Mathias Drton – Curriculum Vitae

December 2024

Address:

Department of Mathematics
TUM School of Computation, Information and Technology
Technical University of Munich
Boltzmannstr. 3
85748 Garching b. München, Germany

Employment:

2019–	Technical University of Munich	Professor of Mathematical Statistics
2019–	University of Washington	Affiliate Professor of Statistics
2018–2019	University of Copenhagen	Professor of Statistics
2012–2019	University of Washington	Professor of Statistics
2011–2012	The University of Chicago	Professor of Statistics
2009–2011	The University of Chicago	Associate Professor of Statistics
2005–2009	The University of Chicago	Assistant Professor of Statistics
2004–2005	University of California, Berkeley	Postdoc

Visiting Positions:

2017	Institute of Statistical Mathematics, Tokyo, Japan (3 months)
2007	University of Minnesota, Institute for Mathematics and its Applications (3 months)

Education:

2001–2004	University of Washington (Advisors: Michael D. Perlman, Thomas S. Richardson)	Ph.D. in Statistics
1994–2000	Universität Augsburg, Germany (Advisor: Friedrich Pukelsheim)	Diplom in Applied Mathematics
1998–1999	Université Toulouse III Paul Sabatier, France (Advisor: Jean-Marc Azaïs)	DEA in Applied Mathematics

Honors:

2021	ELLIS Fellow, European Lab for Learning & Intelligent Systems Unit Munich
2020	ERC Advanced Grant, European Research Council
2020	Elected Member, International Statistical Institute
2019	Ethel Newbold Prize, Bernoulli Society
2018	Elected Foreign Member of the Royal Danish Academy of Sciences and Letters
2016	Fellow of the Institute of Mathematical Statistics (IMS)
2014	Medallion Lecture, Institute of Mathematical Statistics (IMS)
2014	Best paper award, Bayesian Analysis

2004	Best Student Paper Award, Conference on Uncertainty in Artificial Intelligence
2003	Birnbaum Award, Department of Statistics, University of Washington.

Grants:

2021–2025	TUM-ICL Joint Academy of Doctoral Studies, "Learning and Analyzing Discrete Geometric Structure in Statistical Models"
2021–2025	Co-PI in DFG Consortium "Mathematical Research Data Initiative (MaRDI)"
2020–2025	ERC Advanced grant, "Graphical Models for Complex Multivariate Data"
2017–2020	NSF grant, "Identification and Statistical Inference in Graphical Models"
2016–2020	NSF grant, "Statistical Methods for Differential Network Biology With Applications to Aging", Co-PI with A. Shojaie, D. Promislow
2013–2016	NSF grant, "Bayesian Information Criteria and Problems of Parameter Identifiability"
2014–2015	NSA grant, "Bayesian Information Criteria"
2013–2014	Royalty Research Fund grant, University of Washington
2009–2013	Sloan Research Fellowship
2008–2013	NSF CAREER grant, "Statistical Inference in Algebraic Models with Singularities"
2005–2008	NSF grant, "Graphical and Algebraic Models for Multivariate Categorical Data"

Editorial Activities:

2020–	Associate editor, *Journal of the Royal Statistical Society Series B*
2019–	Advisory board for the new journal *Algebraic Statistics*
2018–	Associate editor, *Biometrika*
2012–2021	Associate editor, *Electronic Journal of Statistics*
2007–2015	Associate editor, *Annals of Statistics*
2007–2011	Associate editor, *Journal of the Royal Statistical Society Series B*
2013–2015	Guest editor, Special Issue on Statistics, *Linear Algebra and Its Applications*
2007	Guest editor, Issue on "Algebraic Statistics and Computational Biology," *Statistica Sinica*
2007–2021	Editorial board, *Metrika*
2004–	Referee for most major Statistics journals

Other Professional Activities:

2025	Program Chair, Conference on Causal Learning and Reasoning (CLeaR)
2024	Integrity Chair, Conference on Uncertainty in Artificial Intelligence
	Member, TUM-IAS (Institute for Advanced Study) Advisory Council
2023	Organizer, Workshop on Bayesian Statistics and Statistical Learning - New Directions in Algebraic Statistics, Institute for Mathematical and Statistical Innovation (IMSI), Chicago, USA
2022	Member, Program Committee, 2022 IMS International Conf. on Statistics and Data Science (ICSDS)

