

CURRENT STATUS

Since 2026: Professor for Algebra / Algebraic Geometry at Georg-August-Universität Göttingen

PREVIOUS POSITIONS

2020 - 2026: Professor for Applied Algebra at Universität Leipzig

2017 - 2020: Juniorprofessor for Discrete Geometry at Freie Universität Berlin, acting head of the working group from July 2018 until September 2020

2017: Member of the Nonlinear Algebra Group at the Max-Planck-Institute for Mathematics in the Sciences, Leipzig, Germany

2014 - 2017: Visiting Assistant Professor at the Georgia Institute of Technology, Atlanta

DEGREES

- PhD: Doktor der Naturwissenschaften (summa cum laude) May 2014; Advisor: Claus Scheiderer
- Diploma Degree in Mathematics (grade 1.0) 2010

EDUCATION

- Universität Konstanz, PhD student 2010 - 2014
- Université Paris Diderot Paris VII, Exchange student 2008/09
- Universität Konstanz, Student 2004-2009

RESEARCH INTERESTS

Algebraic, convex, discrete, real geometry

- Positive polynomials and sums of squares
- Convex, semi-algebraic sets
- Positive Geometry

GRANTS AND AWARDS

- DFG Project “Positive Geometry” within the SPP “Combinatorial Synergies” (2024-2027)
- SAXAG: start up grant by the SMWK, the Saxonian Ministry of Science, Culture, and Tourism (2022)
- MaRDI (joint project as part of NFDI), part of TA6: Data Culture and Community Integration (2021-2026)
- DFG Project “Geometry of hyperbolic polynomials“ (with Daniel Plaumann, 2019-2022)

- Simons-Berkeley Research Fellowship (to attend *Geometry of Polynomials*, Spring 2019)
- [Pegasus]² Marie Skłodowska-Curie Fellowship of the FWO (three year postdoc grant, moved to FU Berlin instead, 2017)
- Oct 2011 - Mar 2014: PhD fellowship with the German National Academic Foundation
- Sep 2008 - Mar 2010: Student fellowship with the German National Academic Foundation

EXTENDED STAYS

- March 2026: Erwin Schrödinger International Institute for Mathematics and Physics - Program *Amplitudes and Algebraic Geometry*
- January - May 2019: Simons Institute - Semester Program *Geometry of Polynomials*
- September - October 2018: ICERM - Semester Program *Nonlinear Algebra*
- August - September 2017: MSRI - Semester Program *Geometric and Topological Combinatorics* (Research Membership)
- May - July 2014: National Institute of Mathematical Sciences, Daejeon, South Korea - *Thematic Program on Applied Algebraic Geometry*

PUBLICATIONS

1. *Stubborn Polynomials*, with Lorenzo Baldi, Grigoriy Blekherman, Khazhgali Kozhasov, Daniel Plaumann, and Bruce Reznick, Preprint 2026.
<https://arxiv.org/abs/2602.01191>
2. *Positive Genus Pairs from Amplituhedra*, with Joris Koefler and Dmitrii Pavlov, Preprint 2026.
<https://arxiv.org/abs/2601.11142>
3. *Toric extensions of Pólya's theorem*, with Lorenzo Baldi, Máté L. Telek and Julian Weigert, Preprint 2025.
<https://arxiv.org/abs/2511.07342>
4. *Taking the amplituhedron to the limit*, with Joris Koefler, Preprint 2025.
<https://arxiv.org/abs/2501.08221>
5. *Spurious local minima in nonconvex sum-of-squares optimization*, with Grigoriy Blekherman, Mauricio Velasco, and Shixuan Zhang, Preprint 2024.
<https://arxiv.org/abs/2411.02208>
6. *Pythagoras Numbers for Ternary Forms*, with Grigoriy Blekherman and Alex Dunbar, Preprint 2024.
<https://arxiv.org/abs/2410.17123>
7. *Nonnegativity certificates on real algebraic surfaces*, with Grigoriy Blekherman, Gregory G. Smith, and Mauricio Velasco, Preprint 2024.
<https://arxiv.org/abs/2409.08834>

