# Alexander Aue

## PERSONAL DATA Ā

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|---|---|
| Professor | Phone: +1–530–554–1555 |
| Department of Statistics | Fax: +1–530–752–7099 |
| University of California, Davis | Email: `aaue@ucdavis.edu` |
| Davis, CA 95616 | Web: `www.stat.ucdavis.edu/~alexaue` |

## EDUCATION

Ph.D., Universität zu Köln, Germany, 2004, Applied Mathematics
Diplom, Philipps-Universität Marburg, Germany, 2000, Mathematics

## PROFESSIONAL EXPERIENCE

### Academic Positions

| | | |
|---|---|---|
| 2017–present | University of California, Davis | Professor |
| | 2018–2023 | Department Chair |
| | 2019–present | Co-Director, Center for Data Science and AI |
| | 2021–present | Program Director, Data Science Major |
| 2011–2017 | University of California, Davis | Associate Professor |
| | 2013–2016 | Vice Chair for Undergraduate Affairs |
| 2008–2011 | University of California, Davis | Assistant Professor |
| 2006–2007 | Clemson University | Assistant Professor |
| 2004–2006 | University of Utah | Assistant Professor (Lecturer) |

### Visiting Positions

| | |
|---|---|
| 08–09/2016 | Visiting Scientist |
| | Department of Electrical Engineering and Computer Science, University of Michigan |
| 02–03/2016 | Simons Visiting Professor |
| | Mathematical Research Institute Oberwolfach and Ruhr-Universität Bochum, Germany |
| 01–02/2014 | Visiting Fellow |
| | Isaac Newton Institute for Mathematical Sciences, University of Cambridge, UK |
| 06–07/2024 | Visiting Professor |
| | Department of Statistics, University of Bologna, Italy |

### Professional Society Memberships

| | |
|---|---|
| 2000–present | Deutsche Mathematiker-Vereinigung |
| 2005–present | Institute of Mathematical Statistics |
| 2005–present | Bernoulli Society for Mathematical Statistics and Probability |
| 2007–present | American Statistical Association |
| 2008–2022 | The Econometric Society |
| 2018–present | The American Association for the Advancement of Science |

## Honors and Awards

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|---|---|
| 2013 | Econometric Theory Multa Scripsit Award |
| 2016 | Elected Fellow of the American Statistical Association |
| 2016 | UC Davis Chancellor's Award for Excellence in Mentoring Undergraduate Research |
| 2018 | Elected Fellow of the Institute of Mathematical Statistics |
| 2024 | Elected Fellow of the American Association for the Advancement of Science |

## UNIVERSITY AND PROFESSIONAL SERVICE

### Editorial Service

Co-Editor, *Journal of Time Series Analysis*, 2023–present
Co-Editor, *Sankhya A*, 2025–present
Associate Editor, *Journal of Computational and Graphical Statistics*, 2012–present
Associate Editor, *Journal of the Royal Statistical Society, Series B*, 2013–2021
Associate Editor, *Journal of Statistical Planning and Inference*, 2014–2022
Associate Editor, *Electronic Journal of Statistics*, 2016–present
Associate Editor, *Journal of Business and Economic Statistics*, 2016–2019
Associate Editor, *The Annals of Statistics*, 2018–2024
Associate Editor, *Journal of Time Series Analysis*, 2019–2023
Editorial Board Reviewer, *Journal of Machine Learning Research*, 2020–present

### Other Service to Profession

Ordinary Council Member, *Bernoulli Society*, 2017–2021.
Member, ASA Committee on Fellows, 2022–24.
Academic Partner, EPSRC Centre for Doctoral Training in Statistics and ML
    at Imperial College and Oxford University, 2024–2029.
Advisory Board Member, Detecting Anomalous Structure in Streaming Data Settings
    at Lancaster University, 2024–2029.

### Conference Organisation

*Second International Workshop in Sequential Methodologies 2009*, Troyes, France,
Member of the Scientific Program Committee.

*2009 NBER-NSF Time Series Conference*, Davis, CA,
Member of the local Organizing Committee.

*UC Davis Statistical Sciences Symposium 2013: Complex and Massive Data*, Davis, CA,
Member of the Organizing Committee.

*2014 German Open Conference on Probability and Statistics (Stochastik-Tage)*, Ulm, Germany,
Organizer for Section 12: "Statistics of Stochastic Processes".

*2014 International Indian Statistical Association Conference*, Riverside, CA,
Member of the Organizing Committee.

*European Meeting of Statisticians 2015*, Amsterdam, Netherlands,

Invited Session Organizer.

*Recent Developments in Statistics for Complex Dependent Data*, 2015, Loccum, Germany,
Invited Paper Session Organizer.

*2016 Joint Statistical Meetings*, Chicago, IL,
Program Chair of the IMS Contributed Papers Sessions.

*10th International Conference on Computational and Methodological Statistics*, 2017, London, UK,
Organized Invited Session Organizer.

*11th International Conference on Computational and Methological Statistics*, 2018, Pisa, Italy,
Member of Scientific Program Committee and Organized Invited Session Organizer.

*Bringing Statistical Methodology to Big Data Problems in Agricultural and Environmental Economics*,
2019, Davis, CA, Member of Organizing Committee.

*Third International Congress on Actuarial Science and Quantitative Finance*, 2019, Manizales, Colombia,
Invited Session Organizer.

*European Meeting of Statisticians, 2019*, Palermo, Italy,
Invited Session Organizer.

*ISI Statistics World Congress, 2019*, Kuala Lumpur, Malaysia,
Invited Session Organizer.

*12th International Conference on Computational and Methodological Statistics*, 2019, London, UK,
Organized Invited Session Organizer.

*2020 Conference on Statistical Learning and Data Science/Nonparametric Statistics*, 2020, Irvine, CA,
Invited Session Organizer (two sessions; cancelled due to Covid)

*13th International Conference on Computational and Methodological Statistics*, 2020, London, UK,
Organized Invited Session Organizer.

*2021 Joint Statistical Meetings*, Seattle, WA,
Program Chair of the ASA Section on Nonparametric Statistics.

*16th International Conference on Computational and Methodological Statistics*, 2021, London, UK,
Organized Invited Session Organizer.

*5th International Symposium on Nonparametric Statistics*, 2022, Paphos, Cyprus,
Invited Session Organizer.

*17th International Conference on Computational and Methodological Statistics*, 2023, Berlin, Germany,
Organized Invited Session Organizer.

*Frontiers of Functional Data Analysis: Challenges and Opportunities in the Era of AI*, 2024, Singapore,
Member of the IMS-NUS Organizing Committee.

*18th International Conference on Computational and Methodological Statistics*, 2024, London, UK,
Organized Invited Session Organizer.

*6th International Symposium on Nonparametric Statistics*, 2024, Braga, Portugal,
Invited Session Organizer.

## Grant Reviews

| | |
|---|---|
| Panelist | National Science Foundation, Division of Mathematical Sciences |
| Reviewer | Natural Sciences and Engineering Research Council of Canada |
| Reviewer | Fonds quebecois de la recherche sur la nature et les technologies |
| Reviewer | National Security Agency |
| Reviewer | Hong Kong Research Council |
| Reviewer | Swiss National Science Foundation |