	Organizer, Workshop on Algebraic Structures in Statistical Methodology, Math. Forschungsinstitut Oberwolfach
2021–2027	Core Member, Munich Data Science Institute (MDSI)
2021–2024	Member, European Regional Committee, Bernoulli Society
	Member, Organizing Committee, SIAM Conf. on Applied Algebraic Geometry
	Member, Program Committee, International Conf. on Artificial Intelligence and Statistics
	Member, Senior Program Committee, Conf. on Uncertainty in Artificial Intelligence
	Organizer, Invited session on Graphical Causal Models at ISI World Congress
2020–2021	Co-organizer, Algebraic Statistics Online Seminar
2020	Member, Senior Program Committee, Conf. on Uncertainty in Artificial Intelligence
	Member, Program Committee, Workshop on Algebraic Statistics, University of Hawaii
2018–2019	Chair, Committee to Select Editors, Institute of Mathematical Statistics
2017–2019	Member, Council of the Institute of Mathematical Statistics
2017–2018	Member, Committee to Select Editors, Institute of Mathematical Statistics
	Member, Advisory board for Mathematics Research Communities Program, American Mathematical Society
2017–2018	Member, Program Committee, IMS Annual Meeting 2018
2017	Organizer, Workshop on Algebraic Statistics, Math. Forschungsinstitut Oberwolfach
2016	Organizer, AMS Math Research Communities on Algebraic Statistics, Snowbird, UT
2013	Organizer, Invited session on Singular Learning Theory, SIAM Conf. on Applied Algebraic Geometry, Fort Collins, CO
2012	Program Chair of the Institute of Mathematical Statistics for the 2012 WNAR Conf.
2011	Organizer, Invited session on Graphical Statistical Models, SIAM Conf. on Applied Algebraic Geometry, Raleigh, NC
2010–2011	Chair, Committee on Special Lectures, Institute of Mathematical Statistics
2010	Co-organizer, Workshop on Parameter Identification in Graphical Models, American Institute of Mathematics, Palo Alto
2008–2010	Member, Committee on Special Lectures, Institute of Mathematical Statistics
2008	Co-organizer, Seminar on Algebraic Statistics, Math. Forschungsinstitut Oberwolfach
	Organizing Committee member, Program on Algebraic Methods in Systems Biology and Statistics, Statistical and Applied Mathematical Sciences Institute (SAMSI)
2007	Organizer, Invited session on Graphical Models, Annual Meeting of the Western North American Region (WNAR) of the International Biometric Society
2004–2009	Member, Program Committee, Conf. on Uncertainty in Artificial Intelligence

Ph.D. Students:

2024	Philipp Dettling	Graphical Continuous Lyapunov Models
2024	Nils Sturma	Identifiability and Statistical Inference in Latent Variable Modeling
2023	Jun Wu	Homoscedasticity and feedback loops in graphical models
2022	Wenyu Chen	Causal structure learning in high dimensions (co-advised with Ali Shojaie)

2020	Shiqing Yu	Non-Gaussian graphical models: Estimation with score matching and causal discovery under zero-inflation (co-advised with Ali Shojaie)
2018	Amit Meir	Estimation and testing following model selection
	Y. Samuel Wang	Linear structural equation models with non-Gaussian errors: Estimation and discovery
	Luca Weihs	Parameter identification and assessment of independence in multivariate statistical modeling
	Chaoyu Yu	Adaptive statistical inference procedures for multigroup data (co-advised with Peter Hoff)
2017	Lina Lin	Methods for estimation and inference for high-dimensional models (co-advised with Ali Shojaie)
2016	Dennis Leung	Testing independence in high dimensions and identifiability of graphical models
	Andrew McDavid	Statistical hurdle models for single cell gene expression: Differential expressionand graphical modeling (co-advised with Raphael Gottardo)
2014	Chris Fox	Interpretation and inference of linear structural equation models
2012	Rina Foygel Barber	Prediction and model selection for high-dimensional data with sparse or low-rank structure (co-advised with Nati Srebro)
	Han Xiao	Simultaneous inference on sample covariances (co-advised with Wei-Biao Wu)
2010	Michael Finegold	Robust network inference with multivariate t-distributions
Current supervision:		David Strieder, Konstantin Göbler, Daniele Tramontano, Daniela Schkoda, Sarah Lumpp, Richard Schwank, Yurou Liang.