8. *Plane quartics and heptagons*, with Daniele Agostini, Daniel Plaumann, and Jannik Lennart Wesner, Preprint 2024.
<https://arxiv.org/abs/2408.15759>
9. *Nonnegative Polynomials and Moment Problems on Algebraic Curves*, with Lorenzo Baldi and Grigoriy Blekherman, Preprint 2024.
<https://arxiv.org/abs/2407.06017>
10. *Weak and Strong Extremal Biquadratics*, with Grigoriy Blekherman, Bogdan Raita, and Isabelle Shankar, Preprint 2022.
<https://arxiv.org/abs/2204.10625>
11. *Do alcoved lattice polytopes have unimodal h^* -vector*, with Hannah Sjöberg, Preprint, 2021.
<https://arxiv.org/abs/2104.15080>
12. *Moments, Sums of Squares, and Tropicalization*, with Grigoriy Blekherman, Felipe Rincon, Cynthia Vinzant, and Josephine Yu.
Journal of the London Mathematical Society, **112(4)**, 44 pages, 2025
13. *Adjoint and Canonical Forms of Polypols*, with Kathlén Kohn, Ragni Piene, Kristian Ranestad, Felix Rydell, Boris Shapiro, Miruna-Stefana Sorea, and Simon Telen.
Documenta Mathematica, **30(2)**, 275-346, 2025
14. *Adjoint and Canonical Forms of Tree Amplituhedra*, with Kristian Ranestad and Simon Telen.
Mathematica Scandinavica, **130(3)**, 433-466, 2024
15. *Convex hulls of surfaces in fourspace*, with Chiara Meroni and Kristian Ranestad.
Collectanea Mathematica, 2024
16. *Tropical Positivity and Determinantal Varieties*, with Marie-Charlotte Brandenburg and Georg Loho.
Algebraic Combinatorics, **6(4)**, 999-1040, 2023
17. *Landau on Chess Tournaments and Google's PageRank*, with Günter M. Ziegler.
to appear in *Edmund Landau: Collected Works*, Volume 10, edited by A. Hüntelmann, A. Kreuzer, H. Wefelscheid and U. Wefelscheid
18. *Families of Faces and the Normal Cycle of a Convex Semi-algebraic Set*, with Daniel Plaumann and Jannik Lennart Wesner.
Beiträge zur Algebra und Geometrie, **64**, 851-875, 2023
19. *The Chiral Domain of a Camera Arrangement*, with Sameer Agarwal, Andrew Pryhuber, and Rekha Thomas.
Journal of Mathematical Imaging and Vision, **64**, 948-967, 2022
20. *Hyperbolic Secant Varieties of M-Curves*, with Mario Kummer.
Journal für die Reine und Angewandte Mathematik, **787**, 125-162, 2022