## Departmental, GPS & UCD Committees

| | | |
|---|---|---|
| Member | Graduate Admissions Committee | 2008–10, 2012–13 |
| Member | L&S Assembly Representative | 2008–09 |
| Member | Hiring Committee | 2008–2009, 2012–2013 |
| Organizer | Statistics Seminar | Spring 2009, Spring 2014 |
| Member | Academic Senate Assembly Representative | 2010–2013 |
| Member | Membership Committee | 2011–2018 |
| Chair | Faculty Teaching Evaluations Committee | 2011–2012, 2014–2023 |
| Reviewer | Graduate Studies Internal Fellowships | 2012 |
| Chair | Undergraduate Matters | 2012–2017 |
| | Undergraduate Adviser | 2012–2017 |
| Member | iAMSTEM Hub Faculty Advisory Committee | 2013–2014 |
| Member | MS Admissions Committee | 2013–present |
| Member | Academic Advising Council | 2014–present |
| Member | Data Science Committee | 2014–present |
| Chair | Statistics-Mathematics Strategy Committee | 2014–present |
| Member | Executive Committee (elected) | 2014–2016 |
| Member | TA Committee | 2015–present |
| Member | Web Committee | 2015–present |
| Member | Faculty Advisory Board, Educational Effectiveness Hub | 2015–present |
| Member | Executive Committee (elected), GGAM | 2017–2018 |
| Chair-Elect | MPS Steering Committee | 2017–2018 |
| Member | Associate Dean Recruitment Advisory Committee | 2019 |
| Chair | UC Davis Data Science Steering Committee | 2019–2021 |
| Member | Ad Hoc Committee, Music Graduate Program Review | 2022 |
| Chair | Ad Hoc Committee, Psychology Graduate Program Review | 2023 |
| Chair | Educational Policy and Curriculum Committee | 2023–present |
| Member | L&S Strategic Visioning Committee | 2024 |
| Chair | Chair Selection Committee, Department of Economics | 2024 |
| Member | Confidential Review Committee for Dean Reappointment | 2024 |

## Systemwide Committees

| | | |
|---|---|---|
| Liaison | UC Education Abroad Program | 2014–2022 |
| Member | BOARS, UCEP & UCOPE Advisory Workgroup | 2014–2022 |
| Member | BOARS Area C Workgroup | 2023–present |

## Referee

*Annals of Applied Statistics, Annals of Statistics, Annals of the Institute of Statistical Mathematics, Applied Stochastic Models in Business and Industry, Austrian Journal of Statistics, Biometrika, Bernoulli, Communications in Statistics—Simulation and Computation, Communications in Statistics—Theory and Methods, Computational Statistics & Data Analysis, Econometric Theory, Econometrica, Economics Bulletin, Extremes, IEEE Transactions on Knowledge and Data Engineering, IEEE Transactions on Signal Processing, Journal of Applied Econometrics, Journal of Business & Economic Statistics, Journal of Econometrics, Journal of Financial Econometrics, Journal of Machine Learning Research, Journal of Multivariate Analysis, Journal of Probability and Statistics, Journal of Statistical Computation and Simulation, Journal of Statistical Planning and Inference, Journal of the American Statistical Association, Journal of the Royal Statistical Society, Series B, Journal of Time Series Analysis, Journal of Time Series Econometrics, Lithuanian Mathematics Journal, Mathematics and Computers in Simulation, Probability and Mathematical Statistics, Oxford Bulletin of Economics and Statistics, Rocky Mountain Journal of Mathematics, Scandinavian Journal of Statistics, Statistica Sinica, Statistical Modelling: An International Journal, Statistical Science, Sankhya: The Indian Journal of Statistics, Statistics, Statistics & Probability Letters, Statistics and Its Interface, Stochastic Processes and Their Applications, Test.*

## Other Reviews

External reviewer for promotion to tenure and associate professor, and to full professor.

## SPONSORED RESEARCH

[1] Monitoring structural changes in dynamic time series models,
National Science Foundation DMS-0604670,
Co-Principal Investigator, $ 160,002, 2006–2009.

[2] Monitoring structural changes in dynamic time series models,
National Science Foundation, DMS-0652420 (Supplemental Funding),
Co-Principal Investigator, $ 20,958, 2007–2009.

[3] Topics in nonlinear and functional time series,
National Science Foundation DMS-0905400,
Co-Principal Investigator, $ 250,000, 2009–2012.

[4] Functional linear models and functional time series,
National Science Foundation DMS-1209226,
Principal Investigator, $ 200,000, 2012–2015.

[5] Statistical inference for functional and high-dimensional time series,
National Science Foundation DMS-1305858,
Co-Principal Investigator, $ 200,000, 2013–2016.

[6] Random matrix approach to high-dimensional time series,
National Science Foundation DMS-1407530,
Co-Principal Investigator, $ 330,000, 2014–2017.

[7] Spatial-temporal modeling for the assessment of complex environmental monitoring data,
California Department of Pesticide Regulation,
Principal Investigator, $ 150,000, 2015–2018.

[8] Data driven evaluation of pesticide signal observed in the aquatic environment,
California Department of Pesticide Regulation,
Co-Principal Investigator, $ 119,997, 2018–2020.

[9] UC Davis Center for Data Science and Artificial Intelligence Research,
Office of Research, University of California, Davis,
Co-Director, $ 2,000,000, 2019–2022.

[10] HDR TRIPODS: UC Davis TETRAPODS Institute of Data Science,
National Science Foundation CCF-1934568,
Senior Personnel and Steering Committee Member, $ 1,500,000, 2019–2024.

## GRADUATE STUDENT ADVISING

### Ph.D. Graduates

[1] Ming Zhong (with Thomas Lee), June 2012,
*Break point estimation and variable selection in quantile regressions*.
(First job: Demand Media Inc., Los Angeles, CA;
Currently: Machine Learning Scientist, Apple, Seattle, WA)

[2] Lu Wang (with Prabir Burman), December 2012,
*Generalized exponential prediction for time series analysis*.
(First job: Manager, Ernst & Young, New York, NY;
Currently: Partner/Principal, Ernst & Young, New York, NY)

[3] Christopher Dienes, April 2013,
*On-line monitoring in linear time series models*.
(First job: Mathematical Statistician, Centers for Disease Control and Prevention, Hyattsville, ML;
Currently: Senior Data Scientist, Amazon, Boulder, CO)

[4] Kimihiro Noguchi (with Prabir Burman), April 2013,
*Exploratory analysis and modeling of financial time series*.
(First job: Visiting Assistant Professor, Department of Statistics, Colorado State University;
Currently: Professor, Department of Mathematics, Western Washington University)

[5] Haoyang Liu (GGAM, with Debashis Paul), September 2013,
*Spectral analysis of high-dimensional time series*.
(First job: Assistant Professor, Department of Finance, Florida State University;
Currently: Principal Research Economist, Federal Reserve Bank, Dallas, TX)

[6] Haoying Meng (with Prabir Burman), May 2016,
*Spatio-temporal modeling and prediction of house prices*.
(First job: Credit Risk Analyst, Union Bank, San Francisco, CA;
Currently: Audit Director, CIBC US, Chicago, IL)

[7] Rex Cheung (with Thomas Lee), May 2017,
*Statistical machine learning applications in time series, network, and partition-wise models*.
(First job: Assistant Professor, Department of Decision Sciences, San Francisco State University;
Currently: Data Science Manager, Meta, Menlo Park, CA)

[8] Ozan Sönmez, May 2018,
*Structural breaks in functional time series*.
(First job: Union Bank, San Francisco, CA;
Currently: Data Scientist, Bayer, San Francisco, CA)

[9] Jamshid Namdari (with Debashis Paul), May 2018,
*Estimation of spectral distributions of a class of high-dimensional linear processes*.
(First job: Lecturer, Department of Statistics, UC Davis;
Currently: Postdoc, Emory University, Atlanta, GA)

[10] Haoran Li (with Debashis Paul), May 2019,
*High dimensional hypothesis testing via spectral shrinkage*.
(First job: Assistant Professor (Limited-term), Department of Statistics, Columbia University, NY;
Currently: Assistant Professor, Department of Statistics, Auburn University, Auburn, AL)

[11] Shuhao Jiao, May 2019,
*Prediction methodologies for stationary functional time series*.
(First job: Postdoc, KAUST; Currently: Assistant Professor, CUHK)

[12] Andrew Blandino (with Miles Lopes), July 2021,
*Some bootstrap methods for regression and time series*.
(First & current job: Statistician, Stat Lab, Department of Statistics, UC Davis)

[13] Samayita Bhattacharjee (with Prabir Burman), June 2024,
*Estimation of prediction error and stochastic volatility model for functional time series*.
(First & current job: Senior Data Scientist, Huntington National Bank, Columbus, OH)

[14] Tianke Li, December 2024,
*Diagnostic checks in functional time series*.
(First and current job: Applied Scientist, Amazon, Seattle, WA)

[15] Yishan Huang, Ph.D. Candidate, current (with Thomas Lee).

