Hansen, Prof. V. Temlyakov and Prof. S. Tikhonov (1 month).

2020

- Institute of Advanced Study, Princeton, Invitation by Prof. Dr. S. Arora (1 week).

Invited Talks

1997

- Colloquium, GSF–Forschungszentrum für Umwelt und Gesundheit, München, 7.10.1997.

1999

- Colloquium, GSF–Forschungszentrum für Umwelt und Gesundheit, München, 23.7.1999.

2000

- Graduate-Colloquium, TU München, 18.12.2000.

2001

- Colloquium, Universität zu Lübeck, 25.6.2001.
- Analysis Seminar, Georgia Institute of Technology, Atlanta, 28.11.2001.

2002

- Conference on "Frames, Wavelets, and Operator Theory", Texas A&M University, 15.7.–19.7.2002.

2003

- AMS National Meeting, Baltimore, 15.1.–18.1.2003.
- Workshop on "Wavelets, Frames, and Operator Theory", University of Maryland, 19.1.–21.1.2003.
- Analysis Seminar, University of Arkansas, Fayetteville, 23.1.2003.
- Colloquium, University of Arkansas, Fayetteville, 23.1.2003.
- International Symposium on Optical Science and Technology, SPIE's 48th Annual Meeting, Conference "Wavelets X", San Diego, 3.8.–8.8.2003.
- 25. Nordwestdeutsches Funktionalanalysis-Kolloquium, Universität Duisburg–Essen, Campus Essen, 8.11.2003.

2004

- Oberwolfach–Mini–Workshop "Wavelets and Frames", Mathematisches Forschungsinstitut Oberwolfach, 15.2.–21.2.2004.
- "Second International Conference of Computational Harmonic Analysis", Vanderbilt University, Nashville, 24.–30.5.2004.
- Seminar "Approximationstheorie und Numerik", Philipps–Universität Marburg, 3.6.2004.
- Wavelet Seminar, Washington University in St. Louis, St. Louis, 12.11.2004.

2005

- Analysis Seminar, University of Arkansas, Fayetteville, 17.2.2005.
- Colloquium, University of Arkansas, Fayetteville, 17.2.2005.
- Analysis Seminar, Washington University in St. Louis, St. Louis, 23.2.2005.
- Computational Analysis Seminar, Vanderbilt University, Nashville, 29.3.2005.
- Analysis Seminar, Georgia Institute of Technology, Atlanta, 13.4.2005.
- CSCAMM-Workshop "Sparse Representation in Redundant Systems", University of Maryland, College Park, 9.5.–13.5.2005.
- (2 Invited Talks) International Symposium on Optical Science and Technology, SPIE's 50th Annual Meeting auf der Konferenz "Wavelets XI", San Diego, 31.7.–4.8.2005.
- Banff–Workshop "Time-Frequency-Analysis and Non-Stationary Filtering", Banff International Research Station, 24.9.–29.9.2005.

2006

- Symposium about Applied Mathematics, Universität Zürich, Zürich, 23.1.2006.
- Oberseminar "Wissenschaftliches Rechnen und Modellbildung", TU München, München, 30.1.2006.
- Analysis Seminar, University of Missouri, Columbia, 28.2.2006.
- Wavelet Seminar, Washington University, St. Louis, 10.3.2006.
- Banff–Workshop "Coarsely Quantized Redundant Representations of Signals", Banff International Research Station, 11.3.–16.3.2006.
- NuHAG Seminar, Universität Wien, Wien, 27.3.2006.
- Colloquium, Justus-Liebig-University Gießen, 7.7.2006.
- Deutsches EEG/EP Mapping Meeting, Workshop über Wavelet-Analyse, Schloss Rauischholzhausen, 20.10.–22.10.2006.
- Workshop "The Kadison-Singer Problem", American Institute of Mathematics, Palo Alto, 25.9.–29.9.2006.
- Seminar, San Francisco State University, San Francisco, 5.10.2006.

- Oberseminar "Aktuelle Themen aus der Numerik", RWTH Aachen, 9.11.2006.
- Seminar "Angewandte Mathematik", Universität Potsdam, 14.11.2006.
- Oberseminar Marburg–Gießen "Approximationstheorie, Numerik und Optimierung", Universität Marburg, 28.11.2006.
- Rhein-Ruhr Seminar, Universität Duisburg-Essen, 1.12.2006.

2007

- Colloquium, GSF-Forschungszentrum für Umwelt und Gesundheit, Munich, 31.1.2007.
- (2 Invited Talks) Twelfth International Conference on Approximation Theory, San Antonio, Texas, 4.3.–8.3.2007.
- IMI Seminar, University of South Carolina, 12.3.2007.
- Norbert Wiener Center Seminar, University of Maryland, 19.4.2007.
- 2007 von Neumann "Symposium on Sparse Representations and High-Dimensional Geometry", Snowbird, Utah, 8.7.–12.7.2007.
- Oberwolfach-Workshop "Wavelet and Multiscale Methods", Mathematisches Forschungsinstitut Oberwolfach, 29.7.–4.8.2007.
- Brown Bag-Seminar, PACM, Princeton University, 22.8.2007.
- International Symposium on Optical Science and Technology, SPIE's 52th Annual Meeting, Conference "Wavelets XII", San Diego, 26.8.–30.8.2007.
- Banff-Workshop "Trends in Applied Harmonic Analysis", Banff International Research Station, 23.9.–28.9.2007.
- Applied Math Seminar, Stanford University, 9.11.2007.
- SAM Colloquium, ETH Zurich, 14.11.2007.
- Oberseminar "Aktuelle Themen aus der Numerik", RWTH Aachen, 22.11.2006.
- Colloquium, Universität Osnabrück, 23.11.2006.
- EE Seminar, Harvard University, 30.11.2007.
- Seminar, University of British Columbia, 12.12.2007.

2008

- (Poster) Workshop "Contemporary Frontiers in High-Dimensional Statistical Data Analysis", Isaac Newton Institute for Mathematical Sciences, Cambridge, UK, 7.1.–11.1.2008.
- Lineare Algebra & Optimization-Seminar, Stanford University, 6.2.2008.
- Net/Comm/DSP Seminar, University of California, Berkeley, 11.2.2008.
- Conference on Information Sciences and Systems (CISS 2008), Princeton University, 19.3.–21.3.2008.
- Workshop on "Sparsity in High Dimensional Statistics and Learning Theory", Georgia Institute of Technology, 22.3.–24.3.2008.
- Analysis Seminar, Georgia Institute of Technology, 26.3.2008.
- IMI Seminar, University of South Carolina, 31.3.2008.
- Colloquium, Drexel University, 3.4.2008.
- Statistics Seminar, Stanford University, 6.5.2008.
- Colloquium, San Francisco State University, 7.5.2008.
- Applied Math Seminar, University of California, Davis, 8.5.2008.
- Workshop on "Nonlinear Approximation Techniques Using ℓ_1", Texas A&M University, 16.5.–18.5.2008.
- Applied Math Seminar, Yale University, 20.5.2008.
- Chinese-French-Singaporean Joint Workshop on "Wavelet Theory and Applications", Singapore, 9.6.–13.6.2008.
- 7th Conference on "Mathematical Methods for Curves and Surfaces", Toensberg, Norway, 26.6.–1.7.2008.

- Workshop "Frames for the finite world: Sampling, coding and quantization", American Institute of Mathematics, Palo Alto, 18.8.–22.8.2008.
- Alumni Meeting, Universität Osnabrück, 29.11.2008.
- Dagstuhl-Seminar "Structured Decompositions and Efficient Algorithms", Schloß Dagstuhl, Leibniz Zentrum für Informatik, 30.11.–5.12.2008.
- Talk Series "Jahr der Mathematik", Universität Osnabrück, 16.12.2008.
- Colloquium, Universität Münster, 18.12.2008.

2009

- Meeting of FNRS Contact Group "Wavelets and applications", Brussels, 19.1.2009.
- Tag der Berufspraxis, Universität Bielefeld, 23.1.2009.
- Neurobiology Departmental Seminar, Universität Osnabrück, 3.3.2009.
- Banff-Workshop "Frames from First Principles", Banff International Research Station, 16.3.–20.3.2009.
- Mathematics-Electrical Engineering Seminar, Colorado State University, 24.3.2009.
- Colloquium, Universität Paderborn, 28.5.2009.
- Colloquium in Applied Mathematics, Universität Münster, 6.5.2009.
- (2 Invited Talks) SampTA09, CIRM, Marseille, 18.5.–22.5.2009.
- Conference "Strobl09", Strobl, Austria, 15.6.–19.6.2009.
- SFB-Colloquium, Universität Bonn, 7.7.2009.
- Seminar, Universität des Saarlandes, 10.7.2009.
- Mathematics-Electrical Engineering Seminar, Nanyang Technological University, 24.7.2009.
- (2 Invited Talks) International Symposium on Optical Science and Technology, SPIE's 54th Annual Meeting, Conference "Wavelets XIII", San Diego, 2.8.–6.8.2009.
- Colloquium, Stony Brook University, 3.9.2009.
- Analysis Seminar, Stony Brook University, 8.9.2009.
- Analysis Seminar, University of Houston, 5.10.2009.
- Computational Mathematics and Applications Seminar, Oxford University, 15.10.2009.
- Antrittsvorlesung, Universität Osnabrück, 13.11.2009.
- Colloquium, Institute of Biomathematics and Biometry, Helmholtz Zentrum München, 25.11.2009.
- Colloquium on Applied Mathematics, Universität Hamburg, 26.11.2009.

2010

- AMS National Meeting, San Francisco, 13.1.–16.1.2010.
- Satellite Conference of the AMS Meeting, Workshop on "Optimal Frames and Operator Algebras", San Francisco State University, 17.1.–19.1.2010.
- Applied Mathematics Seminar, KAUST, 14.2.2010.
- IMI Seminar, University of South Carolina, 3.3.2010.
- 13th International Conference on Approximation Theory, San Antonio, 7.3.–10.3.2010.
- Analysis Seminar, University of Houston, 9.10.2009.
- Conference on Information Sciences and Systems (CISS 2010), Princeton University, 17.3.–29.3.2010.
- (2 Invited Talks) Interdisciplinary Workshop on "Sparsity and Modern Mathematical Methods for High Dimensional Data", Brussels, Belgium, 6.4.–10.4.2010.
- SIAM Conference on Imaging Science (IS10), Chicago, 12.4.–14.4.2010.
- Seminar, Universität Münster, 28.4.2010.
- Colloquium, Universität Frankfurt, 7.5.2010.
- Conference in Honor of Pete Casazza's 65th Birthday, "From Banach Spaces to Frame Theory and Applications", University of Maryland, 20.5.–23.5.2010.
- Colloquium, Universität Oldenburg, 2.6.2010.

- Workshop "Sparsity and Computation", Universität Bonn, 7.6.–11.6.2010.
- Conference Noko 2010, Universität Oldenburg, 12.6.2010.
- (2 Invited Talks) Seventh International Conference on Curves and Surfaces, Avignon, France, 24.6.–30.6.2010.
- Conference "New Trends in Harmonic and Complex Analysis", Bremen, 29.6.–3.7.2010.
- Seminar, TU Berlin, 9.7.2010.
- Oberwolfach-Workshop "Wavelet and Multiscale Methods", Mathematisches Forschungsinstitut Oberwolfach, 1.8.–7.8.2010.
- ECE Seminar, Rice University, 14.9.2010.
- Colloquium, San Francisco State University, 17.9.2010.
- Oberwolfach-Mini-Workshop "Shearlets", Mathematisches Forschungsinstitut Oberwolfach, 4.10.–8.10.2010.
- Illinois/Missouri Applied Harmonic Analysis Seminar, University of Illinois, 16.10.2010.
- Colloquium, Jacobs-University Bremen, 8.11.2010.
- Conference of the Canadian Mathematical Society in Vancouver, Canada, 4.12.–6.12.2010.

