STEFFEN BORGWARDT
Curriculum Vitae

Professor
Department of Mathematical and Statistical Sciences
College of Liberal Arts and Sciences
University of Colorado Denver
steffen.borgwardt@ucdenver.edu

EDUCATION

Habilitation, May 2015, 'Data Analysis through Polyhedral Theory',
Technische Universität München

Dr. rer. nat. in **Mathematics,** Dec. 2010, 'A Combinatorial Optimization Approach to Constrained Clustering', advisor: P. Gritzmann, Technische Universität München, summa cum laude

Diploma (M.Sc.) in **Computer Science** and **Diploma (M.Sc.)** in **Mathematics**, Mar. 2007,
Technische Universität München

EMPLOYMENT AND PROFESSIONAL EXPERIENCE

Professor, 8/24-current, University of Colorado Denver, Department of Mathematical and Statistical Sciences

Director of Graduate Programs, 7/20-6/23, 1/25-current, University of Colorado Denver, Department of Mathematical and Statistical Sciences

Associate Professor, 9/19-7/24, University of Colorado Denver, Department of Mathematical and Statistical Sciences

Assistant Professor, 9/16-8/19, University of Colorado Denver, Department of Mathematical and Statistical Sciences

Privatdozent, 9/15-8/16, Technische Universität München, Department of Mathematics

Visiting Assistant Professor, 9/14-8/15, University of California Davis, Department of Mathematics

Acting Associate Professor, 9/13-4/14, Technische Universität Braunschweig, Department of Mathematics

Head of Research and Development Project 'ArborChange', 4/12-8/13, Project of the Bavarian State Ministry for Nutrition, Agriculture and Forests

Postdoctoral Research Associate, 1/11-3/12 and 5/14-8/14, Technische Universität München, Department of Mathematics

JOURNAL PUBLICATIONS

S. Borgwardt, C. Buchanan, E. Culver, B. Frederickson, P. Rombach, Y. Yoo (2026) *Path Odd-Covers of Graphs*. **Discrete Mathematics** 349(9):115078

A. Black, S. Borgwardt, M. Brugger (2025) *On the Circuit Diameter Conjecture for Counterexamples to the Hirsch Conjecture.* **Discrete Optimization** 58:100910

M. Bayer, S. Borgwardt, et al. (11 authors) (2025) *Combinatorics of Generalized Parking-Function Polytopes.* **Discrete & Computational Geometry**, doi/10.1007/s00454-025-00770-1

S. Borgwardt, A. Morrison (2025) On Combinatorial Algorithms and Circuit Augmentation for Pseudoflows. **Journal of Combinatorial Optimization** 49, 73, doi/10.1007/s10878-025-01313-3 (MIP conference poster award for co-author)

S. Borgwardt, W. Grewe, S. Kafer, J. Lee, L. Sanita (2025) On the Hardness of Short and Sign-Compatible Walks. **Discrete Applied Mathematics** 367, pp. 129-149

S. Borgwardt, W. Grewe, J. Lee (2025) On the Diameter of a 2-Sum of Polyhedra. **Optimization Letters** 19, pp. 1053-74

M.E. Eton, S. Borgwardt, D. Mays (2024) Inverse Method to Determine the Hydraulic Conductivity Parameter from a Velocity Field using Graph Theory. **InterPore Journal** 1:3, IPJ271124–5

S. Borgwardt, S. Patterson (2024) An Integer Program for Pricing Support Points of Exact Barycenters. **INFORMS Journal on Optimization** 6:2, pp. 137-153

S. Borgwardt, W. Grewe, J. Lee (2024) On the Combinatorial Diameters of Parallel and Series Connections. **SIAM Journal on Discrete Mathematics** 38:1, doi/10.1137/22M1490508

S. Borgwardt, M. Brugger (2024) Circuits in Extended Formulations. **Discrete Optimization** 52:100825

S. Borgwardt, F. Happach, S. Zirkelbach (2023) An Algorithm for the Separation-Preserving Transition of Clusterings. **INFORMS Journal on Optimization** 5:1, pp. 1-26

S. Borgwardt, C. Viss (2022) A Polyhedral Model for Enumeration and Optimization over the Set of Circuits. **Discrete Applied Mathematics** 308, pp. 68-83 (university-wide best dissertation award for co-author)