[16] Lingyou Pang, Ph.D. Candidate, current.

[17] Santosh Kandel, Ph.D. Candidate, current (with Prabir Burman).

[18] Xinyi Wang, Ph.D. Student, current.

## Ph.D. Oral Qualifying Exam Committee Member for

[1] Daniel Sultana, with Prabir Burman and Debahis Paul, 2008.

[2] Michael McAssey, with Fushing Hsieh, 2008.

[3] Yuchen Chao, with Boris Jeremić (Civil and Environmental Engineering), 2009.

[4] Changjie Ma, with Rituparna Sen, 2009.

[5] Jiani Mou, with Jiming Jiang, 2009.

[6] Rongqi Chen, with Wolfgang Polonik, 2009.

[7] Kehui Chen, with Hans-Georg Müller, 2009 (Chair).

[8] Yinhong Weng, with Prabir Burman and Wolfgang Polonik, 2009 (Chair).

[9] Wanli Qiao, with Wolfgang Polonik, 2009 (Chair).

[10] Patrick Ji, with Jay Lund (Civil and Environmental Engineering), 2009.

[11] Jinjiang He, with Jane-Ling Wang, 2010.

[12] Apratim Ganguly, with Wolfgang Polonik, 2010 (Chair).

[13] Kevin Fujii, with Fushing Hsieh, 2013 (Chair).

[14] Qi Gao, with Thomas Lee, 2014.

[15] Olivia Lee, with Fushing Hsieh, 2014 (Chair).

[16] Cecilia Dao, with Jiming Jiang, 2014.

[17] Nana Wang, with Wolgang Polonik, 2015 (Chair).

[18] Jilei Yang, with Jie Peng, 2015.

[19] Shriram Gajjar, with Ahmet Palazoglu (Chemical Engineering and Materials Science), 2015.

[20] Lynna Chu, with Hao Chen, 2016.

[21] Ken Wang, with Wolfgang Polonik, 2016.

[22] Suofei Wang, with Thomas Lee, 2016.

[23] Jingyi Zheng, with Fushing Hsieh, 2016.

[24] Dimitriy Izyumin, with Prabir Burman, 2016.

[25] Mengxin Ji, with Aaron Smith (Agricultural and Resource Economics), 2018.

[26] Hoseung Song, with Hao Chen, 2018.

[27] Tongyi Tang, with Thomas Lee and Debashis Paul, 2018 (Chair).

[28] James Do, with Xiaoguang Liu (Electrical Engineering), 2018.

[29] Kristine O'Laughlin, with Emilio Ferrer (Psychology), 2018.

[30] Maxime Pouokam, with Javier Arsuaga (GGB), 2019 (Chair).

[31] Junwen Yao, with Miles Lopes and Jane-Ling Wang, 2020.

[32] Shuting Liao, with Fushing Hsieh and Debashis Paul, 2020.

[33] Esha Datta, with Xin Liu (GGAM), 2020.

[34] Yejiong Zhu, with Hao Chen, 2020 (Chair).

[35] Xiner Zhou, with Hans-Georg Müller (GGB), 2021.

[36] Yi Han, with Thomas Lee, 2021 (Chair).

[37] Xi Yang, with Fushing Hsieh (GGB), 2022.

[38] Eunseong Bae, wtih Wolfgang Polonik (Chair), 2022.

[39] Simran Johal, with Emilio Ferrer (Psychology), 2022.

[40] Jing Lyu, with Hao Chen (GGB), 2022.

[41] Mingshuo Guo, with Hao Chen, 2023.

[42] Felipe Ulloa, with Levent Kavvas (Civil and Environmental Engineering), 2023.

[43] Wonjun Seo, with Xiucai Ding, 2024.

## Ph.D. Exit Exam Committee Member for

[1] Li Zhu (with Fushing Hsieh), *Modeling dynamics in two statistical problems: longitudinal disease activity score and parasite infection*, 2008.

[2] Michael McAssey (with Fushing Hsieh), *Topics on associations among random processes*, 2010.

[3] Patrick Ji (with Jay Lund, Civil and Environmental Engineering) *Reservoir re-operation, risk, and levee failure analysis: Mokelumne river case*, 2011.

[4] Rongqi Chen (with Wolfgang Polonik), *Asymptotic distribution for the plug-in estimation of level sets*, 2011 (dissertation).

[5]  Kehui Chen (with Hans-Georg Müller), *Modeling of conditional distribution for functional data*, 2012 (dissertation).

[6]  Changjie Ma (with Rituparna Sen), *Time series of density function*, 2012 (dissertation).

[7]  Wanli Qiao (with Wolfgang Polonik), *On estimation of filament structures*, 2013.

[8]  Gabriel Becker (with Duncan Temple Lang), *Dynamic documents for data analytic science*, 2014.

[9]  Chen Chen (with Fushing Hsieh), *Detecting and bootstrapping multi-scale community structures in binary networks*, 2014.

[10]  Apratim Ganguly (with Wolfgang Polonik), *Structure learning in locally constant Gaussian graphical models*, 2014.

[11]  Jinjiang He (with Jane-Ling Wang), *Functional correlation to quantify functional connectivity in brain imaging*, 2014.

[12]  Chih-Hsin Hsueh (with Fushing Hsieh), *Non-parametric algorithmic computational methods for longitudinal and cryo-EM images*, 2015.

[13]  Aaron Shev (with Fushing Hsieh), *Methods for ranking: A study of the Bradley–Terry model and collaborative filtering*, 2015 (dissertation).

[14]  Cecilia Dao (with Jiming Jiang), *Goodness-of-fit tests for generalized linear mixed models*, 2017 (dissertation).

[15]  Rohosen Bandhyopadhyay (with Jiming Jiang), *Benchmarking the observed best predictor*, 2017 (dissertation).

[16]  Shriram Gajjar (with Ahmet Palazoglu, Chemical Engineering and Materials Science), *Capitalizing from data: Real-time analytics and knowledge discovery*, 2017.

[17]  Nana Wang (with Wolfgang Polonik), *Analysing dependence in stochastic networks via Gaussian graphical models*, 2018.

[18]  Chunzhe Zhang (with Thomas Lee), *Uncertainty quantification and sensitivity analysis in statistical machine learning*, 2018 (dissertation).

[19]  Jilei Yang (with Jie Peng), *Estimating time-varying graphical models*, 2018.

[20]  Lynna Chu (GGB, with Hao Chen), *A graph-based approach to change-point detection for multivariate and non-Euclidean data*, 2019 (dissertation).

[21]  Suofei Wu (with Thomas Lee), *Some contributions to random forests and high-dimensional principal component regression*, 2019 (dissertation).

[22]  Jingyi Zheng (with Fushing Hsieh), *Data driven algorithms for analyzing imaging and electroencephalography (EEG) data in neuroscience*, 2019.

[23]  Dmitriy Izyumin (with Prabir Burman), *Forecasting methods for stationary time series*, 2019 (dissertation).

[24]  Guangxing (Ken) Wang (with Wolfgang Polonik), *Empirical likelihood methods for dependent functional data*, 2019 (dissertation).

[25]  Liwei Wu (with James Sharpnack and Cho-Jui Hsieh), *Advances in collaborative filtering and ranking*, 2020.

[26]  Xiaoyue Li (with James Sharpnack), *Scalable methods in point processes*, 2020.

[27]  Maxime Pouokam (with Javier Arsuaga and Prabir Burman), *Statistical topology of genome analysis: From chromosome conformation capture data to 3D structure*, 2020 (dissertation).

[28] Tongyi Tang (with Thomas Lee and Debashis Paul), *Modeling vector fields on a sphere and application to lithospheric magnetic field*, 2021 (dissertation).

[29] Qin Ding (with James Sharpnack and Cho-Jui Hsieh), *Advances in stochastic contextual bandits*, 2021.