2011

- Keynote Talk, International Conference on Harmonic Analysis and Applications, Sydney, 7.2.–11.2.1011.
- Kolloquium, University of Newcastle, Newcastle, 14.2.2011.
- Workshop "New Frontiers in Imaging and Sensing", University of South Carolina, 17.2.–23.2.2011.
- Analysis Seminar, Duke University, 28.2.2011.
- Analysis Seminar, Yale University, 15.3.2011.
- Invited Survey Talk, 82nd Annual Meeting of the International Association of Applied Mathematics (GAMM), Graz University of Technology, 18.4.–21.4.2011.
- 82nd Annual Meeting of the International Association of Applied Mathematics, Graz University of Technology, 18.4.–21.4.2011.
- SampTA 2011, Nangyang Technological University, Singapore, 2.5.–6.5.2011.
- International Symposium in Approximation Theory, Vanderbilt University, 17.5.–21.5.2011.
- Keynote Talk, International Conference on Applied Harmonic Analysis and Multiscale Computing, Edmonton, Canada, 25.7.–28.7.2011.
- Mathematics-Electrical Engineering Seminar, Colorado State University, 29.7.2011.
- Colloquium, University of Colorado, 5.8.2011.
- (3 Invited Talks) International Symposium on Optical Science and Technology, SPIE's 54th Annual Meeting, Conference "Wavelets and Sparsity XIV", San Diego, 21.8.–25.8.2011.
- ILAS 2011, TU BRaunschweig, Germany, 22.8.–26.8.2011.
- Plenary Talk, International Conference on Multivariate Approximation, Hagen, Germany, 24.9.–27.9.2011.
- Plenary Talk, International Workshop on Wavelets, Frames and Applications, University of Delhi, India, 15.12.–21.12.2011.

2012

- Berlin Mathematical School, 6.1.2012.
- CosmoStat Seminar, CEA-Saclay, Gif-sur-Yvette, France, 13.1.2012.
- Plenary Talk, Conference "Mathematics and Image Analysis 2012", Paris, 16.1.–18.1.2012.
- Antrittsvorlesung, TU Berlin, 17.2.2012.
- Analysis Seminar, University of Missouri, 21.2.2012.
- Colloquium, University of Missouri, 23.2.2012.
- Analysis Seminar, Tel Aviv University, 6.3.2012.
- EE Seminar, Technion, 7.3.2012.

- EE Seminar, EPFL, 19.3.2012.
- (2 Invited Talks) 83nd Annual Meeting of the International Association of Applied Mathematics (GAMM), Universität Darmstadt, 26.3.–30.3.2012.
- Tag der Mathematik, Berlin, 5.5.2012.
- Treffen mit dem Wissenschaftlichen MATHEON-Beirats, 11.5.2012.
- Schüler-Info-Tage TU Berlin, 15.5.2012.
- (2 Invited Talks) SIAM Conference on Imaging Science, Philadelphia, 20.-22.5.2012.
- Colloquium, Universität Göttingen, 29.5.2012.
- Applied and Computational Analysis Seminar, University of Cambridge, 31.5.2012.
- Oberwolfach-Workshop "Applied Harmonic Analysis and Sparse Approximation", Mathematisches Forschungsinstitut Oberwolfach, 11.6.–15.6.2012.
- Oberwolfach-Workshop "Learning Theory and Approximation", Mathematisches Forschungsinstitut Oberwolfach, 25.6.–29.6.2012.
- ISMP 2012, Berlin, 20.-24.8.2012.
- Seminar, Stanford University, 5.9.2012.
- Applied Mathematics Colloquium, California Institute of Technology, 10.9.2012.
- Mathematics-Electrical Engineering Seminar, Colorado State University, 25.9.2012.
- Harvard EE Seminar, Harvard University, 19.10.2012.
- PACM Colloquium, Princeton University, 22.10.2012.
- CSCAMM Seminar, University of Maryland, 24.10.2012.
- Analysis Seminar, University of Houston, 29.10.2012.
- ECE Seminar, Rice University, 1.11.2012.
- Public Einstein Lecture, 8.11.2012.
- Plenary Talk, International Workshop SIGMA'2012 (Signal-Image-Geometry-Modelling-Approximation), CIRM, 19.-23.11.2012.

2013

- MathInside, MATHEON, Berlin, 15.1.2013.
- Colloquium, Universität Dresden, 16.1.2013.
- Colloquium, University of Missouri, 14.2.2013.
- IMI Seminar, University of South Carolina, 19.3.2013.
- MathInside, MATHEON, Berlin, 15.3.2013.
- Colloquium, Seminar for Applied Mathematics (SAM), ETH Zürich, 27.3.2013.
- Plenary Talk, 14th International Conference on Approximation Theory, San Antonio, 7.-10.4.2013.
- Keynote Talk, 4. Data Science Day, Berlin, 25.4.2013.
- Numerical Analysis Seminar, Oxford University, 23.5.2013.
- Mathematical Colloquium, University of Darmstadt, 29.5.2013.
- ICMSEC Seminar, Chinese Academy of Science, Beijing, 5.6.2013.
- SPAWC 2013 (4th IEEE International Workshop on Signal Processing Advances for Wireless Communications), Darmstadt, 16.6.–19.6.2013.
- Series of Invited Lectures, SFB-BMS Sommer-School "Discrete Differential Geometry", Berlin, 9.9.–20.9.2013.
- SampTA13, Bremen, Germany, 2.7.–5.7.2013.
- Plenary Talk, CIMPA 2013 "New Trends in Applied Harmonic Analysis: Sparse Representations, Compressed Sensing and Multifractal Analysis", Mar del Plata, Argentina, 5.8.-16.8.2013.
- Mathematics-Electrical Engineering Seminar, Colorado State University, 22.8.2013.
- (2 Invited Talks) International Symposium on Optical Science and Technology, SPIE's 56th Annual Meeting, Conference "Wavelets and Sparsity XV", San Diego, 25.8.–29.8.2013.

- Geometry Workshop, Strobl, Austria, 28.8.-31.8.2013.
- Workshop of the GAMM activity group "Applied and Numerical Linear Algebra", Universität Wuppertal, Germany, 9.9.–10.9.2013.
- Plenary Talk *(Noether Lecturer)*, ÖMG-DMV-Kongress 2013, Innsbruck, 23.-26.9.2013.
- Minisymposium "Frames, high-dimensional data analysis, and dimension reduction", ÖMG-DMV-Kongress 2013, Innsbruck, 23.-26.9.2013.
- Colloquium Talk, Universität Passau, 29.10.2013.
- Plenary Talk, Workshop "Statistical Issues in Compressive Sensing", Universität Göttingen, Germany, 11.-13.11.2013.
- Colloquium Talk, University of Warwick, 29.11.2013.
- Distinguished Lecture Series, School of Computer and Communication Sciences, EPFL, 18.11.2013.

2014

- Conference on Numerical Analysis and Scientific Computing, MPI Leipzig, 7.1.–9.1.2014.
- Colloquium, UCLA, 22.1.2014.
- BMS Student Conference 2014, Berlin, 21.2.2014.
- Minisymposium "Linear Algebra in Compressed Sensing", 85nd Annual Meeting of the International Association of Applied Mathematics (GAMM), Universität Erlangen, 10.3.–14.3.2014.
- Oberwolfach-Miniworkshop "Mathematical Physics meets Sparse Recovery", Mathematisches Forschungsinstitut Oberwolfach, 14.4.–18.4.2014.
- (2 Invited Talks) SIAM Conference on Imaging Science (IS14), Hong Kong, 12.5.–14.5.2014.
- Department Seminar, City University of Hong Kong, 15.5.2014.
- Keynote Talk, Fifth International Conference on Computational Harmonic Analysis and Applications in conjunction with the Shanks Lecture series, Vanderbilt University, Nashville, 19.5.-23.5.2014.
- Invited Talk, Banff-Workshop "Imaging and Modeling in Electron Microscopy - Recent Advances", Banff International Research Station, 18.5.–23.5.2014.
- Invited Lecture, Summer School on "Coherent state transforms, time-frequency and time-scale analysis, applications", Trieste, Italy, 2.6.-21.6.2014.
- Colloquium, RWTH Aachen, 17.6.2014.
- Workshop "White nights of materials science: From physics and chemistry to data analysis, and back", Saint Petersburg, Russia, 16.6.–20.6.2014.
- Royal Society International Scientific Seminar "Computations in infinite dimensions: challenges in a continuous world", Kavli Royal Society International Centre, Chicheley Hall, UK, 30.6.–1.7.2014.
- Invited Talk, RIPS@Berlin, FU Berlin, 9.7.2014.
- Plenary Talk, 30th International Colloquium on Group Theoretical Methods in Physics (ICGTMP), Ghent University, Belgium, 14.7.–18.7.2014.
- Plenary Talk, UCL-Duke University Workshop on Sensing and Analysis of High-Dimensional Data, University College London, UK, 4.9.–5.9.2014.
- Colloquium, Zurich Colloquium in Applied and Computational Mathematics, ETH Zürich, 16.9.2014.
- Invited Talk Series, Summer School "Modelling", Fraunhofer-Institut ITWM, Kaiserslautern, 20.10.–24.10.2014.
- Invited Talk, Berlin-Brandenburgische Akademie der Wissenschaften, 28.11.2014.
- Symposium on "Informatics and Genomics for Materials Development", 2014 Fall Meeting of the Materials Research Society, Boston, 30.11.–5.12.2014.

- Plenary Talk, 5th International Conference on Scientific Computing and Partial Differential Equations (SCPDE14), Hong Kong Baptist University, Hong Kong, 8.12.–12.12.2014.
- Semi-Plenary Talk, Approximation Theory Workshop, FoCM2014, Montevideo, 11.12.–20.12.2014.

2015

- Urania, Berlin, 19.1.2015.
- Joint ECE-CS-IP Seminar, Colorado State University, 5.2.2015.
- Colloquium, University of Texas, Austin, 9.2.2015.
- Visualization Seminar, University of Texas, Austin, 10.2.2015.
- ICES Seminar, University of Texas, Austin, 12.2.2015.
- Visualization Seminar, University of Texas, Austin, 17.2.2015.
- Seminar, Centre de Recherche INRIA Rennes, France, 9.4.2015.
- Colloquium, University of Vienna, Vienna, 29.4.2015.
- Plenary Talk, Applied Inverse Problems Conference, Helsinki, Finland, 25.5.–29.5.2015.
- Plenary Talk, International Conference on "Applied Mathematics and Approximation Theory 2015" (AMAT 2015), Ankara, Turkey, 28.5.–31.5.2015.
- Colloquium of the Hausdorff Center for Mathematics, Universität Bonn, 10.6.2015.
- Invited Talk, Minisymposium "Compressed Sensing and Medical Applications", 27th IFIP TC7 Conference 2015, Nice, France, 29.6.–3.7.2015.
- Invited Talk, International Geometry Workshop, Seggau, 10.7.–12.7.2015.
- Mini-Symposium on "Sparsity-promoting Seismic Data Analysis", 8th International Congress on Industrial and Applied Mathematics (ICIAM 2015), Beijing, China, 10.8.–14.8.2015.
- Plenary Talk, Model Reduction of Parametrized Systems (MoRePaS) workshop, SISSA, International School for Advanced Studies, Trieste, Italy, 13.10.–16.10.2015.
- Colloquium, Universität Münster, 29.10.2015.
- AIM (Applied and Interdisciplinary Mathematics) Seminar, University of Michigan, 6.11.2015.

2016

- Colloquium, Physikalisch-Technische Bundesanstalt, Berlin, 3.2.2016.
- Invited Talk, Workshop "Harmonic Analysis, Graphs and Learning", Hausdorff Institute, Bonn, 14.3.–18.3.2016.
- ECMath Colloquium, HU Berlin, 22.4.2016.
- Mathicse Colloquium, EPFL, 11.5.2016.
- Minitutorial Lecture, SIAM Conference on Imaging Science (IS16), Albuquerque, New Mexico, 23.5.–26.5.2016.
- Plenary Talk, International Conference on Modern Time-Frequency Analysis (Strobl'16), Strobl, Austria, 6.6.–10.6.2016.
- Plenary Talk, International Workshop on Operator Theory and Applications (IWOTA) 2016, St. Louis, Missouri, 18.7.-22.7.2016.
- 2 Invited Lectures, BMS Summer School "Mathematical and Numerical Methods in Image Processing", Berlin, 25.7.–5.8.2016.
- Analysis Seminar, University of Houston, 16.9.2016.
- ECE Seminar, Rice University, 20.9.2016.
- Imaging Seminar, University of Houston, 26.9.2016.
- Colloquium, Georgia Institute of Technology, Atlanta, 29.9.2016.
- Analysis Seminar, Georgia Institute of Technology, Atlanta, 30.9.2016.
- Invited Talk, BIRS-Workshop "Applied Harmonic Analysis, Massive Data Sets, Machine Learning, and Signal Processing", Oaxaca, Mexico, 17.10.–21.10.2016.
- Plenary Talk, International Workshop SIGMA'2016 (Signal-Image-Geometry-Modelling-Approximation), CIRM, 31.10.–4.11.2016.