S. Borgwardt, C. Viss (2022) Circuit Walks in Integral Polyhedra. **Discrete Optimization** 44(1):100566

S. Borgwardt (2022) An LP-based, Strongly Polynomial 2-Approximation Algorithm for Sparse Wasserstein Barycenters. **Operational Research** 22, p.1511-1551

S. Borgwardt, S. Patterson (2022) A Column Generation Approach to the Discrete Barycenter Problem. **Discrete Optimization** 43:100674

S. Borgwardt, C. Viss (2021) Constructing Clustering Transformations. **SIAM Journal on Discrete Mathematics** 35:1, pp. 152-178

S. Borgwardt, C. Brand, A. Feldmann, M. Koutecky (2021) A Note on the Approximability of Deepest-Descent Circuit Steps. **Operations Research Letters** 49:1, pp. 310-315

S. Borgwardt, S. Patterson (2021) On the Computational Complexity of Finding a Sparse Wasserstein Barycenter. **Journal of Combinatorial Optimization** 41:3, pp. 736-761

S. Borgwardt, C. Viss (2020) An implementation of steepest-descent augmentation for linear programs. **Operations Research Letters** 48:3, pp. 323-328

S. Borgwardt, S. Patterson (2020) Improved Linear Programs for Discrete Barycenters. **INFORMS Journal on Optimization** 2:1, pp. 14-33

S. Borgwardt, F. Happach (2019) Good Clusterings Have Large Volume. **Operations Research** 67:1, pp. 215-231 (INFORMS student paper award for co-author)

S. Borgwardt, R. Frongillo (2019) Power Diagram Detection with Applications to Information Elicitation. **Optimization Theory and Applications** 181:1, pp. 184-196

S. Borgwardt, T. Stephen, and T. Yusun (2018) On the Circuit Diameter Conjecture. **Discrete & Computational Geometry** 60:3, pp. 558-587

S. Borgwardt, J. De Loera, E. Finhold, and J. Miller (2018) The Hierarchy of Circuit Diameters and Transportation Polytopes. **Discrete Applied Mathematics** 240, pp. 8-24

S. Borgwardt, J. De Loera, and E. Finhold (2018) The Diameters of Network Flow Polytopes satisfy the Hirsch Conjecture. **Mathematical Programming** 171:1-2, pp. 283-309

S. Borgwardt, A. Brieden, and P. Gritzmann (2017) An LP-based k-means algorithm for balancing weighted point sets. **European Journal of Operational Research** 263, pp. 349-355

E. Anderes, S. Borgwardt, and J. Miller (2016) Discrete Wasserstein Barycenters: Optimal Transport for Discrete Data. **Mathematical Methods of Operations Research** 84:2, pp. 389-409

S. Borgwardt, S. Onn (2016) Efficient solutions for weight-balanced partitioning problems. **Discrete Optimization** 21:C, pp. 71-84

S. Borgwardt, E. Finhold, and R. Hemmecke (2016) Quadratic diameter bounds for dual network flow polyhedra. **Mathematical Programming** 159:1, pp. 237-251

S. Borgwardt, J. De Loera, E. Finhold (2016) Edges vs Circuits: a Hierarchy of Diameters in Polyhedra. **Advances in Geometry** 16:4, pp. 511-530

S. Borgwardt, A. Brieden, and P. Gritzmann (2015) Geometrisches Clustering: Mathematik für die Flurverbesserung (Geometric clustering: Mathematics for land improvement). **Mitteilungen der DMV** 23/2015, pp. 82-90

S. Borgwardt (2015) On Soft Power Diagrams. **Mathematical Modelling and Algorithms in Operations Research** 14:2, pp. 173-196

S. Borgwardt, E. Finhold, and R. Hemmecke (2015) On the circuit diameter of dual transportation polyhedra. **SIAM Journal on Discrete Mathematics** 29:1, pp. 113-121

S. Borgwardt, S. Schaffner, M. Suda (2014) Geometrische Kennzahlen für die forstfachliche Bewertung der Zersplitterung von Privatwaldarealen (Geometric measures for the assessment of fragmentation of private forest areas). **Forstarchiv** 06/14, pp. 188-196