[30] Lifeng Wei (with James Sharpnack and Cho-Jui Hsieh), *Applications of statistics in machine learning problems*, 2021 (dissertation).

[31] Cong Xu (with Thomas Lee), *Change point detection for image, graph and network data*, 2021 (dissertation).

[32] Zhenyu Wei (with Thomas Lee), *Some contributions to high-dimensional statistical machine learning*, 2021 (dissertation).

[33] Hoseung Song (with Hao Chen), *New kernel-based methods for high-dimensional inferences*, 2021 (dissertation).

[34] Lingfei Cui (with Wolfgang Polonik), *Shape and geometry in statistics: Support and density estimation*, 2021 (dissertation).

[35] Yi-Wei Liu (with Hao Chen), *Change-point detection for modern data*, 2022 (dissertation).

[36] Doudou Zhou (with Hao Chen), *A new ranking scheme for high-dimensional and non-Euclidean data with applications in hypothesis testing and change-point detection*, 2022.

[37] Yi Han (with Thomas Lee), *Some contributions to uncertainty quantification and change point detection in dynamic systems*, 2024 (dissertation).

[38] Yejiong Zhu (with Hao Chen), *New powerful and robust graph-based tests for high-dimensional and non-Euclidean data*, 2024 (dissertation).

[39] Xi Yang (with Fushing Hsieh, GGB), *Precision learning of human gait dynamics using wearable sensors*, 2024 (dissertation). Mimicking and Comparative Analysis

**External Ph.D. Dissertation Reviewer for**

[1] Rohmatul Fajriyah, Technische Universität Graz, Austria (Advisor: István Berkes), *Microarray data analysis: Background correction and differentially expressed genes*, 2015.

[2] Hajar Nasrazadani, Universitat Politècnica de Catalunya, Barcelona, Spain (Advisor: Pilar Muñoz Gracia), *The impact of effective factors on the Iranian electricity market in comparison to the Spanish electricity market*, 2016.

[3] Johannes Klepsch, Technische Universität München, Germany (Advisor: Claudia Klüppelberg), *Time series analysis in Hilbert spaces: Estimation of functional linear processes and prediction of traffic*, 2017.

[4] Christina Stöhr, Otto-von-Guericke-Universität Magdeburg, Germany (Advisor: Claudia Kirch), *Sequential change point procedures based on U-statistics and the detection of covariance changes in functional data*, 2019.

[5] Sebastian Kühnert, Universität Rostock, Germany (Advisor: Alexander Meister), *Über funktionale ARCH und GARCH-Zeitreihen*, 2019.

[6] Yang Yang, Australian National University, Canberra, Australia (Advisor: Hanlin Shang), *Modeling and forecasting functional time series*, 2020.

[7] Marius Soltane, Le Mans Université, France (Advisor: Alexandre Brouste), *Asymptotic statistics from some time series models with long memory*, 2020.

[8] Thomas Künzer, Technische Universität Graz, Austria (Advisor: Siegfried Hörmann), *Asymptotic inference for dynamic functional data*, 2022.

[9] Tim Kutta, Ruhr-Universität Bochum, Germany, (Advisor: Holger Dette), *Pivotal goodness-of-fit measures in functional data analysis*, 2022.

## Visiting Ph.D. Students

[1] Thorsten Fink, Institut für Mathematische Stochastik, Technische Universität Braunschweig, Germany, July–October 2012.

[2] Leonid Torgovitski, Mathematisches Institut, Universität zu Köln, Germany, September–October 2014.

[3] Hajar Nasradazani, Department of Statistics and Operations Research, Universitat Politècnica de Catalunya, Barcelona, Spain, September–December 2014.

[4] Ryunosuke Hamada, Department of Information Science, Nara Institute of Science and Technology, Ikoma, Japan, October–December 2015.

[5] Anne van Delft, Department of Quantitative Economics, Maastricht University, The Netherlands, April–June 2016.

[6] Johannes Klepsch, Fakultät für Mathematik, Technische Universität München, Germany, September–November 2016.

## Masters Graduates

[1] Tharanga Wickramarachchi (Clemson, with Colin Gallagher), *Dow Jones Index, GARCH(1,1), and change-points*, 2008.

## Masters Graduates (Committee Member)

[1] Michael Peterson (University of Utah), *Estimation in first-order random coefficient autoregressive models*, 2005.

[2] William Edwards (University of Utah), no thesis, 2006.

[3] Haimanot Kassa (University of Utah, with Jingyi Zhu), *Pricing derivative securities with stochastic volatility*, 2006.

[4] Ryan Hafen (University of Utah), *Topics in empirical distribution functions and change-point analysis*, 2006.

[5] Daniel Nye (University of Utah), *Stable distribution*, 2006.

[6] Cynthia Sahm (University of Utah), *Statistical analysis on long-lived families and late-fertile parents*, joint with the Huntsman Cancer Institute, 2006.

[7] Li Zhu (with Fushing Hsieh), *Regression analysis of emotion electromyogram data with action potentials*, 2008.

[8] Guilherme Pumi (with Prabir Burman), *Analysis of the determinants of wages from the 1985 Current Population Survey*, 2009.

[9] Jordan Kirkner (with Bryan Weare, Atmospheric Sciences), *Detection and propagation of the Madden-Julian oscillation in the equatorial stratosphere*, 2009.

[10] Rachel Carpenter (with Michael Zhang, Civil and Environmental Engineering), *Sacramento's Fix I-5 project: Impact on bus transit ridership*, 2009.

[11] Shriram Gajjar (with Ahmet Palazoglu, Chemical Engineering and Materials Science), *A data-driven multidimensional visualization technique for process fault detection and diagnosis*, 2015.

**Undergraduate Honors Theses**

[1] Daniel Iong, *Predicting missing observations in pesticide data*, May 2017.
[2] Huong Vu (Department of Mathematics), *Monitoring pesticide concentrations: Database time series analysis*, May 2018.
[3] Olya Lukashina, *Problem with win probability*, December 2018.

## TEACHING

**Courses Taught (Department of Mathematics, University of Utah)**

| | | |
|---|---|---|
| Math 3070 | Applied Statistics I | S06 |
| Math 5010 | Introduction to Probability Theory | F04 |
| Math 5040 | Stochastic Processes and Simulation I | F04, F05 |
| Math 5050 | Stochastic Processes and Simulation II | S05, S06 |

**Courses Taught (Department of Mathematical Sciences, Clemson University)**

| | | |
|---|---|---|
| MthSc 302 | Statistics for Science and Engineering | F06 |
| MthSc 803 | Stochastic Processes | S07 |
| MthSc 981 | Limit Theory | F07 |

**Courses Taught (Department of Statistics, University of California, Davis)**

| | | |
|---|---|---|
| Sta 100 | Applied Statistics for Biological Sciences | F12, S14, S15, SS23 |
| Sta 103 | Applied Statistics for Business and Economics | S09, W10, S10, W11, S12 |
| Sta 108 | Applied Statistical Methods: Regression Analysis | W25 |
| Sta 137 | Applied Time Series Analysis | S08, S09, S10, W15, F17, S23, F23, SS24, W25 |
| Sta 141A | Fundamentals of Statistical Data Science | SS24 |
| Sta 200C | Introduction to Mathematical Statistics II | S19 |
| Sta 231A | Mathematical Statistics I | F16 |
| Sta 237A | Time Series Analysis | W08, W11, S14, S16, F17, F19, F21, F23 |
| Sta 237B | Time Series Analysis | W10, W12 |

**Other Teaching Experience (Exercise Sections in Germany)**

| | |
|---|---|
| Probability Theory | Change-Point Analysis |
| Mathematical Statistics | Mathematical Finance |
| Measure Theory | Linear Programming |
| Time Series Analysis | Discrete Mathematics |

## PRESENTATIONS

**Short Courses**

[1] Random matrix theory in statistics (eight hours), *Department of Mathematics, Université Libre de Bruxelles*, Brussels, Belgium (March 2017).

[2] Functional time series analysis (six hours), *Institut für Angewandte Mathematik, Universität Heidelberg*, Heidelberg, Germany (May 2017).