Conference and Workshop Presentations:

2024	Konrad Zuse School of Excellence in Reliable AI, Miesbach, GER
	Bernoulli-IMS 11th World Congress in Probability and Statistics 2024, Bochum, GER
2023	Stochastics Meeting Lunteren, NL
	TUM IGSSE Martini Colloquium
	Workshop on Algebraic Statistics for Ecological and Biological Systems, Institute for Mathematical and Statistical Innovation (IMSI), Chicago, USA
	Computations and Data in Algebraic Statistics, Oaxaca, MX (virtual)
	Causal Inference & Quantum Foundations Workshop, Perimeter Institute for Theoretical Physics, Toronto, CAN (virtual)
	16th German Probability and Statistics Days, University of Duisburg-Essen, Essen, GER
	Workshop on Mathematical Statistics in the Information Age, University of Freiburg, GER
2022	Workshop on Algebraic Structures in Statistical Methodology, Oberwolfach, GER
	ETH-UCPH-TUM Workshop on Graphical Models, Raitenhaslach, GER
	MaRDI Annual Workshop, Berlin, GER
	2022 IMS International Conference on Statistics and Data Scienc, Florence, IT
	Workshop on Re-thinking High-dimensional Mathematical Statistics, Oberwolfach, GER

2021 Lecture at the Mathematics in the Sciences Day, MPI MiS Leipzig, GER

Joint Statistical Meetings (virtual)

Workshop on High Dimensionality and Data Analysis, Hausdorff Center for Mathematics, Bonn, GER

Ethel Newbold Award lecture at the ISI World Statistics Congress, The Hague, NL (virtual)

Conference on Uncertainty in Artificial Intelligence (UAI2021, virtual)

MHC2021 Workshop on Mixtures, Hidden Markov Models, and Clustering, Paris, FR (virtual)

Keynote speaker at the 8th Channel Network Conference of the French, Belgian, British and Irish and Dutch Biometric Societies (virtual).

2020 International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2020, virtual)

Conference on Uncertainty in Artificial Intelligence (UAI2020, virtual)

TUM ICL Mathematics Workshop, TU Munich, GER

2019 Workshop on Foundations and New Horizons for Causal Inference, Oberwolfach, GER

Workshop on Graphical Models: Conditional Independence and Algebraic Structures, TU Munich, GER

Opening Conference on Varieties, Polyhedra, Computation, FU Berlin, GER

2018 IMS Annual Meeting, Vilnius, Lithuania

Workshop on Statistics in Complex Systems, Copenhagen, DK

2017 Workshop on Mathematical Methods of Modern Statistics, CIRM, Luminy, FR

Working Group on Model-Based Clustering, Perugia, IT

SIAM Conference on Applied Algebraic Geometry, Atlanta, GA, USA

Workshop on Graphical Models, Institute of Statistical Mathematics, Tokyo, JP

Workshop on Algebraic and Geometric Methods in Statistics, Institute of Statistical Mathematics, Tokyo, JP

2016 Royal Statistical Society, Read Paper, London, UK

Workshop on Computationally and Statistically Efficient Inference for Complex Large-scale Data, Oberwolfach, GER

Celebration of 60th Year of the University of Chicago's Department of Statistics

2015 Mathematical Society of Japan Seasonal Institute, Osaka

Working Group on Model-Based Clustering, Seattle, WA, USA

2014 Joint Statistical Meetings, Boston, MA, USA

Prague Stochastics, CZ

Abel Symposium on Statistical Analysis for High-Dimensional Data, NO

World Meeting of International Society for Bayesian Analysis (ISBA), Cancun, MX

2013 Joint Statistical Meetings, Montreal, CAN

SIAM Conference on Applied Algebraic Geometry, Fort Collins, CO, USA

Working Group on Model-Based Clustering, Bologna, IT

UW-Microsoft Research Machine Learning Day, Seattle, WA, USA

2012 NIPS 2012 (Neural Information Processing Systems), Lake Tahoe, USA

Algebraic Statistics in the Alleghenies, Penn State University, PA, USA

NSF Workshop on High-Dimensional Data, Yale University, New Haven, CT, USA

Midwest Statistics Research Colloquium, University of Wisconsin, Madison, WI, USA