- Plenary Talk, International Workshop on Coherent States and their Applications, CIRM, France, 14.11.–18.11.2016.
- Special Symposium on Intelligent Systems, Max Planck Institute for Intelligent Systems, Tübingen, 13.–14.12.2016.
- Christmas Colloquium, Justus-Liebig-Univesität Gießen, 14.12.2016.

2017

- PDE and Applied Math Seminar, UC Davis, 8.2.2017.
- Seminar, Stanford University, 9.2.2017.
- Colloquium, University of Hawaii, 15.2.2017.
- Statistics & Electrical Engineering Seminar, Columbia University, 28.2.2017.
- Math and Data Seminar, Center for Data Science, New York University, 2.3.2017.
- Harmonic Analysis and Signal Processing (HASP) and Numerical Analysis and Scientific Computing (NASC) Seminar, Courant Institute, New York University, 3.3.2017.
- 88nd Annual Meeting of the International Association of Applied Mathematics (GAMM), Universität Weimar, 6.3.–10.3.2017.
- Oberwolfach-Workshop "Multiscale and High-Dimensional Problems", Mathematisches Forschungsinstitut Oberwolfach, 26.3.–1.4.2017.
- Colloqium, Universität Darmstadt, 26.4.2017.
- SFB Seminar, TU Berlin, 16.5.2017.
- Plenary Talk, SPARS 2017, Lisbon, Portugal, 5.6.–8.6.2017.
- Plenary Talk, Conference of the European Women in Mathematics, German Chapter, Bielefeld, 9.6.–10.6.2017.
- Invited Talk, Deep Learning Workshop, Berlin, 25.6.–29.6.2017.
- Colloquium, TU Berlin, 27.6.2017.
- Plenary Talk, Jaen Conference on Approximation Theory, Computer Aided Geometric Design, Numerical Methods and Applications, Ubeda, Spain, 2.7.–7.7.2017.
- Invited Talk, Approximation Theory Workshop, FoCM2017, Barcelona, Spain, 10.7.–19.7.2017.
- Invited Talk, Computational Harmonic Analysis and Compressive Sensing Workshop, FoCM2017, Barcelona, Spain, 10.7.–19.7.2017.
- Invited Talk, International Symposium on Optical Science and Technology, SPIE's 61th Annual Meeting, Conference "Wavelets and Sparsity XVII", San Diego, 6.8.–10.8.2017.
- Invited Talk, Intelligent Data Analysis (IDA) Retreat, Berlin, 4.9.–5.9.2017.
- Plenary Talk, International Geometry Workshop in Obergurgl, Austria, 21.9.–26.9.2017.
- Invited Talk, BIRS-Workshop "Mathematical Advances in Electron Microscopy", Oaxaca, Mexico, 15.10.–20.10.2017.
- Research Seminar "Mathematical Statistics", Weierstrass-Institute for Applied Analysis and Stochastics, Berlin, 29.11.2017.
- Invited Talk, Newton-Institute-Workshop "Generative models, parameter learning and sparsity", Cambridge, 30.10.–3.11.2017.
- Colloquium, Max-Planck-Institute for Mathematics in the Sciences, Leipzig, 19.12.2017.
- Colloquium, Universität Postdam, 20.12.2017.

2018

- Invited Talk, IAS Workshop "The Mathematics of Deep Learning", Hong Kong, 8.1.–12.1.2018.
- Statistics Seminar, WIAS, Berlin, 7.2.2018.
- Keynote Talk, Technology Innovation Science Match, Berlin, 22.2.2018.
- Invited Talk, Oberwolfach-Mini-Workshop "Deep Learning and Inverse Problems", Mathematisches Forschungsinstitut Oberwolfach, 4.3.–10.3.2018.

- Invited Talk, Workshop "Theory of Deep Learning", DALI 2018 – Data Learning and Inference, Playa Blanca, Lanzarote, Canary Islands, 3.4.–5.4.2018.
- Tutorial Lecture on "Mathematics of Deep Neural Networks", AIT Meeting of the Activity Group of ITG, TU Berlin, 3.5.–4.5.2018.
- Keynote Talk, Banff-Workshop "Numerical Analysis and Approximation Theory meets Data Science", Banff International Research Station, 22.4.–28.4.2018.
- Invited Talk, Seventh International Conference on Computational Harmonic Analysis (ICCHA7), Nashville, 14.5.–18.5.2018.
- Plenary Talk, Conference "Big Data and Data Science for the Digital World", Madrid, 4.6.–5.6.2018.
- (3 Invited Talks) SIAM Conference on Imaging Science (IS18), Bologna, 5.6.–8.6.2018.
- Panel Talk, Forward Looking Panel – Imaging Science in the Age of Machine Learning, SIAM IS18, Bologna, 5.6.–8.6.2018.
- Invited Talk, Hybrid Talks on "Simulation", TU Berlin, 14.6.2018.
- Invited Talk, Seminar on "Methods of Algebra and Functional Analysis In Applications", Czech Technical University, Prague, 25.6.2018.
- Invited Talk, Workshop on "Theory of Deep Learning", 5th International Conference on Machine Learning (ICML 2018), Stockholm, Sweden, 10.7.–15.7.2018.
- Keynote Talk, Conference on Deep Learning: From Theory to Applications, Rennes, France, 4.9.–6.9.2018.
- Invited Talk, Geburtstagssymposium, Berlin-Brandenburgische Akademie der Wissenschaften, 10.9.2018.
- Invited Talk, Minisymposium "Frame Theory and Asymptotic Analysis", European Women in Mathematics General Meeting 2018, Graz, Austria, 3.9.–7.9.2018.
- Plenary Talk, International Traveling Workshop for Interacting Sparse models and Technology (iTWIST Workshop), CIRM, France, 21.11.–23.11.2018.
- Invited Lecture, General Lecture Series "Digital Future", Berlin, 27.11.2018.
- Invited Talk, Berliner Verbundprogramm DiGiTal, TU Berlin, Open Lab "Gleichstellung in der virtuellen Wirklichkeit", Berlin, 27.11.2018.
- Invited Talk, Symposium on "Advances in Deep Learning", ICSEE 2018 – International Conference on the Science of Electrical Engineering in Israel, Eilat, Israel, 12.12.–14.12.2018.

2019

- Keynote Talk, Northern Lights Deep Learning Workshop, Tromso, Norway, 9.1.–10.1.2019.
- Invited Talk, International BASP Frontiers Workshop 2019 on Neural-nets in Imaging", Villars-sur-Ollon, Switzerland, 3.2.–8.2.2019.
- Keynote Talk, Workshop "Big Data Science in Astroparticle Research", RWTH Aachen, 19.2.2019.
- Invited Talk, Workshop on Compressed of Deep Neural Networks, Fraunhofer Heinrich-Hertz Institute, 25.2.2019.
- Colloquium Talk, California Institute of Technology, 5.3.2019.
- Seminar Talk, California Institute of Technology, 7.3.2019.
- Joint ECE-CS-IP Seminar, Colorado State University, 12.3.2019.
- Seminar Talk, University of Missouri, 14.3.2019.
- Colloquium Talk, University of Missouri, 14.3.2019.
- Keynote Talk, Spring School "Models and Data", University of South Carolina, 21.3.–24.3.2019.
- Plenary Talk, Conference "Digital Future", Berlin, 14.5.2019.
- Keynote Talk, Opening of Berlin Mathematics Research Center MATH+, 14.5.2019.

- Keynote Talk, International Conference on Calibration, Berlin, 21.–22.5.2019.
- Plenary Talk, Outreach Meeting "Approximation, sampling and compression in data science", Newton Institute, Cambridge, 23.5.2019.
- Colloquium Talk, TU Berlin, 28.5.2019.
- Plenary Talk, International Conference on Constructive Theory of Functions, Sozopol, Bulgaria, 2.–8.6.2019.
- Invited Talk, Applied Mathematics Seminar, University of Warwick, 10.6.2019.
- Colloquium Talk, IST Austria, 13.6.2019.
- Plenary Talk, Workshop on "Approximation, sampling, and compression in high dimensional problems", Newton Institute, Cambridge, UK, 17.–21.6.2019.
- Keynote Talk, Conference on Scale Space and Variational Methods in Computer Vision (SSVM) 2019, Hofgeismar, 30.6.–4.7.2019.
- Invited Talk, Seminar of the Computational Molecular Biology Group Zuse Institute Berlin, 3.7.2019.
- Plenary Talk, ILAS 2019: Linear Algebra without Borders, Rio de Janeiro, Brazil, 8.7.–12.7.2019.
- Invited Talk, Minisymposium "Deep Learning and Inverse Problems", ICIAM 2019, Valencia, 15.7.–19.7.2019.
- (3 Invited Talks), Machine Learning Seminar, University of Tromsø, 13., 15., and 16.8.2019.
- Invited Talk, Workshop in honor of Ron DeVore, Sorbonne Université, 13.9.2019.
- Colloquium, Zurich Colloquium in Applied and Computational Mathematics, ETH Zürich, 23.9.2019.
- Plenary Talk, European Conference on Numerical Mathematics and Advanced Applications (ENUMATH), Egmond aan Zee, The Netherlands, 30.9.–4.10.2019.
- Invited Talk, Minisymposium "Advanced Numerical Methods in Image Processing", European Conferences on Numerical Mathematics and Advanced Applications (ENUMATH), Egmond aan Zee, The Netherlands, 30.9.–4.10.2019.
- Colloquium Talk, Zurich Colloquium in Applied and Computational Mathematics, ETH Zürich, 7.10.2019.
- Keynote Talk, Woudschoten Conference on Numerical Analysis and Scientific Computing, Woudschoten Conference Center, Zeist, The Netherlands, 9.10.–11.10.2019.
- Invited Talk, BIRS-Workshop "Computational Harmonic Analysis and Data Science", Oaxaca, Mexico, 28.10.–1.11.2019.
- Invited Talk, IPAM Workshop "Validation and Guarantees in Learning Physical Models: from Patterns to Governing Equations to Laws of Nature", Los Angeles, 28.10.–1.11.2019.
- Invited Talk, Artificial Intelligence for 5G & Beyond Day, Fraunhofer HHI, Berlin, 5.11.2020.
- Invited Talk, Deep Learning Workshop, WIAS Berlin, 3.–5.12.2019.
- Invited Talk, Special session on "Mathematical Foundations of Deep Learning" at IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP), Guadeloupe, West Indies, 15.–18.12.2019.

2020

- Invited Talk, IPAM-Workshop "Deep Learning and Medical Applications", Los Angeles, 27.–31.1.2020.
- Invited Talk, MINDS Seminar, Johns-Hopkins University, Baltimore, 3.3.2020.
- Invited Talk, Seminar, Institute of Advanced Study, Princeton, 5.3.2020.
- Invited Talk, Applied Mathematics Seminar, Courant Institute, NYU, 6.3.2020.
- Invited Talk, (virtual) VisionLab-Seminar, Johns-Hopkins University, Baltimore, 1.5.2020.
- Plenary Talk, Virtual Conference on Mathematics of Data Science, organized by University of Edinburgh, 11.6.–12.6.2020.

- Invited Talk, One World Mathematics of INformation, Data, and Signals (1W-MINDS) Seminar, 18.6.2020.
- Invited Talk, Minisymposium on "Integration of Model-Based and Data-Based Methods with Medical Imaging", (Virtual) SIAM Conference on Mathematics of Data Science, 23.6.–24.6.2020.
- Colloquium Talk, (virtual) MOX Colloquium, organized by Politecnico di Milano, 16.7.2020.
- Plenary Talk, (virtual) Annual GAMM COMINDS AG Workshop, MPI Leipzig, 10.9.–11.9.2020.
- Keynote Talk, Workshop on Machine Learning in Medical Image Reconstruction (MLMIR), 23rd International Conference on Medical Image Computing and Computer Assisted Intervention (virtual MICCAI 2020), 4.10.–8.10.2020.
- Plenary Talk, MathSEE Symposium 2020 – Mathematics in Sciences (virtual), Engineering and Economics, Karlsruhe Instiute of Technology, 7.10.–9.10.2020.
- Invited Talk, Workshop on The Analytical Foundations of Deep Learning: Interpretability and Performance Guarantees, C3.ai Digital Transformation Institute, 19.10.–23.10.2020.
- Plenary Talk, 11. Israel Machine Vision Conference (Virtual), 28.10.–29.10.2020.
- Invited Talk, Conference on the Mathematical Theory of Deep Neural Networks (DeepMath 2020) (virtual), Princeton Club New York, 5.11.–6.11.2020.
- Francqui Lecture Series (Inaugural Lecture and four longer Lectures), 30.11.–4.12.2020.
- Colloquium Talk, Zoom webinar series "Mathematics, Physics and Machine Learning", Instituto Superior Tecnico Lisboa, 2.12.2021.
- Seminar Talk, Physics & Machine Learning Seminar, LMU Munich, 10.12.2020.
- Jour Fixe Talk, Exzellenzclusters STRUCTURES, Universität Heidelberg, 11.12.2020.