[3] Statistical inference for complex data: Random matrices, random functions & geometry and topology (one week), *Oberwolfach Seminar, Mathematisches Forschungsinstitut Oberwolfach*, Oberwolfach, Germany (May 2018), with Wolfgang Polonik.

**Invited Talks**

[1] Testing for parameter changes in stationary time series, *Special Statistics Seminar*, Salt Lake City, UT (February 2003).

[2] Sequential change-point analysis based on invariance principles. *Statistical Models for Financial Data*, Graz, Austria (May 2004).

[3] A survey on first-order random coefficient autoregressive time series, *Mathematics Colloquium, Utah State University*, Logan, UT (November 2004).

[4] Some limit results for near-integrated autoregressive time series, *Joint Statistics Seminar, Hong Kong University and Hong Kong University of Science and Technology*, Hong Kong, China (May 2005).

[5] Grenzwertsätze für autoregressive Zeitreihen. *Mathematisches Kolloquium, Universität Hamburg*, Hamburg, Germany (June 2005).

[6] Change-point monitoring in linear models with conditionally heteroskedastic errors, *Statistics Department Seminar, University of Wisconsin-Madison*, Madison, WI (February 2006).

[7] Change-point monitoring in linear models with heteroskedastic errors, *Mathematics & Statistics Colloquium, Texas Tech University*, Lubbock, TX (February 2006).

[8] Change-point monitoring in linear models with conditionally heteroskedastic errors, *Faculty Colloquium, Clemson University*, Clemson, SC (February 2006).

[9] Change-point monitoring in linear models with heteroskedastic errors, *Colloquium, University of Nevada*, Reno, NV (February 2006).

[10] Change-point monitoring in linear models with heteroskedastic errors, *Statistics Colloquium, Colorado State University*, Fort Collins, CO (April 2006).

[11] Distinguishing between random walks and changes in the mean, *Statisticics and Probability Colloquium, Michigan State University*, East Lansing, MI (January 2007).

[12] Distinguishing between random walks and changes in the mean, *Statistics Colloquium, Colorado State University*, Fort Collins, CO (February 2007).

[13] Distinguishing between random walks and changes in the mean, *Statistics Colloquium, University of Georgia*, Athens, GA (February 2007).

[14] Distinguishing between random walks and changes in the mean, *Statistics Seminar, University of California*, Davis, CA (February 2007).

[15] Distinguishing between random walks and changes in the mean, *Statistical Models for Financial Data II*, Graz, Austria (May 2007).

[16] Monitoring shifts in mean: asymptotic normality of stopping times, *First International Workshop in Sequential Methodologies*, Auburn, AL (July 2007).

[17] Distinguishing between random walks and changes in the mean (invited poster), *2007 NBER-NSF Time Series Conference*, Iowa City, IA (September 2007).

[18] Level shifts and unit-roots, *Time Series with Sudden Structural Changes*, Oberwolfach, Germany (February 2008).

[19] Discriminating between level shifts and unit roots, *Frontiers of Probability and Statistical Science, IISA 2008 Conference*, University of Connecticut, Storrs, CT (May 2008).

[20] Break detection in the covariance structure of multivariate nonlinear time series models, *Recent Advances in Time Series Analysis*, Protaras, Cyprus (June 2008).

[21] Break detection in the covariance structure of multivariate time series models (invited poster), *2008 NBER-NSF Time Series Conference*, Aarhus, Denmark (September 2008).

[22] Topics in autoregressive time series with random coefficients, *IOMS Seminar, Stern School of Business at New York University*, New York City, NY (October 2008).

[23] Topics in autoregressive time series with random coefficients, *Statistics Department Seminar, University of California*, Davis, CA (October 2008).

[24] Real-time monitoring in multiple time series regression models, *Economics Department Seminar, University of California*, Davis, CA (November 2008).

[25] Topics in autoregressive time series with random coefficients, *Statistics Department Seminar, Charles University*, Prague, Czech Republic (December 2008).

[26] Real-time monitoring in multiple time series regression models, *Economics Department Seminar, University of Cyprus*, Nicosia, Cyprus (December 2008).

[27] Real-time monitoring in multiple time series regression models, *Statistics Department Seminar, University of Illinois at Urbana-Champaign*, Urbana, IL (February 2009).

[28] Delay times of sequential procedures for multiple time series regression models, *Economics Department Seminar, University of Tilburg*, Tilburg, The Netherlands (March 2009).

[29] Sequential procedures for multiple time series regressions, *Statistics Department Seminar, University of California*, Berkeley, CA (May 2009).

[30] Delay times of sequential procedures for multiple time series regression models, Second International Workshop in Sequential Methodologies, Troyes, France (June 2009).

[31] A point process model for transaction-level asset prices, *Statistics Department Seminar, Texas A&M University*, College Station, TX (October 2009).

[32] Sequential procedures for multiple time series regressions, *Statistische Woche 2009*, Wuppertal, Germany (October 2009).

[33] Estimating fractional cointegration at the tick level with tapered DFTs, *Statistics Department Seminar, Chinese University*, Hong Kong (November 2009).

[34] Estimating fractional cointegration at the tick level with tapered DFTs, *Statistics and Actuarial Science Department Seminar, Hong Kong University*, Hong Kong (November 2009).

[35] Segmenting mean-nonstationary time series via trending regressions (invited poster), *2010 NBER-NSF Time Series Conference*, Duke, NC (October 2010).

[36] A point process model for transaction-level asset prices, *Mathematics Department Seminar, Université Libre de Bruxelles*, Brussels, Belgium (December 2010).

[37] Monitoring in dependent functional linear models, *Third International Workshop in Sequential Methodologies*, Stanford, CA (June 2011).

[38] Stationary and nonstationary random coefficient and quantile autoregressions, *2nd NTH Workshop on Finance and Insurance Mathematics*, Braunschweig, Germany (July 2011).

[39] Stationary and nonstationary random coefficient and quantile autoregressions, *Oberseminar Stochastik, Universität zu Köln*, Cologne, Germany (July 2011).

[40] Exploratory analysis and modeling of stock return data, *Stochastik Seminar, Universität Heidelberg*, Heidelberg, Germany (January 2012).

[41] Segmenting mean-nonstationary time series via trending regressions, *Time Series: Models, Breaks and Applications*, Karlsruhe, Germany (February 2012).

[42] Exploratory analysis and modeling of stock return data, *Statistics of Lévy Driven Models*, Ulm, Germany (March 2012).

[43] Topics in functional time series, *Interface of Time Series and Functional Data, IMS Invited Session at the Joint Statistical Meetings*, San Diego, CA (August 2012).

[44] Predicting functional time series, *Seminar, Fakultät Statistik, Universität Dortmund*, Dortmund, Germany (June 2013).

[45] Piecewise quantile autoregressive modeling for non-stationary time series, *Change-Points and Related Processes in Economic Time Series, B&ES Invited Session at the Joint Statistical Meetings*, Montreal, Canada (August 2013).

[46] The Marčenko–Pastur law for times series, *New Developments in Econometrics and Time Series*, Brussels, Belgium (September 2013).

[47] The Marčenko–Pastur law for times series, *Statistical Inference for Complex Time Series Data*, Oberwolfach, Germany (September 2013).

[48] On the prediction of functional time series, *AMS Western Fall Sectional Meeting, University of California, Riverside*, Riverside, CA (November 2013).

[49] Modeling transaction-level asset prices by point processes, *IEEE Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA (November 2013).

[50] On the spectral analysis of high-dimensional time series, *Colloquium, Mathematische Fakultät, Universität Ulm*, Ulm, Germany (January 2014).

[51] Simultaneous break point detection and variable selection in quantile regression models, *Inference for Change-Point and Related Processes*, Newton Institute, Cambridge, UK (January 2014).

[52] On the prediction of functional time series, *Colloquium, Institut für Statistik und Operations Research, Universität Wien*, Vienna, Austria (January 2014).