21. *On the Existence of Two View Chiral Reconstructions*, with Andrew Pryhuber and Rekha Thomas.
SIAM Journal on Applied Algebra and Geometry, **6(1)**, 41-76, 2022
22. *Sums of Squares and Quadratic Persistence on Real Projective Varieties*, with Grigoriy Blekherman, Gregory G. Smith, and Mauricio Velasco.
Journal of the EMS, **24(3)**, 925-965, 2022
23. *Maximum Likelihood Estimation for Nets of Conics*, with Stefan Dye, Kathlén Kohn, and Felix Rydell.
Le Matematiche, **76(2)**, 399-414, 2021
24. *Sums of Squares: A real projective story*, with Grigoriy Blekherman, Gregory G. Smith and Mauricio Velasco.
Notices of the AMS, **68(5)**, 734-747, 2021
25. *On the Dimensions of the Realization Spaces of Polytopes*, with Laith Rastanawi and Günter Ziegler.
Mathematika, **67(2)**, 342-365, 2021
26. *Conic Programming: Infeasibility Certificates and Projective Geometry*, with Simone Naldi.
Journal of Pure and Applied Algebra, **225(7)**, 22 pages, 2021
27. *Kippenhahn's Theorem for Joint Numerical Ranges and Quantum States*, with Daniel Plaumann and Stephan Weis.
SIAM Journal on Applied Algebra and Geometry, **5(1)**, 86-113, 2021
28. *Combinatorial Inscrubability Obstructions for Higher-dimensional Polytopes*, with Joseph Doolittle, Jean-Philippe Labbé, Carsten Lange, Jonathan Spreer, and Günter Ziegler.
Mathematika, **66(4)**, 927-953, 2020
29. *Typical and Generic Ranks in Matrix Completion*, with Daniel Bernstein and Grigoriy Blekherman.
Linear Algebra and its Applications, **585**, 71-104, 2020
30. *Positive Semidefinite Univariate Matrix Polynomials*, with Christoph Hanselka.
Mathematische Zeitschrift, **292(1-2)**, 83-101, 2019
31. *Maximum Likelihood Threshold and Generic Completion Rank of Graphs*, with Grigoriy Blekherman.
Discrete and Computational Geometry, **61(2)**, 303-324, 2019
32. *Gram Spectrahedra*, with Lynn Chua, Daniel Plaumann, and Cynthia Vinzant.
In *Ordered Algebraic Structures and Related Topics*, vol. 697 of Contemporary Mathematics, 81-105. American Mathematical Society, Providence, RI, 2017
33. *Do Sums of Squares Dream of Free Resolutions?* with Grigoriy Blekherman and Mauricio Velasco.
SIAM Journal on Applied Algebra and Geometry **1(1)**, 175-199, 2017

34. *Low-Rank Sum-of-Squares Representations on Varieties of Minimal Degree*, with Grigoriy Blekherman, Daniel Plaumann, and Cynthia Vinzant. International Mathematical Research Notices, **2019(1)**, 33-54, 2019
35. *Extreme Rays of the Hankel Spectrahedra for Ternary Forms*, with Grigoriy Blekherman. Journal of Symbolic Computation **79 (1)**, 23-42, 2017
36. *Real Ranks with Respect to Varieties*, with Grigoriy Blekherman. Linear Algebra and its Applications, **505**, 344-360, 2016
37. *Computing hermitian determinantal representations of hyperbolic curves*, with Daniel Plaumann, David E Speyer, and Cynthia Vinzant. International Journal of Algebra and Computation, **25 (8)**, 1327-1336, 2015
38. *Generic Spectrahedral Shadows*, with Bernd Sturmfels. SIAM Journal on Optimization, **25 (2)**, 1209-1220, 2015
39. *Algebraic Boundaries of Convex Semi-algebraic Sets*. Research in the Mathematical Sciences, **2 (1)**, 2015
40. *Algebraic Boundaries of Convex Semi-algebraic Sets*, PhD thesis, 2014. <http://nbn-resolving.de/urn:nbn:de:bsz:352-281616>
41. *Algebraic Boundaries of $SO(2)$ -Orbitopes*. Discrete and Computational Geometry, **50 (1)**, 219-235, 2013

BOOK

1. Panorama der Mathematik, with Andreas Loos and Günter M. Ziegler, Springer, Berlin, 2022

GRADUATE STUDENTS

1. Joris Köfler (IMPRS, MPI MiS Leipzig)
2. Julian Weigert (U Leipzig)
2. Jannik Wesner (joint with Daniel Plaumann, TU Dortmund)

GRADUATED STUDENTS

1. Marie-Charlotte Brandenburg (U Leipzig)
2. Hannah Sjöberg (joint with Günter Ziegler, FU Berlin)
3. Laith Rastanawi (joint with Günter Rote, FU Berlin)
4. Chiara Meroni (joint with Bernd Sturmfels, MPI MiS)

SEMINAR TALKS (SELECTION)