Cancelled or Postphoned to 2021/2022 due to COVID-19

- Keynote Talk, Quarterly Lecture of the Berlin Mathematical Society, Museum of Technology, Berlin, 21.4.2020.
- Invited Talk, ESI Workshop on "Statistical estimation and deep learning in UQ for PDEs", Vienna, 25.–29.5.2020.
- Invited Talk, ESI Workshop on "Approximation of high-dimensional parametric PDEs in forward UQ", Vienna, 2.–5.6.2020.
- Invited Talk, Approximation Theory Workshop, Foundations of Computational Mathematics (FoCM 2020) Conference, Vancouver BC, Canada, 15.–24.6.2020.
- Invited Talk, International Conference "Approximation Theory and Applications" dedicated to the 100th anniversary of Professor S.B. Stechkin, Steklov Institute of Mathematics, Moscow, 6.9.–12.9.2020.
- Invited Talk, 8th International Conference on Computational Harmonic Analysis (ICCHA 2020), Munich, 14.9.–18.9.2020.
- Plenary Talk, Dutch Symposium on Inverse Problems, Amsterdam, 21.9.2020.
- Keynote Talk, Conference on "Mathematics of Machine Learning", Center for Interdisciplinary Research (ZIF) in Bielefeld, 22.2.–25.2.2021.
- Invited Talk, Special Session "Approximationtheory and Data Analysis", Joint Meeting DMV-Israeli Science Foundation, Hebrew University, Jerusalem, 8.3.–10.3.2021.
- Invited Talk, BIRS-Workshop "Big Data Inverse Problems", Banff, Canada, 18.4.–23.4.2021.
- Plenary Talk, International Conference on Mathematical Methods for Curves and Surfaces (MMCS10), Oslo, 28.6.–2.7.2021.
- Invited Talk, BIRS-Workshop "Integration of Model- and Data-Driven Methods for Medical Imaging", Oaxaca, Mexico, 12.9.–17.9.2021.

2021

- Tutorial Talk, TRIPODS Winter School on Graph Learning and Deep Learning, Johns Hopkins Mathematical Institute for Data Science (MINDS), 6.1.–8.1.2020.
- Invited Talk, TRIPODS Workshop on Graph Learning and Deep Learning, Johns Hopkins Mathematical Institute for Data Science (MINDS), 13.1.–15.1.2020.
- Panel Member, TRIPODS Workshop on Graph Learning and Deep Learning, Johns Hopkins Mathematical Institute for Data Science (MINDS), 13.1.–15.1.2020.
- Seminar Talk, Seismology Seminar, LMU Munich, 26.1.2021.
- Seminar Talk, Machine Learning Seminar, University of Tromsoe, 27.1.2021.
- Seminar Talk, CSCAMM Seminar, University of Maryland, 3.2.2021.
- Invited Talk, Oberwolfach-Workshop "Mathematical Foundations of Machine Learning", Mathematisches Forschungsinstitut Oberwolfach, 21.3.–27.3.2021.
- Invited Talk, Hot Topic Workshop on Safety and Security of Deep Learning, ICERM, 10.4.–11.4.2021.
- Invited Talk, Applied Mathematics Seminar, Yale University, 19.4.2021.
- Invited Talk, Workshop on Theory of Overparameterized Learning (virtual), 20.4.–21.4.2021.
- Seminar Talk, Seminar on AI in Medicine, TU Munich, 22.4.2021.
- Colloquium Talk, Garchinger Maier-Leibnitz-Colloquium, Munich, 22.4.2021.
- Invited Talk, Online lecture series "Mathematics of Deep Learning", Universität Erlangen-Nürnberg, 27.4.2021.
- Seminar Talk, Centre Visual Intelligence Lectures, University of Tromsø, 29.4.2021.
- Panel Member, Panel on "Graph Neural Networks Beyond Message Passing", Workshop on "Geometric and Topological Representation Learning", ICLR 2021, 3.5.–7.5.2021.
- Invited Lecture, Maths in Society Lecture Series, TU Munich, 12.5.2021.
- Colloquium Talk, Statistics Colloquium, LMU Munich, 19.5.2021.
- Plenary Talk, Minisymposium in Honor of Maryam Mirzakhani, Hakim Sabzevari University, 20.5.2021.
- Seminar Talk, ETH Foundations of Data Science Seminar, ETH Zurich, 20.5.2021.
- Invited Talk, Special Session on "Machine Learning and Model Order Reduction for Large Scale Predictive Simulations", 13th International Conference on Large-Scale Scientific Computations (LSSC'21), Sozopol, 7.6.–11.6.2021.
- Invited Lecture, Max Planck Institute of Biochemistry, 14.6.2021.
- Colloquium Talk, Würzburger Mathematisches Kolloquium, University of Würzburg, 15.6.2021.
- Plenary Talk, 8th European Congress of Mathematics, Portoroz, Slovenia, 20.6.–26.6.2021.
- Invited Talk, Symposium on Scientific Computing, Annual Meeting of the Canadian Society of Applied and Industrial Mathematics (CAIMS 2021), University of Waterloo, 21.6.–25.6.2021.
- Invited Talk, Oberwolfach-Workshop "Computation and Learning in High Dimensions", Mathematisches Forschungsinstitut Oberwolfach, 1.–7.8.2021.
- Invited Talk, Geophysics Seminar, LMU Munich, 6.7.2021.
- Invited Lecture, Online Lecture Series "Beyond the Patterns", Universität Erlangen-Nürnberg, 13.7.2021.
- Lecturer, Gene Golub SIAM Summer School (G2S3) on "Theory and Practice of Deep Learning", AIMS, Cape Town, South Africa, 19.–30.7.2021.
- Invited Talk, IMA Workshop on Mathematical Foundation and Applications of Deep Learning, Purdue University, 12.–13.8.2021.
- Invited Talk, HCM Symposium 2020, Hausdorff Center, Bonn, 24.8.–26.8.2021.
- Invited Talk, CRM Applied Math Lab Seminar, McGill University, Canada, 27.9.2021.
- Invited Talk, Lecture Series SFB "Hybrid Societies", TU Chemnitz, 8.10.2021.
- Keynote Talk, RingvorlesungLMU "Artificial Intelligence", LMU Munich, 19.10.2021.

- Invited Talk, One World Signal Processing Seminar, 27.10.2021.
- Invited Talk, Seminar Cycle "Mathematics for Artificial Intelligence - MAIn 2021", Politecnico di Torino, Italy, 3.11.2021.
- Invited Talk, Workshop of the Interdisciplinary Working Group "Future of Medicine", Berlin-Brandenburg Academy of Sciences (BBAW), 5.11.2021.
- Colloquium Talk, DASHH Data Science Colloquium, Hamburg, 18.11.2021.
- Invited Talk, Workshop on "The Power of Women in Deep Learning", Isaac Newton Institute, 22.11.–23.11.2021.
- Invited Talk, Virtual LC2 seminar (Learning, Computation, and Control), Imperial College London Applied Maths, 25.11.2021.

2022 (up to now)

- Seminar Talk, Virtual Seminar Series on "AIM2: Artificial Intelligence and Mathematics, fundamentals and beyond", CNR-IAC, Italy, 12.1.2022.
- Invited Talk, Rotary Club, Munich, 15.1.2022.
- Eugen-Biser-Lecture, LMU Munich, 15.1.2022.
- Seminar Talk, Scripps Institution of Oceanography, San Diego, 18.1.2022.
- Invited Talk, The 9 th Seminar on Harmonic Analysis and Applications, 27.1.2022.
- Colloquium Talk, Mathematical Colloquium, Universität Ulm, 28.1.2022.
- Seminar Talk, Seminar on Medicine&AI, LMU Munich, 4.2.2022.
- Seminar Talk, DaSCI Webinar on AI, DaSCI Research Institute, University of Granada, Spain, 8.2.2022.
- Keynote Talk, Workshop on information theory for deep learning (IT4DL), Conference of the Association for the Advancement of Artificial Intelligence 2022, Vancouver, 22.2.–1.3.2022.
- Distinguished Lecturer, LMS Lecture Series, Cambridge University, 28.2.–4.2.2022.
- Invited Talk, Dagstuhl-Workshop "Graph Embeddings: Theory meets Practice", Schloss Dagstuhl – Leibniz-Zentrum für Informatik, Germany, 27.–30.3.2022.
- Seminar Talk, DaSCI Research Institute of the University of Granada, Spain, 5.4.2022.
- Invited Talk, Mini-symposium on "Physics-based Machine Learning and Uncertainty Quantification", SIAM Conference on Uncertainty Quantification, Atlanta, 12.–15.4.2022.
- Colloquium Talk, Institute of Natural Sciences, Shanghai Jiao Tong University, 19.4.2022.
- Invited Talk, Maths4DL Meeting, University of Bath, 21.–22.4.2022.
- Invited Talk, Cambridge University Maths Society (The Archimedeans), Cambridge, 29.4.2022.
- Invited Talk, Follow-up Workshop "Mathematics of Data Science", Hausdorff Center, Bonn, 25.–29.4.2022.
- Seminar Talk, SILO (Systems, Information, Learning and Optimization) Seminar Series, University of Wisconsin-Madison, 11.5.2022.
- Invited Talk, Seminar on "Machine learning for the working mathematician", Sydney, 19.5.2022.
- Panel Member, Panel "Mathematical challenges in an AI driven world", Conference 100UMI-800UNIPD, University of Padova, 23.–24.5.2022.
- Invited Talk, Workshop on "Statistical estimation and deep learning in UQ for PDEs", ESI, Vienna, 30.5.–3.6.2022.
- Keynote Talk, AIM@LMU Ringvorlesung, LMU Munich, 8.6.2022.
- Invited Talk, Workshop on "AI in Science: Foundations and Applications", LMU Munich, 9.–10.6.2022.
- Plenary Talk, National Symposium on AI and Mathematics at CWI, Amsterdam, 9.–10.6.2022.

- Panel Member, EC Panel "Science through the AI lens panel", Joint Research Centre Summit, 13.6.2022.
- Keynote Talk, Workshop "Synergies between Data Science and PDE Analysis", University of Bonn, 13.6.–17.6.2022.
- Keynote Talk, European Seminar on COmputing (ESCO 2022), Pilsen, Oland, 13.-17.6.2022.
- Panel Member, Panel on "Künstliche Intelligenz in Medizin & Alltag - Grenzen zum Wohle der Menschen" of LMU & TUM Medicine, 18.6.2022.
- Plenary Talk, Bedlewo Acta Numerica Conference, Banach Center, Bedlewo, Poland, 29.6.–2.7.2022.
- Invited Talk, International Congress of Mathematicians (ICM) 2022, Virtual, 6.7.–14.7.2022.
- Invited Talk, Session on AI, Congress of the American, European and French Mathematical Societies, Grenoble, 18.7.–22.7.2022.
- Plenary Talk, World Congress on Computational Intelligence (WCCI), Padova, 18.7.–23.7.2022.
- Plenary Talk, Workshop "Algorithmic Optimization and Data Science", Trierer Graduiertenkolleg Algorithmische Optimierung, Trier, 20.–22.7.2022.
- Plenary Talk, the International Conference on Scientific Computation and Differential Equations (SciCADE'21), University of Iceland, Reykjavik, 25.7.–29.7.2022.
- Keynote Talk, MCML Kick-Off Event, Bavarian Academy of Sciences and Humanities, Munich, 27.7.2022.
- Keynote Talk, Section "Computational and mathematical methods in data science", 92nd Annual Meeting of GAMM, Aachen, 15.–19.8.2022.
- Invited Talk, 2nd RAPTOR School "Loop Requirements", Ljubljana, 4.–9.9.2022.
- Invited Talks (2x), Arnold Sommerfeld Center (ASC) Summer School, 12.–16.9.2022.
- Plenary Talk, Chemnitzer Finite-Elemente-Symposium, Herrsching am Ammersee, 15.–17.9.2022.
- Invited Talk, Information Geometry and Machine Learning Webinar, Stony Brook University, 7.10.2022.
- Invited Talk, Workshop on Machine Learning and Its Applications, National University of Singapore, 10.–28.10.2022.
- Invited talk, 55th National Congress of the Mexican Mathematics Society, Guadalajara, Mexico, 23.–28.10.2022.
- Keynote Talk, Lecture Series "Künstliche Intelligenz in der Medizin", München, 24.10.2022.
- Keynote Talk, Machine Learning Frontiers in Precision Medicine (MLFPM) Event, München, 25.10.2022.
- Invited Talk, Session "Trustworthy AI", AI Symposium, Tokyo, 27.–28.10.2022.
- Keynote Talk, Quantum Techniques in Machine Learning (QTML), Napoli, Italy, 8.–11.11.2022.
- Keynote Talk, Kick-off Event, DFG-Research Training Group 2339 "Interfaces, Complex Structures, and Singular Limits in Continuum Mechanics", 11.11.2022.
- Invited Talk, Digicon 2022, München, 16.11.2022.
- Colloquium Talk, Universität Osnabrück, 14.12.2022.
- Colloquium Talk, RWTH Aachen, 16.12.2022.