[53] On the spectral analysis of high-dimensional time series, *Colloquium, Mathematisches Institut, Universität zu Köln*, Köln, Germany (January 2014).

[54] On the prediction of stationary functional time series, *UC Davis Statistical Sciences Symposium 2014. Spatial-Temporal Statistics: Methods and Applications*, Davis, CA (April 2014).

[55] On the prediction of stationary functional time series, *2014 Joint Applied Statistics Symposium of International Chinese Statistical Association & Korean International Statistical Society*, Portland, OR (June 2014).

[56] The Marčenko–Pastur law for linear time series, *Gumbel Lecture, Statistische Woche 2014*, Hannover, Germany (September 2014). *Plenary talk.*

[57] On the prediction of stationary functional time series, *NBER-NSF Time Series Conference, Federal Reserve Bank of St. Louis*, St. Louis, MO (September 2014).

[58] Predicting functional time series, *Joint Mathematics & Computer Science Seminar, University of Utah*, Salt Lake City, UT (November 2014).

[59] On the prediction of stationary functional time series, *Seminar, Department of Economics, University of California*, San Diego, CA (November 2014).

[60] Piecewise quantile autoregressive modeling for non-stationary time series, *7th International Conference of the ERCIM on Computational and Methodological Statistics*, Pisa, Italy (December 2014).

[61] Piecewise quantile autoregressive modeling of non-stationary time series, *Special Colloquium, Department of Mathematics, University of Utah*, Salt Lake City, UT (February 2015)

[62] Spectral analysis of high-dimensional time series, *Special Joint Time Series/Stochastics/Applied Math Seminar, Department of Mathematics, University of Utah*, Salt Lake City, UT (February (2015).

[63] On the prediction of stationary functional time series, *Econometrics Seminar, Department of Economics, University of California*, Riverside, CA (March 2015).

[64] Piecewise quantile autoregressive modeling of non-stationary time series, *Seminar zur Emeritierung von Josef Steinebach, Universität zu Köln*, Köln, Germany (March 2015).

[65] On the prediction of stationary functional time series, *Frontiers of Functional Data Analysis, BIRS Workshop*, Banff, Canada (June 2015).

[66] On the prediction of stationary functional time series, *European Meeting of Statisticians*, Amsterdam, The Netherlands (July 2015).

[67] On the prediction of stationary functional time series, *Oberseminar Stochastik, Institut für Mathematische Stochastik, Technische Universität Braunschweig*, Braunschweig, Germany (July 2015).

[68] Variable selection in fully functional regression models, *IMS Invited Session at the Joint Statistical Meetings*, Seattle, WA (August 2015).

[69] Predicting functional time series, *Colloquium, Department of Statistics and Probability, Michigan State University*, East Lansing, MI (December 2015).

[70] Dating structural breaks in functional data without dimension reduction, *New Developments in Functional and Highly Multivariate Statistical Methodology*, Oberwolfach, Germany (February 2016).

[71] Dating structural breaks in functional data without dimension reduction, *Seminar, Institut de statistique, biostatistique et sciences actuarielles, Université catholique de Louvain*, Louvain-la-Neuve, Belgium (March 2016).

[72] Prediction and structural breaks for functional time series, *Seminar, Department of Economics, Université de Montréal*, Montreal, Canada (April 2016).

[73] Dating structural breaks in functional data without dimension reduction, *3rd Conference of the International Society of Nonparametric Statistics*, Avignon, France (June 2016).

[74] Spectral analysis of high-dimensional time series with applications to the mean-variance frontier, *Statistics Seminar, Department of Economics, Universität Bonn*, Bonn, Germany (July 2016).

[75] Spectral analysis of high-dimensional time series with applications to estimating the mean-variance frontier, *Seminar, Department of Statistics and Actuarial Science, University of Waterloo*, Waterloo, Canada (September 2016).

[76] Dating structural breaks in functional data without dimension reduction, *NBER-NSF Time Series Conference, Columbia University*, New York (September 2016).

[77] Spectral analysis of high-dimensional time series with applications to the mean-variance frontier, *Conference in honor of Lajos Horváth*, Graz, Austria (October 2016).

[78] Spectral analysis of high-dimensional time series with applications to the mean-variance frontier, *CMStat*, Sevilla, Spain (December 2016).

[79] Spectral analysis of high-dimensional time series with applications to the mean-variance frontier, *Stochastik Seminar, Institut für Angewandte Mathematik, Universität Heidelberg*, Heidelberg, Germany (January 2017).

[80] Detecting and dating structural breaks in functional data without dimension reduction, *Statistics Department Seminar, Charles University*, Prague, Czech Republic (March 2017).

[81] Spectral analysis of high-dimensional time series with applications to the mean-variance frontier, *Econometrics Seminar, Department of Economics, University of Cambridge*, Cambridge, UK (May 2017).

[82] Spectral analysis of high-dimensional time series with applications to the mean-variance frontier, *Statistisches Kolloquium, Institut für Mathematische Stochastik, Georg-August-Universität Göttingen*, Göttingen, Germany (June 2017).

[83] Estimating invertible functional time series, *4th International Workshop on Functional and Operational Statistics*, A Coruña, Spain (June 2017).

[84] Spectral properties of high-dimensional time series, *10th Extreme Value Analysis Conference, Delft University of Technology*, Delft, The Netherlands (June 2017).

[85] Spectral analysis of high-dimensional time series with applications to the mean-variance frontier, *WNAR Invited Session at the Joint Statistical Meetings*, Baltimore, MD (August 2017).

[86] Spectral analysis of high-dimensional time series with applications to the mean-variance frontier, *3rd ICSA-Canada Chapter Symposium*, Vancouver, Canada (August 2017).

[87] Functional data & time series, *Econometrics Reading Group Seminar, Departments of Agricultural and Resource Economics, and Economics, University of California*, Davis, CA (December 2017).

[88] Functional data analysis, with a view on current time series methods, *NII Shonan Meeting on Analysing Large Collections of Time Series*, The National Institute of Informatics, Shonan Village Center, Japan (February 2018).

[89] Detecting deviations from stationarity of functional time series, *Joint Seminar, Departments of Economics and Statistics*, National University of Singapore, Singapore (February 2018).

[90] Spectral analysis of high-dimensional time series with applications to the mean-variance frontier, *Frontiers in Forecasting, Institute for Mathematics and its Applications*, Minneapolis, MN (February 2018).

[91] Limiting spectral distributions for a class of high-dimensional time series, *Statistics of geometric features and new data types, Isaac Newton Institute for Mathematical Sciences*, Cambridge, UK (March 2018).

[92] High-dimensional time series and random matrix theory, *Seminar, Department of Statistics, Rice University*, Houston, TX (April 2018).

[93] Testing for stationarity of functional time series in the frequency domain, *Big Data challenges: heterogeneity, model misspecification and changepoints*, Windermere, UK (April 2018).

[94] Structural breaks in functional time series, *From Data to Knowledge, Working for a Better World; 2018 IISA International Conference on Statistics*, University of Florida, Gainesville, FL (May (2018).

[95] Estimating the eigenvalue spectrum of (auto)covariance matrices of high-dimensional time series, *4th Conference of the International Society of Nonparametric Statistics*, Salerno, Italy (June 2018).

[96] Structural breaks in functional time series, *Oberseminar Stochastik, Universität zu Köln*, Cologne, Germany (July 2018).

[97] Analyzing complex time series data, *Netflix*, Los Gatos, CA (August 2018).

[98] Limiting spectral distributions for a class of high-dimensional time series, *AMS Sectional Meeting at San Francisco State University*, San Francisco, CA (October 2018).

[99] Spectral analysis of (auto)covariances from high-dimensional time series, *Seminar, Department of Statistics, University of Wisconsin*, Madison, WI (November 2018).

[100] Testing for stationarity of functional time series in the frequency domain, *Functional Data Analysis and Beyond*, MATRIX, Creswick, Australia (December 2018).

[101] Eigenvalue distributions of sample (auto)covariance matrices obtained from high-dimensional linear processes, *Joint Seminar, Departments of Statistical Sciences and Economics, University of Bologna*, Bologna, Italy (March 2019).