- UNIVERSE+ Seminar
Is the amplituhedron a positive geometry? (2026)

- Seminar Combinatorial algebraic geometry, Tübingen
Taking the amplituhedron to the limit (2025)
- Kolloquium TU Chemnitz
Sums of Squares: Theory and Applications (2023)
- Seminar Groups and Geometry, Bielefeld
Sums of Squares and Projective Geometry (2022)
- Seminar Algebra, Jena
Sums of Squares and Projective Geometry (2022)
- Seminar Algebra-Geometry-Combinatorics, TU Dresden
Polypols and their adjoints (2021)
- Numerical Algebra and Optimization Seminar, MPI Leipzig
Chirality in Computer Vision (2021)
- Seminar on Nonlinear Algebra, MPI Leipzig
Adjoint and Canonical Forms of Polypols (2021)
- Discrete Mathematics/Geometry Seminar, TU Berlin
Realization Spaces of Polytopes (2020)
- Nonlinear Algebra Seminar Online, Max-Planck Institute Leipzig
Chirality from Multiple Views (2020)
- Algebra, Geometry, Combinatorics Seminar, San Francisco State University
Local Properties of Realization Spaces of Polytopes (2019)
- Introduction to Algebraic Statistics by Bernd Sturmfels, Freie Universität Berlin
The Cone of Sufficient Statistics (Invited Lecture, 2018)
- Seminar Algorithmic Algebra, Technische Universität Berlin
Quadratic Persistence of Real Projective Varieties (2018)
- Discrete Geometry Seminar, Freie Universität Berlin
Matrix Completion Problems from the Geometric Point of View (2017)
- Algebra Geometry Combinatorics Seminar, San Francisco State University
Positive Semidefinite Matrix Completion and Free Resolutions (2017)
- Geometric and Topological Combinatorics Seminar, MSRI, Berkeley
Positive Semidefinite Matrix Completion and Free Resolutions (2017)
- Nonlinear Algebra Seminar, Max-Planck Institute Leipzig
Positive Semidefinite Matrix Completion and Sums of Squares (2017)
- Colloquium Methods for Discrete Structures, Free University Berlin
Positive Semidefinite Matrix Completion (2017)
- Computational Algebra Seminar, North Carolina State University, Raleigh, NC
Pythagoras Number of Real Projective Varieties (2017)
- TU Eindhoven
Geometry of Sums of Squares (2017)

- Technical University Berlin
Geometry of Sums of Squares (2017)
- Trends in Optimization Seminar, University of Washington, Seattle
Positive semidefinite matrix completion and sums of squares (2016)
- Seminar Discrete Geometry, Free University Berlin
Geometry of Sums of Squares (2016)
- Combinatorics Seminar, University of Miami, Miami
Positive semidefinite matrix completion and free resolutions (2016)
- Algebraic Geometry Seminar, University of Illinois, Urbana-Champaign
Sums of Squares on Projective Varieties (2016)
- Algebra Seminar, Osnabrück, Germany
Positive Semidefinite Matrix Completion, Sums of Squares, and Free Resolutions (2016)
- Oberseminar Reelle Geometrie und Algebra, Konstanz, Germany
Low-Rank Sum-of-Squares Representations on Varieties of Minimal Degree (2016)
- Algebra Seminar, Emory University, Atlanta, GA
Matrix Completion and Free Resolutions (2016)
- Geometry Seminar, Texas A&M, College Station, TX
Matrix Completion and Small Schemes (2016)
- Colloquium at Georgia Southern, Statesboro, GA
Sums of Squares and Projective Varieties (2015)
- Oberseminar Reelle Geometrie und Algebra, Konstanz, Germany
Generic Spectrahedral Shadows (2015)
- Oberseminar Diskrete Mathematik, Frankfurt, Germany
Generische Projizierte Spektraeder (2015)
- Computational Algebra Seminar, North Carolina State University, Raleigh, NC
Generic Spectrahedral Shadows (2015)