Statistics Winter Workshop, University of Florida, Gainesville, FL, USA

2011 Workshop on Singular Learning Theory, American Institute of Mathematics (AIM), Palo Alto, CA, USA

SIAM Conference on Applied Algebraic Geometry, Raleigh, NC, USA

ISI World Statistics Congress, Dublin, IE

Humboldt Kolleg, Gothenburg, SE

International Indian Statistical Association Conference, Raleigh, NC, USA

Workshop on Solving Polynomial Equations, Stockholm, SE

2010 Lecturer at 3^e cycle romand de statistique et de probabilités appliquées (3 lectures), CH

Special session on Applications of Algebraic Geometry, AMS Joint Math Meetings, San Francisco, CA, USA

NIPS 2010 (Neural Information Processing Systems), Vancouver, CAN

DREAM 5 (Dialogue for Reverse Engineering Assessments and Methods), New York, NY, USA

2008 Opening workshop, Program on Algebraic Methods in Systems Biology and Statistics, Statisticaland Applied Mathematical Sciences Institute, NC, USA

COMPSTAT 2008, Porto, PT

Workshop on Methods for Analyzing Longitudinal Data, Gothenburg, SE

7th World Congress in Probability and Statistics, Singapur, SGP

Symposium on Mathematical Aspects of Graphical Models, Durham, UK

2007 Special session on Combinatorial Enumeration, Optimization, Geometry, and Statistics, AMS Fall Southeastern Section Meeting, Murfreesboro, TN, USA

Special session on Numerical and Symbolic Techniques in Algebraic Geometry and Its Applications, AMS Fall Central Section Meeting, Chicago, IL, USA

Workshop on Theoretical Effectivity and Practical Effectivity of Groebner Bases, Research Institute for Mathematical Sciences, Kyoto, JP

Workshop on Applications in Biology, Dynamics, and Statistics, Institute for Mathematics and its Applications, Minneapolis, MN, USA

2006 Bayesian Focus Week, Statistical and Applied Mathematical Sciences Institute, NC, USA

Prague Stochastics, CZ

Annual Meeting of the Institute of Mathematical Statistics, Rio de Janeiro, BR

European Meeting of Statisticians, Torun, PL

Session on Algebraic Statistics, Joint Mathematics Meetings, San Antonio, TX, USA

2005 Workshop on Algebraic Statistics and Computational Biology, Clay Mathematics Institute, Boston, MA, USA

Workshop on Multivariate Systems with Independence Structures, Gothenburg, SE

RECOMB 2015, Boston, MA, USA

2004 20th Conference on Uncertainty in Artificial Intelligence, Banff, CAN (plenary talk)

6th Bernoulli World Congress, Barcelona, ES

Workshop on Algorithmic, Combinatorial and Applicable Real Algebraic Geometry, MathematicalSciences Research Institute (MSRI), Berkeley, CA, USA

Workshop on Analysis and Design of Electoral Systems, Oberwolfach, GER

2003 Workshop on Computational Algebraic Statistics, American Institute of Mathematics (AIM), Palo Alto, CA, USA

Workshop on Computational Aspects of Graphical Models, Aalborg, DK

19th Conference on Uncertainty in Artificial Intelligence (UAI), Acapulco, MX

Joint Statistical Meetings, San Francisco, CA, USA

First Joint Meeting of the Institute of Mathematical Statistics and the International Society for Bayesian Analysis, Puerto Rico, USA

2002 Annual Meeting of the Institute of Mathematical Statistics, Banff, CAN

Department Seminars:

2024 Universität Augsburg, GER; TUM Numerical Mathematics; Universität Zürich, CH; EPFL Lausanne, CH

2023 University of Washington, Seattle, WA, USA; University of Economics and Business, Vienna, AT; Leibniz Institute for Prevention Research and Epidemiology, Bremen, GER

2022 Ruhr-Universität Bochum, GER; Université Libre de Bruxelles, BE; Online Causal Inference Seminar; TU Delft, NL; Warwick CRiSM Seminar; Applied Algebra and Analysis Online Seminar (TU Braunschweig, GER, Universität Osnabrück, GER)