[102] Functional data & time series: A brief introduction, *Statistics—Agriculture & Resource Economics Workshop "Bringing Statistical Methodology to Big Data Problems in Agricultural and Environmental Economics"*, Davis, CA (June 2019).

[103] Detecting deviations from stationarity in functional time series, *Econometrics Seminar, Universidad Carlos III de Madrid*, Madrid, Spain (June 2019).

[104] Bootstrapping spectral statistics in high dimensions, *New Developments in Econometrics and Time Series*, Graz, Austria (June 2019).

[105] Random matrix theory for high-dimensional time series, *2019 International Conference on Statistical Optimization and Learning*, Beijing, China (June 2019). *Keynote speaker.*

[106] Functional data analysis, with a view toward current time series methods, *Research School of Finance, Actuarial Studies and Statistics 2019 Summer Research Camp*, Australian National University, Canberra, Australia (December 2019). *Keynote speaker.*

[107] Functional data analysis: a primer, *Big Ag Data Conference*, University of California, Davis, CA (January 2020).

[108] Two-sample tests for relevant differences in the eigenfunctions of covariance operators, *B&ES Invited Session at the Joint Statistical Meetings*, Philadelphia, PA, online (August 2020); online.

[109] Relevant two-sample tests for the eigenfunctions of covariance operators, *New Results on Time Series and their Statistical Applications, Centre International de Recontres Mathématiques*, Luminy, France, online (September 2020); online.

[110] Random matrix theory aids statistical inference in high dimensions, *Statistics Seminar, Columbia University*, New York, NY (October 2020); online.

[111] Random matrix theory aids statistical inference in high dimensions, *Statistics Seminar, Lancaster University*, Lancaster, UK (November 2020); online.

[112] Two-sample tests for relevant differences in the eigenfunctions of covariance operators, *CMStatistics, King's College*, London, UK (December 2020); online.

[113] Random matrix theory aids statistical inference in high dimensions, *Statistics Seminar, King Abdullah University of Science and Technology*, Thuwal, Saudi Arabia (March 2021); online.

[114] Random matrix theory aids statistical inference in high dimensions, *Research Training Group/Graduiertenkolleg 2131 Seminar, Ruhr Universität Bochum – TU Dortmund – Universität Duisburg-Essen*, Germany (June 2021); online.

[115] Simultaneous detection of multiple change points and community structures in time series of networks, *IMS Invited Session at the Joint Statistical Meetings*, Seattle, WA (August 2021); online.

[116] Random matrix theory for high-dimensional time series, *Math Colloquium, Tulane University*, New Orleans, LA (December 2021); online.

[117] Random matrix theory aids statistical inference in high dimensions, *Statistics Seminar, University of Georgia*, Athens, GA (March 2022); online.

[118] Random matrix theory for high-dimensional time series, *Seminar Series in Probability and Statistics, TU Delft*, Delft, The Netherlands (March 2022); online.

[119] Testing for stationarity of functional time series in the frequency domain, *Special Invited Session at the 5th International Conference on Econometrics and Statistics*, Ryukoku University, Kyoto, Japan (June 2022); online.

[120] Two-sample tests for relevant differences in the eigenfunctions of covariance operators, *International Symposium on Nonparametric Statistics*, Paphos, Cyprus (June 2022).

[121] Testing high-dimensional general linear hypotheses under a multivariate regression model with spiked noise covariance, *24th International Conference on Computational Statistics, University of Bologna*, Bologna, Italy (August 2022); online.

[122] Testing high-dimensional general linear hypotheses under a multivariate regression model with spiked noise covariance, *NBER-NSF Time Series Meeting, Boston University*, Boston, MA (September 2022); online.

[123] Random matrix theory aids statistical inference in high dimensions, *Statistics Seminar, University of Hong Kong*, Hong Kong (November 2022); online.

[124] Detecting deviations from stationarity in functional time series, *Advances in Time Series Conference, Le Mans Université*, Le Mans, France (November 2022); online.

[125] Testing high-dimensional general linear hypotheses under a multivariate regression model with spiked noise covariance. *16th German Probability and Statistics Days*, Essen, Germany (March 2023). *Keynote speaker.*

[126] Testing high-dimensional general linear hypotheses under a multivariate regression model with spiked noise covariance. *Workshop on Mathematical Statistics in the Information Age: Statistical efficiency and computational tractability*, Freiburg, Germany (March 2023).

[127] Testing high-dimensional general linear hypotheses under a multivariate regression model with spiked noise covariance. *Statistics Department Seminar, Texas A&M University*, College Station, TX (April 2023).

[128] Bootstrapping spectral statistics in high dimensions, *Workshop on Big Data in Economics and Finance, University of Cambridge*, Cambridge, UK (May 2023).

[129] Testing high-dimensional general linear hypotheses under a multivariate regression model with spiked noise covariance. *Workshop on Applications of Random Matrices in Economics and Statistics, University of Oxford*, Oxford, UK (May 2023).

[130] Random matrix theory for high-dimensional time series, *Virtual Time Series Seminar* (September 2023); online.

[131] Functional Heteroskedastic Time Series Modeling, *Recent advances in functional data analysis, Macquarie University*, Sydney, Australia (March 2024).

[132] Testing high-dimensional general linear hypotheses under a multivariate regression model with spiked noise covariance. *School of Economics, The University of Sydney*, Sydney, Australia (March 2024).

[133] Testing high-dimensional general linear hypotheses under a multivariate regression model with spiked noise covariance. *School of Finance, Actuarial Studies & Statistics, Australian National University*, Canberra, Australia (March 2024).

[134] Testing high-dimensional general linear hypotheses under a multivariate regression model with spiked noise covariance. *Statistics Seminar, Colorado State University*, Fort Collins, CO (April 2024).

[135] Testing high-dimensional general linear hypotheses in a multivariate regression model with spiked noise covariance. *Statistics Seminar, Columbia University*, New York, NY (September 2024).

[136] Testing high-dimensional general linear hypotheses in a multivariate regression model with spiked noise covariance. *Wilks Seminar, ORFE, Princeton University*, Princeton, NJ (September 2024).

[137] Analyzing complex time series data: Random functions and random matrices. *Quantitative Seminar, Department of Psychology, UC Davis*, Davis, CA (November 2024).

[138] Testing high-dimensional general linear hypotheses under a multivariate regression model with spiked noise covariance. *Statistics & Data Science Seminar, Cornell University*, Ithaca, NY (December 2024).

## Contributed Talks

[1] Zur Schätzung des Changepoints bei graduellen Veränderungen, *11th Symposium Marburg-Wroclaw*, Marburg, Germany (February 2001).

[2] Limiting extreme value distributions for a class of tests of gradual changes, *12th Statistical Research Seminar Marburg-Wroclaw*, Wroclaw, Poland (October 2001).

[3] Estimators in change-point models: a general approach, *13th Symposium Marburg-Wroclaw*, Marburg, Germany (October 2002).

[4] Maxima of stochastic processes with drift, *14th Statistical Research Seminar Marburg-Wroclaw*, Kudova Zdroj, Poland (October 2003).

[5] Sequential change-point analysis based on invariance principles, *Karlsruher Stochastik-Tage 2004*, Karlsruhe, Germany (March 2004).

[6] Strong approximation for RCA(1) time series with applications, *Statistics and Probability Seminar, University of Utah*, Salt Lake City, UT (October 2004).

[7] Markov chain Monte Carlo methods, *Graduate Colloquium, University of Utah*, Salt Lake City, UT (October 2005).

[8] Asymptotics for recursive-type detectors in linear models, *Statistics and Probability Seminar, University of Utah*, Salt Lake City, UT (November 2005).

[9] Change-point monitoring in linear models with heteroskedastic errors, *Frankfurter Stochastik-Tage 2006*, Frankfurt, Germany (March 2006).

[10] Monitoring shifts in mean: asymptotic normality of stopping times, *Statistik unter einem Dach*, Bielefeld, Germany (March 2007).