CONFERENCE TALKS

- Computations in Algebraic Geometry
Spurious local minima and syzygies (2025)
- DDG40: Structures algébriques et ordonnées
Degree bounds in Hilbert 17 (2025)
- SIAM Conference on Applied Algebraic Geometry, Minisymposium “Combinatorial and Computational Aspects of Positive Geometry”
Adjoints in Positive Geometry (2025)
- Squares in Dortmund
Graded Pythagoras Numbers (2025)
- Combinatorial Synergies East
Adjoints in Positive Geometry (2025)

- MFO Mini-Workshop “Alcoved Polytopes in Physics and Optimization”
Taking the amplituhedron to the limit (2025)
- Rigidity in Action
Generic Rigidity and Statistics (2024)
- SIAM Conference on Applied Algebraic Geometry, Minisymposium “Nonlinear Algebra in Particle Physics”
Adjoint of Amplituhedra (2023)
- FoCM 2023
Adjoint of Polypols (2023)
- MFO Workshop “New Directions in Real Algebraic Geometry”
Two View Chiral Reconstructions and Real Cubic Surfaces (2023)
- MFO Workshop “Real Algebraic Geometry with a View toward Koopman Operator Methods”
Positivstellensätze: A survey (2023)
- MTNS 2022, Invited Session on Moment Problems, Convex Algebraic Geometry, and Semidefinite Relaxations
Hyperbolic Secant Varieties of M-Curves (2022)
- Minisymposium on Lattice Polytopes, online
 h^ -Vectors of Alcoved Lattice Polytopes* (2022)
- POEMA 4th Workshop, online
Sums of Squares and Projective Geometry (2022)
- Numerical and Probabilistic Nonlinear Algebra, MPI Leipzig
Image Reconstruction and Chirality in Computer Vision (2021)
- Degeneracy Loci and Applications, online
Spectrahedra (2021)
- POEMA 2nd Workshop, online
Kippenhahn’s Theorem for Joint Numerical Ranges (2020)
- Workshop Computational Algebra, online
Realization Spaces of Polytopes (2020)
- Opening Conference of the Thematic Einstein Semester Algebraic Geometry, FU Berlin
Sums of Squares and Projective Varieties (2019)
- ICCOPT, Berlin, Germany
Kippenhahn’s Theorem in Higher Dimensions (2019)
- SIAM Conference on Applied Algebraic Geometry, Bern, Switzerland
Real Geometry of Matrix Completion (2019)
- BIRS Workshop Geometry of Real Polynomials, Convexity and Optimization, Banff, Canada
Kippenhahn’s Theorem for the Joint Numerical Range (2019)

- Geometry of Polynomials Boot Camp, Simons Institute for the Theory of Computing, Berkeley, CA
Hyperbolic Polynomials and Determinantal Representations I and II (2019)
- Symposium on Discrete Mathematics, TU Graz, Austria
Graph invariants from positive semidefinite matrix completion (2018)
- GDMV 2018, Paderborn, Germany
Sektion Diskrete Mathematik und Computeralgebra
Matrixvervollständigung vom geometrischen Standpunkt (2018)
- Geometrietag 2017, Magdeburg, Germany
Quadratic Persistence of Projective Varieties (2017)
- BMS-BGSMath Keynote Lecture, Barcelona
Extension Complexity and the Matching Polytope (2017)
- SIAM Conference on Applied Algebraic Geometry, Atlanta, GA
Minisymposium on Convex Algebraic Geometry and Semidefinite Optimization
Sum-of-Squares Representations of Shortest Length (2017)
- Oberwolfach Workshop Real Algebraic Geometry with a View Toward Moment Problems and Optimization, Oberwolfach
Sums of Squares on Projective Varieties (2017)
- Joint Mathematics Meeting, Atlanta, GA
Special Session on Gaussian Graphical Models and Combinatorial Algebraic Geometry
Positive Semidefinite Matrix Completion and Algebraic Geometry (2017)
- Harmony of Real and Complex Algebraic Geometry, Deajeon, South Korea
Matrix Completion and Free Resolutions I and II (2016)
- AMS Sectional Meeting, Raleigh, NC
Special Session on Applied Algebraic Geometry
More on the Geometry of Positive Semidefinite Matrix Completion (2016)
- ALaNT 4, Telč, Czech Republic
Sums of Squares and Positive Semidefinite Matrix Completion (2016)
- GOAL Workshop, Paris, France
Gaussian Graphical Models and Regularity (2016)
- Applied Algebra Days 3, Madison, WI
Sums of Squares and Maximum Likelihood Estimation (2016)
- AMS Sectional Meeting, Fargo, ND
Special Session on Combinatorial Ideals and Applications
Matrix Completion, Free Resolutions, and Sums of Squares (2016)
- AMS Sectional Meeting, Athens, GA
Special Session on Discrete and Applied Algebraic Geometry
Low rank psd lifts of nonnegative quadratic forms (2016)