2023 (up to now)

- Invited Talk, 3rd workshop on "Seeking Low Dimensionality in Deep Neural Networks" (SLowDNN), MBZUAI, Abu Dhabi, 3.–6.1.2023.
- Plenary Talk, International Conference on "Computational Mathematics for High-Dimensional Data in Statistical Learning", MATRIX institute, Victoria, Australia, 30.1.–10.2.2023.

- Invited Talk, Workshop on the occasion of Stephane Mallat's 60th birthday, Bures-sur-Yvette, France, 19.–21.4.2022.
- Invited Talk, BIRS workshop "Leveraging model- and data-driven methods in medical imaging", BIRS-Okanagan, 7.–12.5.2023.
- Invited Talk, INdAM Workshop "Learning for Inverse Problems", Rome, 5.–9.6.2022.
- Invited Talk, 10th International Congress on Industrial and Applied Mathematics (ICIAM 2023), Tokyo, 20.–25.8.2023.
- Plenary Talk, Kaiserslautern Applied and Industrial Mathematics Days – KLAIM 2023, Kaiserslautern, 25.–27.9.2022.

Further Invitations/Leadership Functions/Honors

2009	Guest on the Red Sofa in the Mathematikum, Gießen
2009	Nomination for Program Chair for the SIAM Activity Group on Imaging Science
2010	Inscription in the Internet Portal "AcademiaNet" for Excellent Female Researchers
2010	Invitation for Panel of the FWO
2012	Public Einstein Lecture
2012	Guest on the Red Sofa in the Mathematikum, Gießen
2012–2022	Founding member and Chair of the GAMM Activity Group "Mathematical Signal- and Image Processing"
2013	Invitation to the DFG-Round Table on "Compressed Sensing"
2013	Inclusion in Hübners "Who is Who in Deutschland"
2013–2020	Member of the SampTA Steering Committee
2013	Election to the SPARS Steering Committee
2013	Election to the IPODI Selection Committee and election to become chair
2013	Election to the Committee for "NaFöG–Elsa-Neumann-Scholarships of the state of Berlin"
2014	Election to the Managing Board of the International Association of Applied Mathematics and Mechanics (GAMM)
2015–2021	Coordination of the DFG-Priority Programm "Compressed Sensing in Information Theory", SPP 1798 (joint with R. Mathar)
2015–	Consultant for the Fraunhofer Herinrich-Hertz-Institute (HHI)
2016	Election to Vice Chair of the SIAM Activity Group on Imaging Sciences
2016–2018	Election to the Selection Committee GAMM Juniors Fellows
2016–	Election to the Executive Board of the SFB/TR 109
2017	Invitation for a Panel of the European Research Council
2017	Invitation as Expert to InfoRadio rbb, 91. Treffpunkt WissensWerte "Mathe ist schön"
2017–	Election to the Executive Board of the RTG BIOQIC
2018	Election to Chair of the SIAM Activity Group on Imaging Sciences
2018–	GAMM Representative in the Council of the European Mathematical Society
2018	Member of the Committee for the Expert Council "Mathematics" of the Universität Hamburg
2018	Member of the Committee for the Expert Council "Computer Science" of the Universität Hamburg
2018–	Election to the Executive Board of the SFB 1114
2018–2023	Spokesperson of the RTG "Differential Equation- and Data-driven Models in Life Sciences and Fluid Dynamics: An Interdisciplinary Research Training Group (DAEDALUS)", RTG 2433

2018	Member of the Berlin Delegation for the DFG Review of the Excellence Cluster MATH+
2019	Salon Sophie Charlotte of the Academy 2019, Host, Natural Sciences
2019	Chair of the SIAG/Imaging Science Nominating Committee
2019–	Member of the SIAM Committee on Committees and Appointments
2019–	Founding member and Chair of the MATH+ Activity Group "Mathematics of Data Science"
2019–	Founding member and Chair of the GAMM Activity Group "Computational and Mathematical Methods in Data Science"
2020–	Speaker of the working group "Digitalization in Medicine" of the Berlin-Brandenburg Academy of Sciences (BBAW)
2020	Interview, Present Futures Forum Webcast, TU Berlin
2020	Expert Service, International Day of Mathematics
2020–	Member of the Board of Foundations of Computational Mathematics
2021	Main Organizer of the 6-Month Programme "Mathematics of Deep Learning" at the Isaac Newton Institute for Mathematical Sciences
2021–2027	Main Coordinator of the DFG-Priority Programm "Mathematical Foundations of Deep Learning", SPP 2298
2021–	Board Member of the Carathéodory-Gesellschaft zur Förderung der Mathematik in Wirtschaft, Universität und Schule an der Ludwig-Maximilians-Universität München e.V.
2021	Invitation to serve as Vice-Chair of the SIAM Activity Group on Data Science (pending institution of this activity group by SIAM)
2021–	Member in the Tenure-Committee of the Universität Hamburg
2021–	Member of the Arnold Sommerfeld Center for Theoretical Physics (ASC)
2021–2023	Spokesperson of the Research Focus "Next Generation AI" at the Center for Advanced Studies (CAS) at LMU Munich
2022–	Member of the Scientific Advisory Board for the EPSRC Programme Grant "Mathematics of Deep Learning"
2022	Panelist at the Round Table on "Mathematical challenges in an AI driven world", International Conference in honor of the 100th anniversary of the Italian Mathematical Union (UMI) and the 800th anniversary of the University of Padova
2022–	Member in the "Gesellschaft für mathematische Forschung e.V."
2022–	Member of the Scientific Committee of the Mathematical Research Center Oberwolfach
2022–2023	Election to Vice President-at-Large of SIAM
2022–	Member of the Advisory Board for the Maths4DL (Mathematics for Deep Learning) Programme Grant
2022–	Associated Member of the Arnold-Sommerfeld-Center at LMU Munich
2022	Einladung als Expertin zur Veranstaltung "AI for life – KI: Mitten im Leben!" mit Ministerpräsident Dr. Markus Söder
2022	Chair of the Selection Committee of Helmholtz Imaging
2022–	Member of the platform "Learning Systems" of the Federal Ministry of Education and Research (BMBF)
2022–	Member of the Munich School for Data Science (MUDS)

Prize Committees

2014 & 2016	Member of the Weyl Prize Selection Committee
2017 –	Member of the International Jury for the START-Program and the Wittgenstein-Prize
2017 – 2018	Member of the Selection Committee for the Caroline von Humboldt-Professur and the Caroline von Humboldt-Prize
2019	Chair of the SIAG/Imaging Science Prize Committee
2020 – 2023	Member of the AMS Grenander Prize Selection Committee
2021 –	Member of the Scientific Committee for the Hang Lung Math Award
2021	Chair of the SIAG/DATA Career Prize and the SIAG/DATA Early Career Prize

Refereeing and Reviewing Work

- Member of the Advisory Boards for the following book series:
  - Applied and Numerical Harmonic Analysis (Birkhäuser-Springer)
  - Lecture Notes in Applied and Numerical Harmonic Analysis, Springer Briefs (Springer)
  - Mathematics of Data, Springer
  - Studium Mathematik (Springer)
- Editor for the journals:
  - Acta Applicandae Mathematicae (Corresponding Editor), since 2007
  - Advances in Computational Mathematics (Associate Editor), since 2016
  - Applied and Computational Harmonic Analysis (Associate Editor), since 2021
  - Constructive Approximation, since 2019
  - IEEE Signal Processing Letters (Senior Associate Editor for Compressed Sensing), 2012–2019
  - IEEE Transactions on Information Theory (Associate Editor for Signal Processing), 2017–2020
  - IMA Journal of Numerical Analysis, since 2018
  - International Journal of Wavelets, Multiresolution and Information Processing (Associate Editor), 2012–2020
  - Journal de l'Ecole Polytechnique (Associate Editor), 2013–2018
  - Journal of Approximation Theory (Associate Editor), since 2014
  - Journal of Fourier Analysis and Applications (Associate Editor), since 2009
  - Journal of Machine Learning (Associate Editor), since 2022
  - Journal of Mathematical Imaging and Vision (Associate Editor), since 2014
  - Journal of Wavelet Theory and Applications (Associate Editor), 2006–2019
  - SIAM Journal on Imaging Sciences (Associate Editor), since 2018
  - SIAM Journal on Mathematics of Data Science (Associate Editor), 2018–2021, (Section Editor), since 2022
  - SIAM News (SIAM Activity Group Liaison), 2018–2019, 2021–2022
  - The Journal of Machine Learning for Biomedical Imaging, since 2020
- Editor for the following special issues:
  - "Operator Algebra and Representation Theory: Frames, Wavelets and Fractals" in Numerical Functional Analysis and Optimization, 2010 (gemeinam mit P. Jorgensen, G. Olafson, and Q. Sun).

  - "Sparse Approximate Solution of Linear Systems" in Linear Algebra and its Applications, 2013 (joint with A. Pinkus, H. Rauhut, and V. Temlyakov).
  - "Mathematical Signal and Image Processing" in GAMM Mitteilungen, 2014 (joint with G. Plonka-Hoch, and G. Steidl).
  - "Mathematical Image Analysis" in the Journal of Mathematical Imaging and Vision, 2014 and 2016 (joint with J. Fadilli, G. Peyre, G. Plonka-Hoch, and G. Steidl).
  - "Mathematical Foundations of Deep Learning in Imaging Science" in the Journal of Mathematical Imaging and Vision, 2019 (joint with J. Bruna, E. Haber, T. Pock, and R. Vidal).
  - "ILAS Rio 2019 Conference" in Linear Algebra and its Applications, 2020 (joint with N. Abreu, C. Helmberg, and V. Trevisan).

- Member of the scientific advisory board for the following books:
  - LNAI xxAI – Beyond explainable Artificial Intelligence, Springer, 2021.