S. Borgwardt, A. Brieden, and P. Gritzmann (2014) Geometric clustering for the consolidation of farmland and woodland. **Mathematical Intelligencer** 36:2, pp. 37-44 (including front cover of journal)

S. Borgwardt, F. Schmiedl (2014) Threshold-based preprocessing for approximating the weighted dense k-subgraph problem. **European Journal of Operational Research** 234, pp. 631-640

S. Borgwardt (2013) On the Diameter of Partition Polytopes and Vertex-Disjoint Cycle Cover. **Mathematical Programming**, Series A 141:1, pp. 1-20

S. Borgwardt, A. Brieden, and P. Gritzmann (2011) Constrained Minimum-k-Star Clustering and its application to the consolidation of farmland. **Operational Research** 11:1, pp. 1-17

GRANTS

CURRENT

DoD-AFOSR Regular Grant 2024-27, received 8/24, 'Advances in Circuit Augmentation', awarded by AFOSR, Air Force Office of Scientific Research, volume $459,500, subcontracted co-PI Dr. Jon Lee, University of Michigan

Graduate Research Workshops in Combinatorics 2020-26, previous co-PI (rotating) / current organizing committee, continuing grant supported by the NSF Division of Mathematical Sciences, Combinatorics program, series of research workshops

PREVIOUS

NSF Standard Grant 2020-25, received 6/20, 'AF: Circuit Walks in Optimization', awarded by the NSF Division of Computing and Communication Foundations, Algorithmic Foundations program, volume $233,560

DoD-AFOSR Regular Grant 2021-24, received 4/21, 'The Hirsch-Conjecture for Totally-Unimodular Polyhedra', awarded by AFOSR, Air Force Office of Scientific Research, volume $374,716, subcontracted co-PI Dr. Jon Lee, University of Michigan

Simons Foundation Collaboration Grant for Mathematicians 2017-22, received 6/17, 'Polyhedral Theory in Data Analytics', awarded by the Simons Foundation, volume $42,000

ORS Large Grant, received 1/17, 'Constructing the Difference of Clusterings', awarded by the Office of Research Services, University of Colorado Denver, volume $11,200

Research and Development Project 'ArborChange', 4/12-8/13,
Project of the Bavarian State Ministry for Nutrition, Agriculture and Forests, volume $110,000 + indirect costs (estimated $42,000), and primary costs (direct and indirect) for 1.75 full-time employees of the Bavarian state for one year (estimated $180,000)

PUBLICATIONS IN REVIEW

C. Kiekhaefer, S. Borgwardt (2026) *Blocking the Disease Axis: Protected-Terminal Vertex Cuts for Control Point Discovery in Severe COVID-19*

S. Borgwardt, Z. Sorenson (2026) *A Canceling Heuristic for the Directed Traveling Salesman Problem.* available on arxiv:2603.26564

S. Borgwardt, N. Crawford, S. Kafer, J. Lee, A. Morrison (2025) *On Circuit Imbalance and 0/1-Circuits for Coloring and Spanning Forest Problems.* Available on arxiv:2512.05223

S. Borgwardt, M. Carr, C. Chen, W. Ge, S. Hartke, Y. Huang, A. Moon (2025) *Reconstruction of C_4-free graphs from the set of closed neighborhoods and digital convexity*. available on arxiv:2510.21195

S. Borgwardt, Z. Dvorak, B. Frederickson, A. Nix, Y. Yoo (2025) *Improved Decomposition Bounds for Partition Polytopes and Odd Covers.* available on arxiv:2507.12748

S. Borgwardt, N. Crawford, D. Horton, A. Morrison, E. Speakman (2025) *Evacuation Planning on Time-Expanded Networks with Integrated Wildfire Information.* available on arxiv:2410.14500v2

PUBLICATIONS IN PREPARATION

S. Borgwardt, A. Holcombe-Pomerance, S. Kafer, J. Lee, A. Morrison (exp. 9/2026) *Refinements to the Polyhedral Model: A Better Implementation of Steepest-Descent Augmentation*

S. Borgwardt, A. Semyonov (exp. 8/2026) *Improved Algorithms for the Separation-Preserving Transition between Least-Squares Assignments*

OTHER PUBLICATIONS

M. Bayer, S. Borgwardt, et al. (11 authors) (2023) *Combinatorics of Generalized Parking-Function Polytopes.* Extended abstract (followed up by journal paper, see above). Graduate Research Workshop in Combinatorics 23 paper