2021 KTH Stockholm, SE (online); Math Machine Learning Seminar MPI MiS + UCLA (online)

2020 Columbia University, New York, NY, USA; University of Toronto, CAN (online)

2019 Ludwig-Maximilians-Universität, Munich, GER

2018 University of Copenhagen, DK; Ecole Polytechnique, Paris, FR

2017 Stanford University, CA, USA; Institute of Statistical Mathematics, JP; Keio University, Yokohama, JP; Academia Sinica, TW; Booth School of Business, University of Chicago, IL, USA; Texas A&M, TX, USA

2016 Cornell University, Ithaca, NY, USA; Duke University, Durham, NC, USA; University of Washington, Seattle, WA, US.A

2015 Princeton University, NJ, USA; University of Kentucky, Lexington, KY, USA

2013 Georgia Tech, Atlanta, GA, USA; Universität Augsburg, GER

2012 Universität Wien, AT; Universität Regensburg, GER; University of Washington, Seattle, WA, USA

2011 University of Washington, Seattle, WA, USA; Universität Stuttgart, GER; Universität Mannheim, GER; University of Perugia, IT

2010 University of California, Davis, CA, USA; University of Chicago (Business School), IL, USA

2009 North Carolina State University (Math), Raleigh, NC, USA ; Ohio State University, Columbus, OH, USA

2008 University of California, Berkeley, CA, USA; University of Washington, Seattle, WA, USA; University of Illinois at Chicago, IL, USA; Max-Planck Institute Leipzig, GER; Research Institute for Symbolic Computation, Linz, AT

2007 Northern Illinois University, DeKalb, IL, USA; Purdue University, West Lafayette, IN, USA; University of Kentucky, Lexington, KY, USA; University of Illinois at Urbana-Champaign, IL, USA; Université de Montréal & McGill University, Quebec, CAN

2006 York University, Toronto, CAN; University of Wisconsin, Madison (Biostatistics), WI, USA

2005 Universität Heidelberg, GER; ETH Zürich, CH; University of California, Berkeley (Biostatistics), CA, USA; University of Illinois at Chicago, IL, USA

2004 University of Pennsylvania, Philadelphia, PA, USA; University of California, Davis, CA, USA; University of Minnesota, Minneapolis, MN, USA; Universityof Chicago, IL, USA; Carnegie Mellon University, Pittsburgh, PA, USA; University of Michigan, Ann Arbor, MI, USA; University of California, Irvine, CA, USA; Harvard University, Cambridge, MA, USA; Columbia University, New York, NY, USA; University of Toronto, ON, CAN; Stanford University, CA, USA; Universityof British Columbia, Vancouver, BC, CAN

2003 University of Washington (Electrical Engineering), Seattle, WA, USA; Universität Augsburg, GER

2002 Universität Mainz, GER; University of Washington, Seattle, WA, USA

Mathias Drton – Publications

Books:

2 Handbook of Graphical Models (with Marloes Maathuis, Steffen Lauritzen, Martin Wainwright). Chapman & Hall/CRC Handbooks of Modern Statistical Methods, 2019.

1 Lectures on Algebraic Statistics (with Bernd Sturmfels, Seth Sullivant). Oberwolfach Seminars, Vol. 39. Birkhäuser Verlag, Basel, 2009.

Articles (in Journals and Edited Volumes):

98 Identifiability of homoscedastic linear structural equation models using algebraic matroids (with Benjamin Hollering, Jun Wu). *Advances in Applied Mathematics*, **163**, Part B, (2025).

97 Distribution-free tests of multivariate independence based on center-outward quadrant, Spearman, Kendall, and van der Waerden statistics (with Hongjian Shi, Marc Hallin, Fang Han). *Bernoulli*, **31**, no. 1, (2025): 106–129.

96 High-dimensional undirected graphical models for arbitrary mixed data (with Konstantin Göbler, Sach Mukherjee, Anne Miloschewski). *Electronic Journal of Statistics*, **18**, no. 1, (2024): 2339–2404.

95 Rational maximum likelihood estimators of Kronecker covariance matrices (with Alexandros Grosdos, Andrew McCormack). *Algebraic Statistics*, **15**, no. 1, (2024): 145–164.