- Referee for the journals:
  - Abstract and Applied Analysis
  - Acta Applicandae Mathematicae
  - Acta Mathematica Sinica
  - Acta Mathematica Vietnamica
  - Advances in Computational Mathematics
  - Advances in Operator Theory
  - Analysis and Mathematical Physics
  - Archiv der Mathematik
  - Applied and Computational Harmonic Analysis
  - Applied Numerical Mathematics
  - Banach Journal of Mathematical Analysis
  - Bulletin of Iranian Mathematical Society
  - Bulletin of the Belgian Mathematical Society
  - Constructive Approximation
  - Contemporary Mathematics
  - Czechoslovak Mathematical Journal
  - Discrete and Computational Geometry
  - Discrete Applied Mathematics
  - Duke Mathematical Journal
  - EURASIP Journal on Applied Signal Processing
  - EuroVis
  - Glasnik Matematicki
  - IEEE Journal of Biomedical and Health Informatics
  - IEEE Signal Processing Magazine
  - IEEE Transactions on Big Data
  - IEEE Transactions on Computational Imaging
  - IEEE Transactions on Image Processing
  - IEEE Transactions on Information Theory
  - IEEE Transactions on Signal Processing
  - Illinois Journal of Mathematics
  - Image Communication
  - Indian Journal of Mathematics
  - Information Fusion
  - International Journal of Wavelets, Multiresolution and Information Processing
  - Inverse Problems

  - Journal of Applied Functional Analysis
  - Journal of Applied Mathematics
  - Journal of Approximation Theory
  - Journal of Computational and Applied Mathematics
  - Journal of Computational Mathematics
  - Journal of Computational Physics
  - Journal of Contemporary Mathematical Analysis
  - Journal of Fourier Analysis and Applications
  - Journal of Functional Analysis
  - Journal of Geometric Analysis
  - Journal of Geophysics and Engineering
  - Journal of Inequalities and Applications
  - Journal of Machine Learning Research
  - Journal of Mathematical Analysis and Applications
  - Journal of Mathematical Imaging and Vision
  - Journal of Nonlinear Science
  - Journal of the Belgian Mathematical Society
  - Journal of the London Mathematical Society
  - Journal of Visual Communication and Image Representation
  - Linear Algebra and its Applications
  - Linear and Multilinear Algebra
  - Mathematical Inequalities & Applications
  - Mathematical Problems in Engineering
  - Mathematische Nachrichten
  - Methods and Applications of Analysis
  - Monatshefte für Mathematik
  - Pattern Recognition Letters
  - Proceedings of the AMS
  - Proceedings of the EMS
  - Results in Mathematics
  - Rocky Mountain Journal of Mathematics
  - Sampling Theory in Signal and Image Processing
  - SIAM Journal on Applied Mathematics
  - SIAM Journal on Imaging Sciences
  - SIAM Journal on Mathematical Analysis
  - SIAM Journal on Matrix Analysis
  - SIAM Journal on Numerical Analysis
  - SIAM Journal on Scientific Computing
  - Signal, Image, and Video Processing
  - Signal Processing
  - Transactions of the American Mathematical Society
  - Transactions on Pattern Analysis and Machine Intelligence
  - Zeitschrift für Analysis und ihre Anwendungen

- (Meta-)Reviewer for major conferences:

  - ICML 2020
  - NeurIPS 2020
  - ICML 2021
  - NeurIPS 2021
  - ICML 2022

  - MSML 2022
  - NeurIPS 2022
- Reviewer for international science foundations:
  - Deutsche Forschungsgemeinschaft (DFG).
  - Deutsche Mathematiker Vereinigung (DMV).
  - Dutch National Science Foundation (NWO).
  - European Commission (EC).
  - Fonds zur Förderung der wissenschaftlichen Forschung (FWF)
  - French National Research Agency (ANR).
  - German-Israeli Foundation for Scientific Research and Development (GIF).
  - Icelandic Centre for Research (Rannis).
  - Israel Science Foundation (ISF).
  - Ministerium für Wissenschaft, Forschung und Kunst Baden-Württemberg.
  - National Science Foundation in den USA (NSF).
  - Österreichische Akademie der Wissenschaften.
  - United States-Israel Binational Science Foundation (BSF).
  - The Royal Society.
  - Vienna Science and Technology Fund (WWTF).
- Reviewer for research centers:
  - Centre de Recerca Matematica (Barcelona, Spain)
  - Helmholtz AI (Munich, Germany)
  - Isaac Newton Institute for Mathematical Sciences (Cambridge, UK)
  - Matheon (Berlin, Germany)
- Reviewer for the *Mathematical Reviews*.
- 2008: Panelist for the *National Science Foundation (NSF)*.
- 2009: Juror for *Jugend forscht* auf Bundesebene.
- 2017: Panelist for the *European Research Council (ERC)*.
- External Reviewer for Ph.D. Theses (at Justus-Liebig-Universität Giessen, Norwegian University of Science and Technology, Skoltech, Tel Aviv University, Universität Bremen, Universität Potsdam, University of British Columbia, University of Buenos Aires, University of Cambridge, etc.), as well as for Habilitation Theses (at Universität Osnabrück, Universität Wien, Universität Innsbruck, etc.).
- External Member of several Hiring Committees (at Saarland University, Universitat Politecnica de Catalunya, University of Bayreuth, University of Leipzig, University of Luxembourg, University of Vienna, and University of Zurich, etc.)

Organization of Meetings

2006

- Summer Meeting of the Oberseminar Marburg – Gießen "Approximationstheorie und Numerik", Justus-Liebig-Universität Gießen, 6.6.2006.
- Workshop on Wavelet-Analyse at the Deutsche EEG/EP Mapping Meeting, Schloss Rauischholzhausen, 20.10.–22.10.2006 (joint with A. Klein and T. Sauer).

2008

- Special Session "Sparse Representations, Frames, and Signal Processing", CISS 2008 (Conference on Information Sciences and Systems), Princeton University, 19.3.–21.3.2008 (joint with A. Pezeshki).
- 6th International Conference on "Wavelet Analysis and Pattern Recognition" (ICWAPR 2008), Hong Kong, 29.8.–31.8.2008 (Member of the Program Committee).
- Dagstuhl-Seminar "Structured Decompositions and Efficient Algorithms", Schloß Dagstuhl, Leibniz Zentrum für Informatik, 30.11.–5.12.2008 (joint with S. Dahlke, I. Daubechies, M. Elad and G. Teschke).

2009

- Banff-Workshop "Frames from first principles: Error correction, symmetry goals, and numerical efficiency", Banff International Research Station, 15.3.–20.3.2009 (joint with B. Bodmann, P. G. Casazza, V. Paulsen, and O. Yilmaz).
- Special Session "Geometric Multiscale Analysis", SampTA 2009, Centre International de Rencontres Mathématiques in Marseille, 18.5.–22.5.2009.
- Special Session "From Frames to Fusion Frames", The International Symposium on Optical Science and Technology, SPIE's 54th Annual Meeting in San Diego, Wavelets XIII, 2.8.–6.8.2009 (joint with P. G. Casazza).

2010

- Special Session "Compressed Sensing, Sparse Approximation, and Frame Theory", CISS 2010 (Conference on Information Sciences and Systems), Princeton University, 17.3.–19.3.2010 (joint with A. Pezeshki).
- Mini-Symposium "Microlocal Analysis and Imaging", SIAM Conference on Imaging Science (IS10), Chicago, 12.4.–14.4.2010 (joint with M. Cheney).
- Birthday Conference in Honor of Pete Casazza's 65th Birthday, Norbert Wiener Center, University of Maryland, 20.5.–22.5.2010. (Program Chair; joint with B. Bodmann, C. Heil, and T. Strohmer).
- Mini-Symposium "Sparse Approximation", Curves and Surfaces 2010, Avignon, 24.6.–30.6.2010.
- Special Session "Geometric Multiscale Analysis", New Trends in Harmonic and Complex Analysis, Bremen, 29.6.–3.7.2010.
- Oberwolfach-Mini-Workshop "Shearlets", Oberwolfach, 4.10.–8.10.2010. (Organizer; joint with D. Labate).

2011

- Dagstuhl-Seminar "The impact of sparse representations and efficient sensing", Schloß Dagstuhl, Leibniz Zentrum für Informatik, 30.1.–4.2.2011 (joint with S. Dahlke, M. Elad, Y. Eldar, and G. Teschke).
- Banff-Workshop "Sparse and Low Rank Approximation", Banff International Research Station, 6.3.–11.3.2011 (joint with H. Rauhut, J, Tropp, and O. Yilmaz).
- Oberwolfach-Conference "Operator Algebras and Representation Theory: Frames, Wavelets and Fractals", Oberwolfach, 27.3.–2.4.2011. (Organizer; joint with P. Jorgenson, G. Ólafsson, and S. Silvestrov).

- Conference "SampTA11", Singapore, 2.5.–6.5.2011 (Program Chair; joint with L. Fesquet, B. Torréssani, and Y. Eldar).
- Special Session "Geometric Multiscale Analysis", Conference "SampTA11", Singapore, 2.5.–6.5.2011.
- Joint Seminar University of Osnabrueck – Jacobs University, Bremen, 24.5.2011 (Organizer; joint with G. Pfander).
- 32. Norddeutsches Kolloquium über Angewandte Analysis und Numerische Mathematik, Osnabrück, 27.5.–28.5.2011 (Organizer; joint with S. Kunis).
- Mini-Symposium "Compressed Sensing and Sparse Approximation Algorithms", Conference ILAS 2011, Braunschweig, 22.8.—26.8.2011 (joint with H. Rauhut).
- Special Session "Frames and Sparse Approximations", The International Symposium on Optical Science and Technology, SPIE's 55th Annual Meeting in San Diego, Wavelets and Sparsity XIV, 21.8.–25.8.2011 (joint with R. Balan and B. Bodmann).

2012

- Oberwolfach-Conference "Applied Harmonic Analysis and Sparse Approximation", Oberwolfach, 10.6.–16.6.2012. (Organizer; joint with I. Daubechies, H. Rauhut and T. Strohmer).
- Special Session "Sparse Optimization and Generalized Sparsity Models", ISMP 2012, Berlin, 20.8.–24.8.2012.
- Matheon-Workshop "Sparse Representation of Functions: Analytic and Computational Aspects", TU Berlin, 10.12.–14.12.2012 (joint with V. Mehrmann and M. Pfetsch).

2013

- Special Session "Mathematical Image Processing", GAMM 2013, Novi Sad, 18.–22.3.2013 (joint with O. Scherzer).
- Minisymposium "Anisotropic Approximations and Function Spaces", 14th International Conference on Approximation Theory, San Antonio, 7.-10.4.2013 (joint with J. Lemvig).
- AIM (American Institute of Mathematics)-Workshop "Frame theory intersects geometry", Palo Alto, 29.7.–2.8.2013 (joint with B. Bodmann and T. Römer).
- SAMPTA 2013, Jacobs University Bremen, Germany, 1.7.–5.7.2013 (Member of the Technical Program Committee).
- International Symposium on Information Theory (ISIT), Istanbul, 7.7.–12.7.2013 (Member of the Technical Program Committee).
- Conference SPARS 2013, EPFL, Lausanne, Switzerland, 8.7.–11.7.2013 (Member of the Technical Program Committee).
- Special Session "Frames and Sparse Approximations", The International Symposium on Optical Science and Technology, SPIE's 57th Annual Meeting in San Diego, Wavelets and Sparsity XIV, 25.8.–29.8.2013 (joint with R. Balan and B. Bodmann).
- Minisymposium "Compressed Sensing", Workshop of the GAMM activity group "Applied and Numerical Linear Algebra", Universität Wuppertal, Germany, 9.9.–10.9.2013.
- Matheon-Workshop "Compressed Sensing and its Applications", TU Berlin, 9.12.–13.12. 2013 (joint with H. Boche, R. Calderbank and J. Vybiral).

2014

- Joint GAMM ANLA-MSIP Workshop on "Matrix Computations for Sparse Recovery", TU Berlin, 9.4.–11.4.2014 (joint with P. Benner)
- SMAI-SIGMA conference "Curves and Surfaces", Paris, France, 12.6.–18.6.2014, (Member of the Scientific Committee).

- International Symposium on Information Theory (ISIT), Honolulu, Hawaii, 29.6.–4.7.2014 (Member of the Technical Program Committee).
- Banff-Workshop "Sparse Representations, Numerical Linear Algebra, and Optimization", Banff International Research Station, 5.10.–10.10.2014 (joint with M. Saunders, S. Wright, and O. Yilmaz).
- Mini-Symposium on "Recent Advances in Magnetic Resonance Imaging", SIAM Conference on Imaging Science (IS14), Hong Kong, 12.5.–14.5.2014 (joint with W.-Q Lim).
- 2nd IEEE Global Conference on Signal and Information Processing (GlobalSIP), Symposium on "Information Processing for Big Data", Atlanta, 3.12.–5.12.2014 (Member of the Technical Program Committee).
- Minisymposium "Applied Harmonic Analysis and Sparse Approximation", 5th International Conference on Scientific Computing and Partial Differential Equations (SCPDE14), Hong Kong Baptist University, Hong Kong, 8.12.–12.12.2014 (joint with X. Zhuang).

2015

- Oberwolfach-Workshop "New Discretization Methods for the Numerical Approximation of PDEs", Oberwolfach, 11.1.–17.1.2015 (Organizer; joint with S. Dahlke, R. Stevenson, and E. Süli).
- Special Session "Frame Theory", 11th International Conference on Sampling Theory and Applications (SampTA 2015), Washington DC, 25.5.–29.5.2015 (joint with G. Pfander).
- SampTA15, Washington, 25.5.–29.5.2015 (Member of the Steering Committee).
- SPARS "Signal Processing with Adaptive Sparse Structured Representations", Cambridge, 6.7.–9.7.2015 (Member of the Steering Committee).
- Special Session "Frames and Sparse Approximations", The International Symposium on Optical Science and Technology, SPIE's 59th Annual Meeting in San Diego, Wavelets and Sparsity XV, 9.8.–13.8.2015 (joint with R. Balan und B. Bodmann).
- Minisymposium "Compressed Sensing, Extensions and Applications", International Congress on Industrial and Applied Mathematics (ICIAM 2015), Beijing, China, 10.8.–14.8.2015 (joint with H. Rauhut).
- Oberwolfach-workshop "Applied Harmonic Analysis and Sparse Approximation", Oberwolfach, 16.8.–22.8.2015 (Organizer; joint with I. Daubechies, H. Rauhut, and T. Strohmer).
- Minisymposium "Applied and Computational Harmonic Analysis", DMV Annual Meeting, Hamburg, 21.9.–25.9.2015 (joint with J. Lemvig).
- 2. International Matheon Conference "Compressed Sensing and its Applications", TU Berlin, 7.12.–11.12.2015 (joint with H. Boche, G. Caire, R. Calderbank, and R. Mathar).