A. Black, S. Borgwardt, and M. Brugger (2022) *Short Circuit Walks for Hirsch Counterexamples.* Technical Report, available on arxiv:2302.03977v1

A. Malkis, S. Borgwardt (2019) *Binary Multithreaded Programs have Low Reachability-Complexity and Small Diameters.* Technical report

S. Borgwardt (2018) *Strongly Polynomial 2-Approximations for Discrete Wasserstein Barycenters.* Technical Report available on arxiv: 1704.05491v3

A. Malkis, S. Borgwardt (2017) *Reachability in Binary Multithreaded Programs Is Polynomial*. **ICDCS 17**, doi: 10.1109/ICDCS.2017.290

S. Borgwardt, J. De Loera, and E. Finhold (2016) *The Diameters of Transportation Polytopes satisfy the Hirsch Conjecture.* **2016 SIAM Workshop on Network Science**. Extended abstract. Full technical report available on arxiv: 1603.00325v1

S. Borgwardt (2015) *Data Analysis through Polyhedral Theory*, Habilitation thesis

S. Borgwardt, A. Malkis, and Y. Nagashima (2014) *On the Diameter of Multithreaded Programs: The Basic Case*. Technical report

S. Borgwardt, A. Brieden, and P. Gritzmann (2013) *Mathematics in Agriculture and Forestry: Geometric Clustering for Land Consolidation*. **IFORS news**, Dec. 2013

S. Borgwardt (2013) *Das Programm ArborTec – ArborChange mit ArborEval und ArborOpt*. Public report for the software engineered in project ArborChange of the Bavarian State Ministry for Nutrition, Agriculture, and Forests.

K. Borgwardt, S. Borgwardt, A. Feragen, N. Shervashidze (2011) *Balanced kernel k-means for comparing large graphs with landmarks*. Technical report

S. Borgwardt (2010) *A Combinatorial Optimization Approach to Constrained Clustering*, Ph.D. thesis

CONFERENCE AND SPECIAL SESSION ORGANIZATION

Session Organization
International Symposium on Mathematical Programming, July 2027
RAI convention center, Amsterdam

Conference Organization
Organizing Committee, co-PI
Graduate Research Workshop in Combinatorics, July 2026
Iowa State University

Conference Organization
Organizing Committee, co-PI
Graduate Research Workshop in Combinatorics, June 2025
Iowa State University

Conference Organization
Organizing Committee, co-PI
Graduate Research Workshop in Combinatorics, May 2024
University of Wisconsin Milwaukee

Conference Organization
Organizing Committee, co-PI
Graduate Research Workshop in Combinatorics, July 2023
University of Wyoming

Conference Organization
Workshop on Circuit Diameters and Augmentation, May 2023
Organized as PI for NSF grant
hosted at the University of Colorado Denver

Conference Organization
Organizing Committee, co-PI

Graduate Research Workshop in Combinatorics, August 2022
hosted at the University of Colorado Denver

AMS Special Session Organization
Joint Mathematics Meeting, January 2020
Colorado Convention Center, Denver

Conference Organization
Organizing Committee
INFORMS Optimization Society Meeting, March 2018
hosted at the University of Colorado Denver

Conference Organization
Organizing Committee
Colloquium in Honor of the 60th Birthday of Peter Gritzmann, Dec. 2014
hosted at the Technische Universität München

Conference Organization
Organizing Committee
ECCO-CO 2014 – European Chapter on Combinatorial Optimization, May 2014
hosted at the Technische Universität München

RESEARCH VISITS, INVITED COLLOQUIUM/SEMINAR TALKS

2026
Denver University

2025
INFORMS Rocky Mountain Chapter Meeting

2024
University of Technology Nuremberg
Technische Universität München
Massachusetts Institute of Technology

2022
University of Colorado Boulder
Technische Universität München

2021
University of Passau

2019
Ulm University
Technische Universität München
University of Colorado Denver, College of Engineering, Design and Computing

2018
Colorado State University

2017
Technische Universität München

University of Wyoming
INFORMS Rocky Mountain Chapter Meeting
University of Colorado Boulder (twice)