- Joint Mathematics Meeting, Seattle, WA
Special Session on Nonlinear Algebra
Real Rank with Respect to Varieties (2016)
- Algebra, Geometry, and Proofs in Symbolic Computation, Fields Institute, Toronto, Canada
Sums of Squares on Projective Varieties (2015)
- Ordered Algebraic Structures and Related Topics, CIRM Workshop, Luminy, France
Gram Spectrahedra (2015)
- Third Workshop on Hybrid Methodologies for Symbolic-Numeric Computation (embedded meeting of ICIAM 2015), Beijing, China
Algebraic Boundaries of Convex Sets (2015)
- SIAM Conference on Applied Algebraic Geometry, Daejeon, South Korea
Generic Spectrahedral Shadows (2015)
- Nonlinear Algebra, Berlin, Germany
Gram Spectrahedra (2015)
- Optimization and Algebraic Geometry, Daejeon, South Korea
Extreme Rays of the Hankel Spectrahedra for Ternary Forms (2014)
- Polyhedra, Lattices, Algebra and Moments, Singapore
Extreme Rays of Cones of Moment Matrices for Ternary Forms (2014)
- SIAM Conference on Applied Algebraic Geometry, Fort Collins
Algebraic Boundaries of Convex Semi-algebraic Sets (2013)
- SIAM Conference on Applied Algebraic Geometry, Raleigh, NC
The Algebraic Boundary of $SO(2)$ -Orbitopes (2011)
- Real Algebraic Geometry, Rennes, France
 $SO(2)$ -Orbitopes (2011)
- Real Algebra, Geometry and Convexity, Leipzig, Germany
 $SO(2)$ -Orbitopes (2011)

ORGANIZATION

- Harmony between Real and Complex Algebraic Geometry, Banff International Research Station, with Greg Blekherman, Daniele Agostini, Margherita Lelli-Chiesa, and Mauricio Velasco (2027)
- Wachspress Geometry — 2 day workshop supported by the SPP Combinatorial Synergies with Martin Winter in Leipzig (2024)
- Summer School “Real Algebraic Geometry and Hodge Theory” with Mario Kummer in Dresden (2024)
- MEGA 2024 (member of the local organizing committee, Leipzig 2024)