2016

- Conference on "Multivariate Approximation and Interpolation with Application (MAIA 2016)", Paris, 18.1.–20.1.2016 (Member of the Scientific Committee).
- International Geometry Summit (IGS 2016), Berlin, 20.6.–24.6.2016 (Member of the Organisation Committee).
- Minisymposium "Nonlinear Approximation", 9th Conference on Mathematical Methods for Curves and Surfaces, Tonsberg, Norway, 23.6.–28.6.2016.
- EMS Summer School on "Modelling, Analysis and Simulation Crime and Image Processing", Cambridge, 4.7.–8.7.2016 (joint with A. Münch, J. Tanner, and B. Wagner).
- BMS Summer School "Mathematics and Computation in Imaging Science" (joint with M. Hintermüller), Berlin, 24.7.–5.8.2016.
- IEEE Information Theory Workshop 2016 (ITW 2016), Cambridge, UK, 11.9.-14.9.2016 (Member of the Technical Program Committee).

- CoSIP Winter Retreat, TU Berlin, 7.12.–9.12.2017 (joint with H. Boche, R. Mathar, and M. März).

2017

- International Conference on Wavelet and Tensor Methods for Partial Differential Equations, Berlin, 3.5.–5.5.2017 (joint with H. Harbecht, P. Petersen, and A. Uschmajew).
- Gene Golub SIAM Summer School 2017 on "Data Sparse Approximations and Algorithms", Berlin, 29.5.–9.6.2017 (joint with J. Liesen and V. Mehrmann).
- IEEE International Symposium on Information Theory (ISIT), Aachen, Germany, 25.6.–30.6.2017 (Member of the Technical Program Committee).
- 8th International Conference on Reliable Methods and Mathematical Modeling (RAMM8), Berlin, 30.7.–2.8.2017 (joint with C. Carstensen).
- Special Session "Mathematical Data Analysis and Frame Theory", The International Symposium on Optical Science and Technology, SPIE's 61th Annual Meeting in San Diego, Wavelets and Sparsity XVII, 6.8.–10.8.2017 (joint with R. Balan and B. Bodmann).
- WIAS/TUB-Workshop on Deep Learning, High-Dimensional Approximations, and Uncertainty Quantification, Berlin, 12.9.–15.9.2017 (joint with M. Eigel, R. Schneider, and C. Spokoiny).
- CoSIP Intense Course on Deep Learning, 29.11.–1.12.2017 (joint with R. Mathar and M. März).
- 3. International Matheon Conference "Compressed Sensing and its Applications", TU Berlin, 4.12.–8.12.2017 (joint with H. Boche, G. Caire, R. Calderbank, and R. Mathar).

2018

- Workshop on "The Mathematics of Deep Learning", Hong Kong University of Science and Technology, 6.1.–10.1.2018 (joint with J. Cai, A. Cohen, B. Jing, Y. Wang, Y. Yao, and D. Zhou).
- International Conference on Mathematical Image Analysis (MIA'18), Berlin, 15.1.–17.1.2018 (Member of the Organizing Committee).
- Session "SPP 1798: Compressed Sensing in Information Processing (CoSIP)", GAMM Annual Meeting, TU München, 19.3.–23.3.2018 (joint with R. Mathar).
- Oberwolfach-Workshop "Applied Harmonic Analysis and Data Processing", Oberwolfach, 25.3.–31.3.2018. (Organizer; joint with I. Daubechies, H. Rauhut and T. Strohmer).
- Minisymposium "Analysis, Optimization, and Applications of Machine Learning in Imaging", SIAM Conference on Imaging Science (IS18), Bologna, Italy, 5.6.–8.6.2018 joint with M. Möller).
- SMAI-SIGMA Conference on "Curves and Surfaces", Arcachon, France, 28.6.–4.7.2018 (Member of the Scientific Committee).
- Compressive Sensorics and Radar (CoSeRa2018), Siegen, 10.9.–13.9.2018 (Co-Chair).
- Minisymposium "Mathematics of Compressed Sensing", CoSeRa2018, Siegen, 10.9.–13.9.2018 (joint with Bouchot).
- Oberwolfach Seminar on "Mathematics of Deep Learning", 14.10.–20.10.2018 (joint with P. Grohs).

2019

- Session "SPP 1798: Compressed Sensing in Information Processing (CoSIP)", GAMM Annual Meeting, TU Wien, 18.2.–22.2.2019 (joint with R. Mathar).
- Workshop "Mathematics of data: Structured representations for sensing, approximation and learning", Alan Turing Institute, London, 27.5.–31.5.2019 (Member of the Scientific Committee).

- IEEE International Symposium on Information Theory (ISIT 2019), Paris, 7.7.–12.7.2019 (Member of the Technical Programm Committee).
- Minisymposium "Frame Theory and Data Science", ILAS 2019: Linear Algebra without Borders, Rio de Janeiro, Brazil, 8.7.–12.7.2019 (joint with D. Needell).
- Minisymposium "Theoretical Foundations of Deep Learning", 9th International Congress on Industrial and Applied Mathematics (ICIAM 2019), Valencia, Spain, 15.7.–19.7.2019 (joint with P. Petersen).
- Panel "The Future of Mathematics in the Age of Machine Learning", 9th International Congress on Industrial and Applied Mathematics (ICIAM 2019), Valencia, Spain, 15.7.–19.7.2019.
- 10th Applied Inverse Conference (AIP'19), Grenoble, France, 8.7.–12.7.2019 (Member of the Scientific Committee).
- International Conference on Continuous Optimization (ICCOPT) 2019, Berlin, 5.8.–8.8.2019 (Cluster Chair for "Big Data and Machine Learning").
- BMS Summer School 2019 on "Mathematics of Deep Learning", ZIB, Berlin, 19.–31.8.2019 (Organizer, joint with K.-R. Müller, F. Noe, C. Schütte, and V. Spokoiny).
- Oberwolfach-Workshop "Innovative Approaches to the Numerical Approximation of PDEs", Oberwolfach, 1.9.–7.9.2019. (Organizer; joint with S. Dahlke, R.H. Nocetto, and R. Stevenson).
- Inaugural GAMM Workshop on Computational and Mathematical Methods in Data Science, ZIB, Berlin, 24.9.–25.9.2019 (Organizer, gemeinsam mit T. Conrad, C. Schütte, M. Stoll).
- First Banach Center–Oberwolfach Graduate Seminar, Bandelow, Poland, 17.11.–23.11.2019 (Organizer, joint with P. Grohs).

2020

- IPAM Workshop on "Deep Learning and Medical Applications", IPAM, Los Angeles, 27.1.–31.1.2020 (joint with B. Glocker, M. Niethammer, S. J. Osher, D. Rueckert, J. K. Seo, M. Unser, and J. C. Ye).

Cancelled or Postphoned to 2021/2022 due to COVID-19

- Session "SPP 1798: Compressed Sensing in Information Processing (CoSIP)", GAMM Annual Meeting, Kassel, 16.3.–20.3.2020 (gemeinsam mit H. Rauhut).
- First International SIAM Conference on "Mathematics of Data Science", Cincinnati, 5.5.–9.5.2020 (Chair, joint with A. Pinar und J. Tropp).
- MATH+ Workshop on "Machine Learning in Imaging Sciences: Bridging the gap between Theory and Practice", WIAS Berlin, 11.–13.5.2020 (joint with M. Hintermüller, K. Papafitsoros, G. Dong, K. Tabelow, T. Schäffter, and H.-C. Hege).
- 3-Day Workshop on "Computational Harmonic Analysis and Compressive Sensing", Conference on the Foundations of Computational Mathematics (FoCM'20), Vancouver, Canada, 15.6.–24.6.2020 (Organizer; joint with K. Gröchenig and H. Rauhut).
- Banff-Workshop "Continuum Models and Optimisation for Deep Neural Networks", Banff International Research Station, 10.1.–15.1.2021 (joint with C. Geldhauser and C. Schönlieb).
- CIRM Thematic Month on "Harmonic analysis, multiscale representations and applications to complex transforms", Luminy, France, 25.1.–26.2.2021 (Member of the Scientific Committee).

2021

- Isaac Newton Institute Programme "Mathematics of Deep Learning", Cambridge, UK, 1.7.–17.12.2021 (Main Organizer, joint with P. Barlett, A. Jentzen, A. Hansen, and C. Schönlieb).
- Workshop "Theoy of Deep Learning", Isaac Newton Institute, Cambridge, 9.8.–13.8.2021 (Organizer, joint with F. Bach, P. Bartlett, and L. Ruthotto).
- MSML21 (Mathematical and Scientific Machine Learning Conference) Lausanne, Switzerland, 16.8.–19.8.2021 (Member of the Program Committee).
- Workshop "Deep Learning and Inverse Problems", Isaac Newton Institute, Cambridge, 27.9.–1.10.2021 (Organizer, joint with S. Arridge, P. Maass, O. Öktem, and C.-B. Schönlieb).
- Workshop "Deep Learning and Partial Differential Equations", Isaac Newton Institute, Cambridge, 15.–19.11.2021 (Organizer, joint with W. E, P. Grohs, and A. Jentzen).
- Workshop "Women in Deep Learning", Isaac Newton Institute, Cambridge, 22.11.–23.11.2021 (Organizer, joint with R. Alaifari, M. Jamnik, and C.-B. Schönlieb).
- Oberwolfach-Workshop "Applied Harmonic Analysis and Data Science", Oberwolfach, 28.11.–4.12.2021 (Organizer; joint with I. Daubechies, H. Rauhut und T. Strohmer).
- Workshop "Interpretability, Security, and Safety of Deep Learning", Isaac Newton Institute, Cambridge, 13.12.–17.12.2021 (Organizer, joint with A. Fawzi, A. Hansen, M. Rodriguez, and W. Samek).

2022 (up to now)

- Workshop on the Theory of Overparameterized Machine Learning (TOPML 2022), virtual event, 5.–6.4.2022 (Member of the Organizing Committee).
- 10th SMAI-SIGMA conference on "Curves and Surfaces", Arcachon, France, 28.6.–4.7.2022 (Member of the Scientific Committee).
- 35th Annual Conference on Learning Theory (COLT 2022), London, UK, 2.7.–5.7.2022 (Member of the Programm Committee).
- Section on the SPP "Theoretical Foundations of Deep Learning", 92nd Annual Meeting of GAMM, Aachen, 15.–19.8.2022 (Organizer).
- 8th International Conference on Computational Harmonic Analysis, Munich, 12.9.–16.9.2022 (Conference Chair).
- Session "AI for a Sustainable Society", AI Symposium, Tokyo, 27.–28.10.2022 (Moderation).