2016
Simon Fraser University Surrey
Simon Fraser University Burnaby
University of Colorado Denver
Georgia Southern University
Northern Illinois University
Technische Universität Chemnitz

2015
Maastricht University
Cardiff University
University of Edinburgh
University of California Los Angeles
University of North Carolina Chapel Hill

2014
Technion – Israel Institute of Technology, Haifa

2013
University of California Davis
Technische Universität Dortmund
Universität Hamburg
Technische Universität Hamburg-Harburg

2012
Goethe-Universität Frankfurt
Max-Planck Institute Tübingen

CONFERENCE AND WORKSHOP PRESENTATIONS, SESSION CHAIR

2025
AFOSR Complex Networks Program Review, Arlington

2024
Informs Annual Meeting 2024, Seattle
International Symposium on Mathematical Programming, Montreal
Sixth Conference on Discrete Optimization and Machine Learning, Tokyo

2023
`Combinatorics and Optimization', ICERM, Providence

2022
CAIMS Annual Meeting 2022, Kelowna

2021
Hausdorff Institute, Bonn

2020
Joint Mathematics Meetings 2020, Denver

2019
Joint Mathematics Meetings 2019, Baltimore

2018
ORS Immigration Research Meeting, Denver
'Optimization and Discrete Geometry: Theory and Practice', Tel Aviv
INFORMS Optimization Society Meeting 2018, Denver

2017
SIAM Optimization 2017, Vancouver

2015
DMV-Jahrestagung 2015, Hamburg
ISMP 2015, Pittsburgh
'Paths, Pivots, and Practice: The Power of Optimization', Montreal

2014
IFORS 2014, Barcelona
ECCO-CO 2014, Munich

2013
EURO 2013, Rome

2012
ISMP 2012, Berlin
EURO 2012, Vilnius
ECCO 2012, Antalya

2010-2020, 2022-23
Participation in 17 interdisciplinary workshops and 8 conferences (without presentations)

PROFESSIONAL ORGANIZATIONS (MEMBERSHIP)

AMS – American Mathematical Society
SIAM – Society of Industrial and Applied Mathematics
INFORMS – The Institute for Operations Research and the Management Sciences
DHV – Deutscher Hochschulverband

COURSES TAUGHT

CU DENVER (College and campus-level awards 2021 for Excellence in Teaching)
Applied Discrete Mathematics
Applied Linear Algebra (6 times)
Independent Study (5 times)
Integer Programming (4 times)
Introduction to Operations Research
Linear Programming (4 times)
Network Flows (3 times)
Readings: Optimization (15 times)

Topics in Optimization: Circuits in Optimization
Topics in Optimization: Combinatorial Optimization (2 times)

TU MUNICH, UC DAVIS, TU BRAUNSCHWEIG, ISM MUNICH

Algebraic and Geometric Techniques for Optimization (problem session) (teaching award)
Applied Discrete Mathematics (problem session)
Combinatorial Optimization (problem session)
Computational Complexity in Optimization (problem session) (teaching award)
Discrete Mathematics in Data Analytics (seminar)
Discrete Optimization
Game Theory 1 (seminar)
Game Theory 2 (seminar)
Introduction to Discrete Mathematics
Linear Algebra
Linear Algebra for Computer Science (best teaching award *TeachInf*, 2016)
Linear Optimization
Mathematics 1
Mathematics 1 for Electrical Engineering (problem session)
Mathematics 2 for Electrical Engineering (problem session)
Mathematics and Computers
Mathematical Methods for the Business Sciences 2 (problem session)
Optimization 1 (problem session)
Optimization 2 (problem session)
Optimization 3 (problem session)
Programming Course: Optimization 1
Programming Course: Optimization 2
Selected Topics from Combinatorial Optimization (seminar)