- Minisymposia “Real Algebraic Geometry and Optimization” (with Greg Blekherman) and “Real Algebraic Geometry” (with Daniele Agostini and Mario Kummer) at SIAM Conference on Applied Algebraic Geometry 2023, in Eindhoven, Netherlands (2023)
- Dresden Leipzig Seminar Algebra und Geometrie, one day meeting at UL (2023)
- Minisymposium “Convex Algebraic Geometry” at SIAM Conference on Applied Algebraic Geometry 2021, with Greg Blekherman and Cynthia Vinzant, in College Station, TX, USA (2021)
- Fall School of the Thematic Einstein Semester on Algebraic Geometry - Varieties, Polyhedra, Computation, with Daniele Agostini, Thomas Krämer, Marta Panizzut, at FU Berlin (2019)
- Real Applied Algebraic Geometry, with Mario Kummer and Bernd Sturmfels at TU Berlin (2019)
- Convexity Day at MPI Leipzig with Thomas Wannerer, in Leipzig (2019)
- Minisymposium „Algebraic Methods for Convex Sets“ at SIAM Conference on Applied Algebraic Geometry 2019, with Greg Blekherman, Daniel Plaumann, Yong Sheng Soh, and Dogyoon Song, in Bern, Switzerland (2019)
- Visit by Rekha Thomas as a guest of the research training group Facets of Complexity at FU Berlin (June 2019)
- Berlin-Leipzig Seminar on Algebra, Geometry, and Combinatorics
Two-day conference at FU Berlin, with Christian Haase (2017)
- Reading Group on Real Algebraic Geometry with Mario Kummer and Kristin Shaw at MPI Leipzig (2017)
- Joint Mathematics Meeting in Atlanta, GA
Special Session on Gaussian Graphical Models and Combinatorial Algebraic Geometry (2017)
- Minisymposium “Polynomial Optimization and Moments” at SIAM Conference on Applied Algebraic Geometry 2015 in Daejeon, South Korea

TEACHING EXPERIENCE

REU (Research Experiences for Undergraduates) in Leipzig 2022 and 2024

Lectures

- Geometry and Cohomology (U Leipzig 2025/26)
- Algebra 1 (U Leipzig 2024/25)
- Combinatorics (U Leipzig 2024)
- Linear Algebra II (U Leipzig 2024)
- Real Algebra (U Leipzig 2023/24)
- Linear Algebra I (U Leipzig 2023/24)
- Algebraic Geometry II: Intersection Theory (U Leipzig 2023)

- Algebraic Geometry (U Leipzig 2022/23)
- Algebra II (U Leipzig 2022)
- Algebra I (U Leipzig 2021/22)
- Real Algebra and Geometry (U Leipzig 2021)
- Linear Algebra II (U Leipzig 2021)
- Riemann surfaces and algebraic curves (U Leipzig 2020/21)
- Linear Algebra I (U Leipzig 2020/21)
- Linear Algebra II (FU Berlin 2020)
- Linear Algebra I (FU Berlin 2019/20)
- Mathematical Panorama (FU Berlin 2018/2019)
- Discrete Geometry III (FU Berlin 2018/2019)
- Discrete Geometry II (FU Berlin 2018)
- Discrete Geometry I (FU Berlin 2017/2018)
- MATH-4150 Introduction to Number Theory (GT Spring 2017)
- MATH-8803-sin Algebraic Curves (GT Fall 2016)
- MATH-2552 Differential Equations (GT Spring 2016)
- MATH-1552 Integral Calculus (GT Fall 2015)
- MATH-4150 Introduction to Number Theory (GT Spring 2015)
- MATH-2403 Differential Equations (GT Fall 2014)

Seminars

- Seminar for teacher students (U Leipzig 2025/26)
- Seminar for teacher students (U Leipzig 2024/25)
- Seminar for teacher students: Elementarmathematik vom höheren Standpunkt (U Leipzig 2023/24)
- Seminar Computer Algebra (U Leipzig 2022/23)
- Seminar for teacher students: Proofs from the Book (U Leipzig 2021/22)
- Seminar on Topics in Algebra and Geometry (U Leipzig 2021/22)
- Seminar Real Algebraic Geometry and Optimization (FU Berlin 2019)
- Proseminar Panorama der Mathematik (Storytelling in Mathematics) (FU Berlin 2019)
- Topics from Number Theory and Algebraic Geometry (Konstanz 2010/2011)

Summer Schools

- Summer School on Hyperbolic Polynomials, Sums of Squares, and Optimization, (Georgia Institute of Technology, organization Greg Blekherman, 2018)
- Summer School on Real Algebraic Geometry and Optimization (Georgia Institute of Technology, organization Greg Blekherman 2016)