2023 (up to now)

- 2023 International Biomedical and Astronomical Signal Process (BASP) Frontiers workshop, Villars-sur-Ollon, Switzerland, 5.–10.2.2023, Session on "Large-scale optimization" (Organizer).
- IPAM Programme "Computational Microscopy", Los Angeles, 13.3.–16.6.2023 (Organizer, joint with Binev, Kirkland, Miao, Murnane, Needell, Saghi, Singer, Osher, Voyles, and Waller).
- RoboAICon2023, Rome, Italy, 23.–25.3.2023 (Member of the Organizing Committee).
- 3-Day Workshop on "Computational Harmonic Analysis and Compressive Sensing", Conference on the Foundations of Computational Mathematics (FoCM'20), Whistler, Canada, 12.6.–21.6.2023 (Organizer; joint with K. Gröchenig and H. Rauhut).
- CEMRACS 2023, Marseille, France, 17.7.–25.8.2023 (Member of the Scientific Committee)

2024 (up to now)

- SIAM Conference on Mathematics of Data Science (SIMODS) 2024 (GAMM Representative)

Committees and Service

Universität Paderborn:

1996 – 2004	Member of numerous committees of the Institute of Mathematics, e.g., • some Hiring Committees, • a committee to plan the annual "Tag der Fakultät", • a committee to revise the examination regulation for Ph.D. and "Habilitation"
2001 – 2002	Board member of the alumni association "Die Matiker"
2000 – 2002	Representative of the scientific assistants in mathematics in the Faculty Committee

Justus–Liebig–Universität Gießen:

2004 – 2006	Women's representative
2006	Member of two Hiring Committees

Universität Osnabrück:

2008	Chairperson of a Hiring Committee
2009	Member of three Hiring Committees
2009	Presentation at the "Parent's Day"
Since 2009	Colloquium Organizer
Since 2009	Member of the Executive Board of the Institute
Since 2009	Member of the "TaskForce Mathematics"
Since 2009	Chairperson of the Organization Committee of the annual "Day of Mathematics"
Since 2009	Chairperson of the Committee for Communication and Marketing
2010	Presentation at the "Mathe Treff" for high school students
Since 2010	Alternate Member of the Faculty Committee
2010	Fundraising for the Colloquiums
2010	Fundraising for the "Day of Mathematics"
2010	Talk at the "Technology Day of Osnabrück"

Technische Universität Berlin and Berlin's Scientific Community:

2011	Chairperson of a Hiring Committee
2012	Member of the delegation of the BMS for the DFG evaluation
2012	Member of two Hiring Committees
2012	Founding Member of the Einstein Center Berlin
2012	Talk at the "Day of Mathematics"
2012	Tag at the "Schüler-Info-Tagen"
2012	Presentation of the celebration of MATHEON Anniversary
2013	Member of two Hiring Committees
2013	Member of two Selection Committees for a Young Researchers Position in EC-Math
2013	Member of one Selection Committees for a Young Researchers Position in MATHEON
2013	Chairperson of the committee to plan the graduation celebration "Dies Mathematicus"
2013–2015	Member of the Executive Board of the Department of Mathematics
2015	Member of one Hiring Committee

Since 2012	Member of the Executive Board of the Berlin Mathematical School (BMS)
Since 2012	Member of the Admissions Committee of the Berlin Mathematical School (BMS)
Since 2012	Member of the Council of the MATHEON
2013–2018	Chairperson of the IPODI Selection Committee
2013–2018	Member of the Committee for awarding the "NaFöG–Elsa-Neumann-Scholarships of the state of Berlin"
Since 2014	Scientific Director of the "Berlin International Graduate School in Model- and Simulation based Research (BIMoS)"
Since 2015	Member of the Executive Board of the Einstein Center for Mathematics Berlin (ECMath)
Since 2015	Member of the Advisory Board Internationalisation of the TU Berlin
2016	Member of four internal and three external Hiring Committees
2017–2018	Member of Committee for the Organization of a Colloquium for Female Mathematicians
2017–2019	Executive Director of the "Berlin International Graduate School in Model- and Simulation based Research (BIMoS)"
Since 2017	Official Representative for the courses for non-mathematics majors (Group D)
Since 2017	Substitute Member in the women's council
2018	Member of four Hiring Committees
2018	Substitute Member of one Hiring Committee
2018	Chairperson of a Hiring Committee
2018	Vice Chairperson of a Hiring Committee
2018	Member of the MATH+ Founding Board
Since 2018	Member of the MATH+ Research Projects Committees
Since 2018	Member of the MATH+ Data Management Committee
Since 2018	Special Coordinator for Mathematical Data Science in MATH+
Since 2018	PI in Charge of Emerging Field "Learning Dynamical Laws" in MATH+
Since 2018	Member of the MATH+ Council
Since 2018	Member of the MATH+ Executive Board
Since 2020	Chair of the MATH+ Visiting Scholars Committee

Ludwig-Maximilians-Universität München:

Since 2020	LMU Expertenservice
Since 2020	Member of IT Committee
2021	Member of 5 Hiring Committees
Since 2021	Chair of the Committee "AI Courses in Mathematics"
Since 2021	Member of the Organization Committee "Munich Summer Colloquium in Mathematics"
2022	Member of 3 Hiring Committees
Since 2022	Member of the Strategy Board of the Munich Center for Machine Learning (MCML)

Membership in Professional Societies

- American Mathematical Society (AMS)
- Carathéodory-Gesellschaft zur Förderung der Mathematik in Wirtschaft, Universität und Schule an der Ludwig-Maximilians-Universität München e.V.

- Deutscher Hochschulverband (DHV)
- Deutsche Mathematiker–Vereinigung (DMV)
- European Mathematical Society (EMS)
- Foundations of Computational Mathematics (FoCM)
- GAMM Activity Group on Computational and Mathematical Methods in Data Science: *Founding Member*
- GAMM Activity Group on Mathematical Signal- and Image Processing: *Founding Member*
- German Data Science Society (GDS) e.V.
- Gesellschaft für Inverse Probleme
- Gesellschaft für mathematische Forschung e.V.
- IEEE Information Theory Society (IEEE ITS)
- IEEE Signal Processing Society (IEEE SPS)
- Institute of Electrical and Electronics Engineers (IEEE)
- International Association of Applied Mathematics and Mechanics (GAMM)
- Münchener Universitätsgesellschaft
- Society for Industrial and Applied Mathematics (SIAM)
- SIAM Activity Group on Data Science
- SIAM Activity Group on Imaging Science
- Verein zur Förderung des Mathematischen Forschungsinstitutes Oberwolfach a.V.

List of Publications

Journal Publications

1. E. Kaniuth and G. Kutyniok. Zeros of the Zak transform on locally compact abelian groups. *Proc. Amer. Math. Soc.* **126** (1998), 3561–3569.
2. G. Kutyniok. Linear independence of time-frequency shifts under a generalized Schrödinger representation. *Arch. Math.* **78** (2002), 135–144.
3. G. Kutyniok. The Zak transform on certain locally compact groups. *J. of Math. Sciences* **1** (2002), 62–85.
4. K. Gröchenig, D. Han, C. Heil, and G. Kutyniok. The Balian-Low theorem for symplectic lattices in higher dimensions. *Appl. Comput. Harmon. Anal.* **13** (2002), 169–176.
5. G. Kutyniok. Ambiguity functions, Wigner distributions and Cohen's class for LCA groups. *J. Math. Anal. Appl.* **277** (2003), 589–608.
6. C. Heil and G. Kutyniok. Density of weighted wavelet frames. *J. Geom. Anal.* **13** (2003), 479–493.
7. G. Kutyniok. A qualitative uncertainty principle for functions generating a Gabor frame on LCA groups. *J. Math. Anal. Appl.* **279** (2003), 580–596.
8. G. Kutyniok. A weak qualitative uncertainty principle for compact groups. *Illinois J. Math.* **47** (2003), 709–724.
9. P.G. Casazza, G. Kutyniok, and M.C. Lammers. Duality principles in Frame Theory. *J. Fourier Anal. Appl.* **10** (2004), 383–408.
10. G. Kutyniok and T. Strohmer. Wilson bases for general time-frequency lattices. *SIAM J. Math. Anal.* **37** (2005), 685–711.
11. W. Czaja, G. Kutyniok, and D. Speegle. The geometry of the parameters of wave packet frames. *Appl. Comput. Harmon. Anal.* **20** (2006), 108–125.
12. G. Kutyniok. The local integrability condition for wavelet frames. *J. Geom. Anal.* **16** (2006), 155–166.
13. G. Kutyniok. Beurling density and shift-invariant weighted irregular Gabor systems. *Sampl. Theory Signal Image Process.* **5** (2006), 131–149.
14. P.G. Casazza, G. Kutyniok, and D. Speegle. A redundant version of the Rado-Horn Theorem. *Linear Algebra Appl.* **418** (2006), 1–10.
15. G. Kutyniok and D. Labate. The theory of reproducing systems on locally compact abelian groups. *Colloq. Math.* **106** (2006), 197–220.
16. G. Kutyniok and D. Labate. Construction of Regular and Irregular Shearlet Frames. *J. Wavelet Theory and Appl.* **1** (2007), 1–10.
17. R. Balan, P.G. Casazza, D. Edidin, and G. Kutyniok. A fundamental identity for Parseval frames. *Proc. Amer. Math. Soc.* **135** (2007), 1007–1015.
18. G. Kutyniok. Affine density, frame bounds, and the admissibility condition for wavelet frames. *Constr. Approx.* **25** (2007), 239–253.
19. P.G. Casazza and G. Kutyniok. A generalization of Gram-Schmidt orthogonalization generating all Parseval frames. *Adv. Comput. Math.* **27** (2007), 65–78.
20. C. Heil and G. Kutyniok. The Homogeneous Approximation Property for Wavelet Frames. *J. Approx. Theory* **147** (2007), 28–46.

21. P. G. Casazza, G. Kutyniok, D. Speegle, and J. C. Tremain. A Decomposition Theorem for frames and the Feichtinger Conjecture. *Proc. Amer. Math. Soc.* **136** (2008), 2043–2053.
22. W. Czaja, G. Kutyniok, and D. Speegle. Beurling dimension of Gabor pseudo frames of affine subspaces. *J. Fourier Anal. Appl.* **14** (2008), 514–537.
23. P. G. Casazza, G. Kutyniok, and S. Li. Fusion frames and distributed processing. *Appl. Comput. Harmon. Anal.* **25** (2008), 114–132.
24. S. Dahlke, G. Kutyniok, P. Maass, C. Sagiv, H.-G. Stark, and G. Teschke. The uncertainty principle associated with the continuous shearlet transform. *Int. J. Wavelets Multiresolut. Inf. Process.* **6** (2008), 157–181.
25. C. Heil and G. Kutyniok. Density of frames and Schauder bases of windowed exponentials. *Houston J. Math.* **34** (2008), 565–600.
26. K. Grčhenig, G. Kutyniok, and K. Seip. Landau's necessary density conditions for LCA groups. *J. Funct. Anal.* **255** (2008), 1831–1850.
27. G. Kutyniok, A. Pezeshki, A. R. Calderbank, and T. Liu. Robust Dimension Reduction, Fusion Frames, and Grassmannian Packings. *Appl. Comput. Harmon. Anal.* **26** (2009), 64–76.
28. G. Kutyniok and D. Labate. Resolution of the wavefront set using continuous shearlets. *Trans. Amer. Math. Soc.* **361** (2009), 2719–2754.
29. G. Kutyniok and T. Sauer. Adaptive Directional Subdivision Schemes and Shearlet Multiresolution Analysis. *SIAM J. Math. Anal.* **41** (2009), 1436–1471.
30. S. Dahlke, G. Kutyniok, G. Steidl, and G. Teschke. Shearlet Coorbit Spaces and associated Banach Frames. *Appl. Comput. Harmon. Anal.* **27** (2009), 195–214.
31. B. G. Bodmann, P. G. Casazza, and G. Kutyniok. A Quantitative Notion of Redundancy for Finite Frames. *Appl. Comput. Harmon. Anal.* **30** (2011), 348–362.
32. R. Calderbank, P. G. Casazza, A. Heinecke, G. Kutyniok, and A. Pezeshki. Sparse Fusion Frames: Existence and Construction. *Adv. Comput. Math.* **35** (2011), 1–31.
33. B. Boufounos, G. Kutyniok, and H. Rauhut. Sparse Recovery from Combined Fusion Frame Measurements. *IEEE Trans. Inform. Theory* **57** (2011), 3864–3876.
34. P. Kittipoom, G. Kutyniok, and W.-Q Lim. Irregular Shearlet Frames: Geometry and Approximation Properties. *J. Fourier Anal. Appl.* **17** (2011), 604–639.
35. G. Kutyniok and W.-Q Lim. Compactly Supported Shearlets are Optimally Sparse. *J. Approx. Theory* **163** (2011), 1564–1589.
36. B. Han, G. Kutyniok, and Z. Shen. Adaptive Multiresolution Analysis Structures and Shearlet Systems. *SIAM J. Numer. Anal.* **49** (2011), 1921–1946.
37. P. G. Casazza, A. Heinecke, F. Krahmer, and G. Kutyniok. Optimally Sparse Frames. *IEEE Trans. Inform. Theory* **57** (2011), 7279–7287.
38. P. Kittipoom, G. Kutyniok, and W.-Q Lim. Construction of Compactly Supported Shearlets. *Constr. Approx.* **35** (2012), 21–72.
39. G. Kutyniok, J. Lemvig, and W.-Q Lim. Optimally Sparse Approximations of 3D Functions by Compactly Supported Shearlet Frames. *SIAM J. Math. Anal.* **44** (2012), 2962–3017.
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