94 Testing many constraints in possibly irregular models using incomplete U-statistics (with Nils Sturma, Dennis Leung). *Journal of the Royal Statistical Society Series B: Statistical Methodology*, (2024): 1–26.

93 On Azadkia—Chatterjee's conditional dependence coefficient (with Hongjian Shi, Fang Han). *Bernoulli*, **30**, no. 2, (2024): 851–877.

92 Causal Discovery with Unobserved Confounding and Non-Gaussian Data (with Y. Samuel Wang). *Journal of Machine Learning Research*, **24**, paper no. 271, (2023): 1–61. [Tom Ten Have Award of the Society for Causal Inference to Y. Samuel Wang]

91 Assessable and interpretable sensitivity analysis in the pattern graph framework for nonignorable missingness mechanisms (with Alireza Zamanian, Narges Ahmidi). *Statistics in Medicine*, **42**, no. 29, (2023): 5419–5450.

90 Confidence in causal inference under structure uncertainty in linear causal models with equal variances (with David Strieder). *Journal of Causal Inference*, **11**, no. 1, (2023).

89 Identifiability in Continuous Lyapunov Models (with Philippp Dettling, Roser Homs, Carlos Améndola, Niels Richard Hansen). *SIAM Journal on Matrix Analysis and Applications*, **44**, no. 4, (2023): 1799–1821.

88 Partial Homoscedasticity in Causal Discovery with Linear Models (with Jun Wu). *IEEE Journal on Selected Areas in Information Theory*, **4**, (2023): 639–650.

87 Learning Linear Gaussian Polytree Models With Interventions (with Daniele Tramontano, Leonard Waldmann, Eliana Duarte). *IEEE Journal on Selected Areas in Information Theory*, **4**, (2023): 569–578.

86 Causal structural learning via local graphs (with Wenyu Chen, Ali Shojaie). *SIAM Journal on Mathematics of Data Science*, **5**, no. 2, (2023): 280–305.

85 Discussion of "A note on universal inference" by Timmy Tse and Anthony Davison (with Hongjian Shi, David Strieder). *Stat*, **12**, no. 1, (2023): e574.

84 Third-order moment varieties of linear non-Gaussian graphical models (with Carlos Améndola, Alexandros Grosdos, Roser Homs, Elina Robeva). *Information and Inference: A Journal of the IMA*, **12**, no. 3, (2023): 1405–1436.

83 Fine-grained network traffic prediction from coarse data (with Krzysztof Rusek). *Austrian Journal of Statistics*, **52**, no. 3, (2023): 114–123.

82 On the choice of the splitting ratio for the split likelihood ratio test (with David Strieder). *Electronic Journal of Statistics*, **16**, no. 2, (2022): 6631–6650.

81 Half-trek criterion for identifiability of latent variable models (with Rina Foygel Barber, Nils Sturma, Luca Weihs). *Annals of Statistics*, **50**, no. 6, (2022): 3174–3196.

80 Generalized score matching for general domains (with Shiqing Yu, Ali Shojaie). *Information and Inference: A Journal of the IMA*, **11**, no. 2, (2022): 739–780.

79 On universally consistent and fully distribution-free rank tests of vector independence (with Hongjian Shi, Marc Hallin, Fang Han). *Annals of Statistics*, **50**, no. 4, (2022): 1933–1959.

78 On the power of Chatterjee rank correlation (with Hongjian Shi, Fang Han). *Biometrika*, **109**, no. 2, (2022): 317–333.

77 Distribution-free consistent independence tests via center-outward ranks and signs (with Hongjian Shi, Fang Han). *Journal of the American Statistical Association*, **117**, no. 537, (2022): 395–410.

76 Existence and uniqueness of the Kronecker covariance MLE (with Satoshi Kuriki, Peter Hoff). *Annals of Statistics*, **49**, no. 5, (2021): 2721–2754.

75 CorDiffViz: an R package for visualizing multi-omics differential correlation networks (with Shiqing Yu, Daniel E. L. Promislow, Ali Shojaie). *BMC Bioinformatics*, **22**, article 486, (2021).

74 High dimensional independence testing with maxima of rank correlations (with Fang Han, Hongjian Shi). *Annals of Statistics*, **48**, no. 6, (2020): 3206–3227.