MENTORING

PHD

three current PhD candidates / students
Nicholas Crawford, CU Denver, 'Extremal Combinatorics and Optimization: The Method and Application of Flag Algebras and Circuits of the Coloring Polytope', PhD completed 4/25
Angela Morrison, CU Denver, 'On Circuit-Based Optimization Methods', PhD completed 4/25
Zachary Sorenson, CU Denver, 'A Cycle-Canceling Heuristics for the Traveling Salesman Problem', PhD completed 4/25
Weston Grewe, CU Denver, 'On Short Combinatorial Walks', PhD Completed 4/24
Matthias Brugger, TU Munich, **co-mentor**, PhD completed 2/24, two joint papers (without primary advisor)
Felix Happach, TU Munich, **co-mentor**, PhD completed 10/20, two joint papers (without primary advisor), INFORMS Student Paper Prize 2018 (see awards)
Charles Viss, CU Denver, 'Circuits in Optimization', PhD completed 4/20, Best Dissertation Award (see awards)
Stephan Patterson, CU Denver, 'Algorithms for Discrete Barycenters', PhD completed 3/20

MASTER, BACHELOR, HONORS, READINGS

16 completed master's projects, a student received best master's thesis award from GOR - Gesellschaft für Operations Research (see awards)
11 completed bachelor's and honors projects
20 directed research, independent study, and readings classes since 2016

SELECTED LEADERSHIP AND SERVICE

AY 2025-26
Graduate Program Director
Graduate Advisor
Vice Chancellor's Advisory Committee
Campus Academic Integrity Committee
Merit Committee
Executive Committee
Program Vitality Review
Preliminary Exam Committee, chair, Linear Programming
Excellence in Research Award Committee
RTP Committee
Conference organizing committee, GRWC 2026, preparation & mentoring
Co-Organization of Operations Research Seminar
Doctoral committee for seven students

AY 2024-25 (Spring 2025)
Graduate Program Director
Graduate Advisor and **Graduate Admissions Director**
Search Committee, co-chair, Assistant Professorship in Mathematics
CLAS Academic Standards Committee
Post-Tenure Review Committee, chair
Executive Committee
Preliminary Exam Committee, chair, Discrete Mathematics
Preliminary Exam Committee, Linear Programming
Excellence in Teaching Award Committee
NSF Panel
Faculty Advisor of the CU Denver Math Club
Conference organizing committee, GRWC 2025, preparation & mentoring
Co-Organization of Operations Research Seminar
Doctoral committee for seven students

Sabbatical in Fall 2024

AY 2023-24
Graduate Advisor and **Graduate Admissions Director**
CLAS Dean's Advisory Committee for IRCF Personnel Decisions
Preliminary Exam Committee, chair, Linear Algebra
CLAS Academic Standards Committee
Excellence in Teaching Award Committee
Search Committee for CLAS Graduate Academic Services Coordinator
Post-Tenure Review Committee (three cases)
RTP Committee
Graduate Recruitment Yield Plan, Department Coordinator
Conference organizing committee, GRWC 2024, preparation & mentoring, host
Conference organizing committee, GRWC 2023, host
Co-Organization of Operations Research Seminar
Doctoral committee for ten students (two external)

AY 2022-23
Graduate Program Director

Degree program reviews, 7-year reviews for Higher Learning Commission, PhD and MS in Applied Mathematics
Conference organization: Workshop on Circuit Diameters and Augmentation, PI and host
CLAS Dean's Advisory Committee for IRCF Personnel Decisions
Executive Committee
Merit Committee, Chair
Excellence in Teaching Award, Faculty Mentoring Award Selection Committees
NSF Panel
Search Committee for Director of Graduate Recruitment
Conference organizing committee, GRWC 2023, preparation & mentoring
Conference organizing committee, GRWC 2022, local host
Co-Organization of Operations Research Seminar
Doctoral committee for ten students (two external), and honor's committee for external student
Catalog editor for department

AY 2021-22

Graduate Program Director
Graduate Admissions Committee
Executive Committee
Initial Appointment Committee
Excellence in Teaching Award, Faculty Mentoring Award Selection Committees
Conference organizing committee, GRWC 2022, preparation & mentoring
Co-Organization of Operations Research Seminar
Faculty Advisor of the CU Denver Machine Learning Club
Doctoral committee for nine students (two external), master's committee for two students
Catalog editor for department

AY 2020-21

Graduate Program Director
Graduate Admissions Committee
Executive Committee
RTP Committee
Merit Committee
Co-Organization of Operations Research Seminar
Faculty Advisor of the CU Denver Machine Learning Club
Doctoral committee for three students, master's committee for two students
Graduate School Fair, Joint Mathematics Meetings 2021, department booth