SERVICE

- Erasmus Coordinator for the Department of Mathematics and Computer Science, Uni Leipzig (2023-2026)
- Member of the Arbeitskreis Schulmathematik (Sachsen), in particular working group Lehrplan (2022-2026)
- Selection Committees Deutschlandstipendium (2023-2025)
- Jury Member “Jugend forscht” (state competition in Saxony, 2025)
- Reviews: Alexander von Humboldt Stiftung, various journals (including Adv. Math., DCG, IMRN, Journal of Algebra, Linear and Multilinear Algebra, SIOPT, SIAGA)
- Committees: TA selection committee (FU Berlin; 06/2018–09/2020), Hiring committees (for two postdoc positions), BMS Committee (10/2019–09/2020), Postdoc Hiring committee for the Nonlinear Algebra group at MPI MiS Leipzig (2020, 2021, 2022, 2023)

CONFERENCES (SELECTION)

- Algebra and combinatorics of amplitudes, Wien, Austria (2026)
- Computations in Algebraic Geometry, Zürich, Switzerland (2025)
- UNIVERSE+ Annual Meeting (2025)
- SIAM Conference on Applied Algebraic Geometry 2025, Madison, WI, USA (2025)
- Rigidity in Action, Linz, Austria (2024)
- Combinatorial Coworkspace 2024, Hirschegg, Austria (2024)
- Positive Geometry in Particle Physics and Cosmology, Leipzig, Germany (2024)
- Current Topics in Fundamental Physics, Benediktbeuern, Germany (2023)
- SIAM Conference on Applied Algebraic Geometry 2023, Eindhoven, Netherlands (2023)
- FoCM 2023, Paris, France (2023)
- Oberwolfach Workshop “New Directions in Real Algebraic Geometry” (2023)
- Oberwolfach Workshop “Real Algebraic Geometry with a View toward Koopman Operator Methods” (2023)
- SIAM Conference on Applied Algebraic Geometry, College Station, TX, USA (2021)
- Oberwolfach Workshop „Real Algebraic Geometry with a View toward Hyperbolic Programming and Free Probability“ (2020)
- SIAM Conference on Applied Algebraic Geometry, Bern, Switzerland (2019)
- BIRS Workshop Geometry of Real Polynomials, Convexity and Optimization, Banff, Canada (2019)
- Simons Workshops on Geometry of Polynomials (2019)
- SIAM Conference on Applied Algebraic Geometry, Atlanta, GA, USA (2017)
- Real Algebraic Geometry with a View Toward Moment Problems and Optimization, Oberwolfach Workshop (2017)

- Joint Mathematics Meeting in Atlanta, GA, USA (2017)
- Joint Mathematics Meeting in Seattle, WA, USA (2016)
- Algebra, Geometry, and Proofs in Symbolic Computation, Fields Institute, Toronto, Canada (2015)
- Ordered Algebraic Structures and Related Topics, CIRM Workshop, Luminy, France (2015)
- Algebraic Vision, Berlin, Germany (2015)
- SIAM Conference on Applied Algebraic Geometry, Daejeon, South Korea (2015)
- Real Algebraic Geometry with a View to Systems Control and Free Positivity, Oberwolfach, Germany (2014)
- SIAM Conference on Applied Algebraic Geometry, Fort Collins, CO, USA (2013)
- Workshop Polynomial Optimisation, Isaac Newton Institute, Cambridge, UK (2013)
- Structured Function Systems and Applications, Oberwolfach, Germany (2013)
- SIAM Conference on Applied Algebraic Geometry, Raleigh, NC, USA (2011)
- Real Algebraic Geometry, Rennes, France (2011)
- BIRS Workshop Convex Algebraic Geometry, Banff, Canada (2010)

LANGUAGES

German (native language)

English (fluent)

French (good)

ADDRESS

Prof. Dr. Rainer Sinn

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