73 Nested covariance determinants and restricted trek separation in Gaussian graphical models (with Elina Robeva, Luca Weihs). *Bernoulli* **26**, no. 4, (2020): 2503–2540.

72 Genetic and metabolomic architecture of variation in diet restriction-mediated lifespan extension in Drosophila (with Kelly Jin; Kenneth A. Wilson; Jennifer N. Beck; Christopher S. Nelson; George W. Brownridge III; Benjamin R. Harrison; Danijel Djukovic; Daniel Raftery; Rachel B. Brem; Shiqing Yu; Ali Shojaie; Pankaj Kapahi; Daniel Promislow). *PLOS Genetics* **10**, no. 7, (2020): e1008835.

71 High-dimensional causal discovery under non-Gaussianity (with Y. Samuel Wang). *Biometrika* **107**, no. 1, (2020): 41–59.

70 On causal discovery with equal variance assumption (with Wenyu Chen, Y. Samuel Wang). *Biometrika* **106**, no. 4, (2019): 973–980.

69 Generalized score matching for non-negative data (with Shiqing Yu, Ali Shojaie). *Journal of Machine Learning Research* **20**, paper no. 76, (2019): 1–70.

68 Graphical models for zero-inflated single cell gene expression (with Andrew McDavid, Raphael Gottardo, Noah Simon). *Annals of Applied Statistics* **13**, no. 2, (2019): 848–873.

67 The maximum likelihood threshold of a path diagram (with Chris Fox, Andreas Käufl, Guillaume Pouliot). *Annals of Statistics* **47**, no. 3, (2019): 1536–1553.

66 Computation of maximum likelihood estimates in cyclic structural equation models (with Chris Fox, Y. Samuel Wang). *Annals of Statistics* **47**, no. 2, (2019): 663–690.

65 Algebraic problems in structural equation modeling. *The 50th Anniversary of Gröbner Bases*, Advanced Studies in Pure Mathematics, Mathematical Society of Japan, (2018): 35–86.

64 Symmetric rank covariances: a generalised framework for nonparametric measures of dependence (with Luca Weihs, Nicolai Meinshausen). *Biometrika* **105**, no. 3, (2018): 547–562.

63 Robust and sparse Gaussian graphical modeling under cell-wise contamination (with Shota Katayama, Hironori Fujisawa). *Stat* **7**, no. 1, (2018): e181.

62 Determinantal generalizations of instrumental variables (with Luca Weihs, Bill Robinson, Emilie Dufresne, Jennifer Kenkel, Kaie Kubjas, Reginald L. McGee II, Nhan Nguyen, Elina Robeva). *Journal of Causal Inference* **6**, no. 1, (2018).

61 Testing independence in high dimensions with sums of squares of rank correlations (with Dennis Leung). *Annals of Statistics* **46**, no. 1, (2018): 280–307.

60 Empirical likelihood for linear structural equation models with dependent errors (with Y. Samuel Wang). *Stat* **6**, no. 1, (2017): 434–447.

59 A Bayesian information criterion for singular models (with Martyn Plummer). *Journal of the Royal Statistical Society Series B* **79**, (2017): 323–380, discussion paper.

58 Structure learning in graphical modeling (with Marloes Maathuis). *Annual Review of Statistics and Its Application* **4**, (2017): 365–393.

57 Covariate-adaptive clustering of exposures for air pollution epidemiology cohorts (with Joshua Keller, Timothy Larson, Joel Kaufman, Dale Sandler, Adam Szpiro). *Annals of Applied Statistics* **11**, no. 1, (2017): 93–113.

56 Marginal likelihood and model selection for Gaussian latent tree and forest models (with Shaowei Lin, Luca Weihs, Piotr Zwiernik). *Bernoulli* **23**, no. 2, (2017): 1202-1232.

55 Large-sample theory for the Bergsma-Dassios sign covariance (with Preetam Nandy, Luca Weihs). *Electronic Journal of Statistics* **10**, no. 2, (2016): 2287–2311.

54 Generic identifiability of linear structural equation models by ancestor decomposition (with Luca Weihs). *Scandinavian Journal of Statistics* **43**, (2016): 1035–1045.

53 Estimation of high-dimensional graphical models using regularized score matching (with Lina Lin, Ali Shojaie). *Electronic Journal of Statistics* **10**, no. 1, (2016): 806–854.