AY 2019-20

Graduate Admissions Director
Executive Committee
Faculty Assembly
RTP and PTR Committees
Co-Organization of Operations Research Seminar
Faculty Advisor of the CU Denver Machine Learning Club
Doctoral committee for four students (one thesis subm.), master's committee for three students
Data to Policy Symposium, judge (fall 2019), participation with classes and machine learning club
Graduate School Fair, Joint Mathematics Meetings 2020, department booth
AMS Special Session organization, Joint Mathematics Meetings 2020

AY 2018-19

Search Committee, co-chair, Assistant Professorship in Optimization (chair after Dec. 15)
Executive Committee

Undergraduate Committee
Preliminary Exam Committee, chair, Linear Algebra (summer 2019)
Faculty Assembly
Co-Organization of Operations Research Seminar
Faculty Advisor of the CU Denver Machine Learning Club
STEAMposium, outreach to K-12 and STEM students, department booth
Doctoral committee for four students (incl. thesis proposal for own student), master's committee for two students
Data to Policy Symposium, participation with two classes
Session organization, Joint Mathematics Meetings 2019

AY 2017-18

Conference organizing committee, Informs Optimization Society Meeting 2018
Search Committee, Assistant Professorship in Optimization
Co-Organization of Operations Research Seminar
Faculty Advisor of the CU Denver Machine Learning Club
Doctoral committee for four students (incl. thesis proposal and comprehensive exam for own student), master's committee for two students
CU Denver Sustainability Day, two talks *Mathematics and Sustainable Agriculture* for K-12 students
Session organization, Informs Optimization Society Meeting 2018

AY 2016-17 AND EARLIER, GENERAL

Minisymposium Organization, SIAM Conference on Optimization 2017
Preliminary Exam Committee Linear Algebra
Co-Organization of Operations Research Seminar
Doctoral committee for two students, honor's committee for two students
Foundations of Mathematics exams, TU Munich, 2016
Moderator for the 26th undergraduate student conference, UC Davis, 2015
Conference organizing committee, Colloquium in Honor of the 60th Birthday of Peter Gritzmann
Conference organizing committee, ECCO-CO 2014 – Euro Chap. on Combinatorial Optimization
IFORS 2014, Barcelona, organizer of stream 'Geometric Clustering'
EURO 2013, Rome, organizer of stream 'Geometric Clustering'

GENERAL

Reviewer of more than 60 articles and 30 grants for about 30 journals and organizations, 2013-26

AWARDS/HONORS

RESEARCH

CLAS Award for Excellence in Research, received 4/24, College of Liberal Arts and Sciences, University of Colorado Denver

Feodor Lynen Research Scholarship and lifetime **Humboldt Fellowship**, received 2/14, awarded by the Alexander-von-Humboldt Foundation, 'Data Analysis through the Geometry of Transportation Polytopes', volume ca. $50,000

European Excellence in Practice Award 2013, received 7/13, 'Geometric clustering for the consolidation of farm- and woodland', joint with A. Brieden and P. Gritzmann, awarded by EURO, the Association of the European Operational Research Societies within IFORS

TEACHING

CU Denver Award for Excellence in Teaching, received 11/21, campus-wide, highest teaching award of the University of Colorado Denver, given annually to one faculty member

CLAS Award for Excellence in Teaching, received 3/21, College of Liberal Arts and Sciences, University of Colorado Denver

'TeachInf' Best Teaching Award, received 7/16, best undergraduate lecture 'Linear Algebra for Computer Science', Department of Computer Science, TU Munich

Two Outstanding Teaching Awards, received 3/13 and 7/14, Department of Mathematics, TU Munich

STUDENTS' RESEARCH AWARDS

Graduate School Best Dissertation Award, *Circuits in Optimization*, University of Colorado Denver, received 4/20. Charles Viss (phd student)

Fulbright Scholarship, US Department of State, started 2/20. Christina Ebben (master's student). First mathematics Fulbright to Brazil. Visit cut short due to covid. Reapplied and received a second time 1/21.

Second place award, 2018 Student Paper Prize Competition, INFORMS Optimization Society, for joint paper *Good Clusterings Have Large Volume,* received 11/18. Felix Happach (phd student)

GOR-Award 2017, for best master's thesis, national award of German Society of Operations Research (GOR), received 9/17. Felix Happach (master's student)