52 Identifiability of directed Gaussian graphical models with one latent source (with Dennis Leung, Hisayuki Hara). *Electronic Journal of Statistics* **10**, no. 1, (2016): 394–422.

51 Order-invariant prior specification in Bayesian factor analysis (with Dennis Leung). *Statistics & Probability Letters* **111**, (2016): 60–66.

50 Efficient computation of the Bergsma-Dassios sign covariance (with Luca Weihs, Dennis Leung). *Computational Statistics* **31**, no. 1, (2016): 315–328.

49 Laplace approximation in high-dimensional Bayesian regression (with Rina Foygel Barber, Kean Ming Tan). *Statistical Analysis for High-Dimensional Data: The Abel Symposium 2014*, Springer International Publishing, Cham, (2016): pp. 15–36 .

48 Maximum likelihood estimates for Gaussian mixtures are transcendental (with Carlos Amendola, Bernd Sturmfels). In *Mathematical Aspects of Computer and Information Sciences. MACIS 2015*, Lecture Notes in Computer Science, vol. 9582. Springer, Cham, (2016): pp. 579–590.

47 Wald tests of singular hypotheses (with Han Xiao). *Bernoulli* **22**, no. 1, (2016): 38–59.

46 High-dimensional Ising model selection with Bayesian information criteria (with Rina Foygel Barber). *Electronic Journal of Statistics* **9**, (2015): 567–607.

45 Adaptive rhythm sequencing: A method for dynamic rhythm classification during CPR (with Heemun Kwok, Jason Coult, Thomas Rea, Lawrence Sherman). *Resuscitation* **91**, (2015): 26–31.

44 On the causal interpretation of acyclic mixed graphs under multivariate normality (with Chris Fox, Andreas Käufl). *Linear Algebra and Its Applications* **473**, (2015): 93–113.

43 Robust Bayesian graphical modeling using Dirichlet t-distributions (with Michael Finegold). *Bayesian Analysis* **9**, no. 3, (2014): 521–550, with discussion, rejoinder pp. 591–596.

42 PC algorithm for Gaussian copula graphical models (with Naftali Harris). *Journal of Machine Learning Research* **14**, (2013): 3365–3383.

41 Half-trek criterion for generic identifiability of linear structural equation models (with Rina Foygel, Jan Draisma). *Annals of Statistics* **40**, no. 3, (2012): 1682–1713.

40 Correction on "Moments of minors of Wishart matrices" (with Aldo Goia). *Annals of Statistics* **40**, no. 2, (2012): 1283–1284.

39 Maximum likelihood degree of variance component models (with Elizabeth Gross, Sonja Petrovic). *Electronic Journal of Statistics* **6**, (2012): 993–1016.

38 Wisdom of crowds for robust gene network inference (as part of the 'DREAM5 Consortium'). *Nature Methods* **9**, (2012): 796–804.

37 SPIn: model selection for phylogenetic mixtures via linear invariants (with Anna Kedzierska, Roderic Guigo, and Marta Casanellas). *Molecular Biology and Evolution* **29**, no. 3, (2012): 929–937.

36 Global identifiability of linear structural equation models (with Rina Foygel, Seth Sullivant), *Annals of Statistics* **39**, no. 2, (2011): 865–886.

35 Robust graphical modeling of gene networks using classical and alternative t-distributions (with Michael Finegold). *Annals of Applied Statistics* **5**, no. 2A, (2011): 1057–1080.

34 Quantifying the failure of bootstrap likelihood ratio tests (with Ben Williams). *Biometrika* **98**, no. 4, (2011): 919–934.

33 On a parametrization of positive semidefinite matrices with zeros (with Josephine Yu), *SIAM Journal on Matrix Analysis and Applications* **31**, no. 5, (2010): 2665–2680.

32 A geometric interpretation of the characteristic polynomial of reflection arrangements (with Carly Klivans). *Proceedings of the American Mathematical Society* **138**, (2010): 2873–2887.

31 Smoothness of Gaussian conditional independence models (with Han Xiao). In *Algebraic Methods in Statistics and Probability II*, (Eds. M. Viana and H. Wynn), Contemporary Mathematics, vol. 516, Amer. Math. Soc., Providence, RI, (2010): pp. 155–177.

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