## PUBLICATIONS

### Refereed Journal Publications[1]

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[1]A * in front of the name indicates a graduate student collaborator

[58] Li, H., Aue, A., Paul, D., and Peng, J., Testing general linear hypotheses under a high-dimensional multivariate regression model with spiked noise covariance, *Journal of the American Statistical Association*, accepted for publication.

[57] Aue, A., and Burman, P., Estimation of prediction error in time series, *Biometrika*, **111**, 643–660 (2024).

[56] Aue, A., and Kirch, C., The state of cumulative sum sequential change point testing seventy years after Page, *Biometrika*, **111**, 367–391 (2024).

[55] *Jiao, S., Aue, A., and Ombao, H., Functional time series prediction under partial observation of the future curve, *Journal of the American Statistical Association*, **118**, 315–326 (2023).

[54] Aue, A., Dette, H., and Rice, G., Two-sample tests for relevant differences in the eigenfunctions of covariance operators, *Statistica Sinica*, **33**, 353–379 (2023).

[53] Aue, A., and *van Delft, A., Testing for stationarity of functional time series in the frequency domain, *The Annals of Statistics*, **48**, 2505–2547 (2020).

[52] *Li, H., Aue, A., and Paul, D., High-dimensional general linear hypothesis tests via non-linear spectral shrinkage, *Bernoulli*, **26**, 2541–2571 (2020).

[51] Cheung, R.C.Y., Aue, A., *Hwang, S., and Lee, T.C.M., Simultaneous detection of multiple change points and community structures in time series of networks, *IEEE Transactions on Signal and Information Processing over Networks*, **6**, 580-591 (2020).

[50] *Li, H., Aue, A., Paul, D., Peng, J., and Wang, P., An adaptable generalization of Hotelling's $T^2$ in high dimensions, *The Annals of Statistics*, **48**, 1815–1847 (2020).

[49] Aue, A., Rice, G., and *Sönmez, O., Structural break analysis for spectrum and trace of covariance operators, *Environmetrics*, **31**, e2617 (2020). [Special issue commemorating Ian MacNeill]

[48] Dette, H., *Kokot, K., and Aue, A., Functional data analysis in the Banach space of continuous functions, *The Annals of Statistics*, **48**, 1168–1192 (2020).

[47] Lopes, M., *Blandino, A., and Aue, A., Bootstrapping spectral statistics in high dimensions, *Biometrika*, **106**, 781–801 (2019).

[46] Aue, A., Rice, G., and *Sönmez, O., Detecting and dating structural breaks in functional data without dimension reduction, *Journal of the Royal Statistical Society, Series B*, **80**, 509–529 (2018).

[45] *Cheung, R.C.Y., Aue, A., and Lee, T.C.M., Consistent estimation for partition-wise regression and classification models, *IEEE Transactions on Signal Processing*, **65**, 3662–3674 (2017).

[44] *Wang, L., Aue, A., and Paul, D., Spectral analysis of sample autocovariance matrices for a class of linear time series in moderately high dimensions, *Bernoulli*, **23**, 2181–2209 (2017).

[43] Aue, A., Horváth, L., and *Pellatt, D., Functional generalized autoregressive conditional heteroskedasticity, *Journal of Time Series Analysis*, **38**, 3–21 (2017).

[42] Aue, A., *Cheung, R., Lee, T.C.M., and *Zhong, M., Piecewise quantile autoregressive modeling for non-stationary time series, *Bernoulli*, **23**, 1–22 (2017).

[41] *Noguchi, K., Aue, A., and Burman, P., Exploratory analysis and modeling of stock return data, *Journal of Computational and Graphical Statistics*, **25**, 363–381 (2016).

[40] Aue, A., *Dubart Nourinho, D., and Hörmann, S., On the prediction of stationary functional time series, *Journal of the American Statistical Association*, **110**, 378–392 (2015).

[39] Aue, A., *Dienes, C., *Fremdt, S., and Steinebach, J., Reaction times of monitoring schemes for ARMA time series, *Bernoulli*, **21**, 1238–1259 (2015).

[38] *Liu, H., Aue, A., and Paul, D., On the Marčenko–Pastur law for linear time series, *The Annals of Statistics*, **43**, 675–712 (2015).

[37] *Wong, R.K.W., Baines, P., Aue, A., Lee, T.C.M., and Kashyap, V.L., Automatic estimation of flux distributions of astrophysical source populations, *The Annals of Applied Statistics*, **8**, 1690–1712 (2014).

[36] Aue, A., *Cheung, R., Lee, T.C.M., and *Zhong, M., Segmented variable selection in quantile regression using the minimum description length principle, *Journal of the American Statistical Association*, **109**, 1241–1256 (2014).

[35] Aue, A., Hörmann, S., Horváth, L., and Hušková, M., Dependent functional linear models with applications to monitoring structural change, *Statistica Sinica*, **24**, 1043–1073 (2014).

[34] Aue, A., Horváth, L., Hurvich, C.M., and Soulier, P., Limit laws in transaction-level asset price models, *Econometric Theory*, **30**, 536–579 (2014).

[33] Paul, D., and Aue, A., Random matrix theory in statistics: a review, *Journal of Statistical Planning and Inference*, **150**, 1–29 (2014). [Invited Review Paper]

[32] *Dienes, C., and Aue, A., On-line monitoring of pollution concentrations with autoregressive moving average times series, *Journal of Time Series Analysis*, **35**, 239–261 (2014).

[31] Aue, A., and Horváth, L., Structural breaks in time series, *Journal of Time Series Analysis*, **34**, 1–16 (2013). [Invited Review Paper]

[30] Aue, A., Hörmann, S., Horváth, L., Hušková, M., and Steinebach, J., Sequential testing for the stability of high frequency portfolio betas, *Econometric Theory*, **28**, 804–837 (2012).

[29] Aue, A., Horváth, L., and Hušková, M., Segmenting mean-nonstationary time series via trending regressions, *Journal of Econometrics*, **168**, 367–381 (2012).

[28] Aue, A., Horváth, L., *Kühn, M., and Steinebach, J., On the reaction time of moving sum detectors, *Journal of Statistical Planning and Inference*, **142**, 2271–2288 (2012).

[27] Aue, A., Lee, T.C.M., and Wang, H., Local bandwidth selection via second derivative segmentation, *Electronic Journal of Statistics*, **6**, 478–500 (2012).

[26] Aue, A., and Lee, T.C.M., On image segmentation using information theoretic criteria, *The Annals of Statistics*, **39**, 2912–2935 (2011).

[25] Aue, A., and Lee, T.C.M., Fast scatterplot smoothing using blockwise least squares fitting, In *Nonparametric Statistical Methods and Related Topics (P.K. Bhattacharya Festschrift)* (Eds. J. Jiang, G.G. Roussas and F.J. Samaniego), World Scientific, Singapore, pp. 299–314 (2011).

[24] *Robbins, M., Gallagher, C., Lund, R., and Aue, A., Mean shift testing in correlated data, *Journal of Time Series Analysis*, **32**, 498–511 (2011).

[23] Aue, A., and Horváth, L., Quasi-likelihood estimation in stationary and nonstationary autoregressive models with random coefficients, *Statistica Sinica*, **21**, 973–999 (2011).

[22] Aue, A., Hörmann, S., Horváth, L., and *Reimherr, M., Break detection in the covariance structure of multivariate time series models, *The Annals of Statistics*, **37**, 4046–4087 (2009).

[21] Aue, A., *Gabrys, R., Horváth, L., and Kokoszka, P., Estimation of a change-point in the mean function of functional data, *Journal of Multivariate Analysis*, **100**, 2254–2269 (2009).

[20] Aue, A., Horváth, L., and *Reimherr, M.L., Delay times of sequential procedures for multiple time series regression models, *Journal of Econometrics*, **149**, 174–190 (2009).

[19] Aue, A., Horváth, L., Hušková, M., and Ling, S., On distinguishing between random walk and change in the mean alternatives, *Econometric Theory*, **25**, 411–441 (2009).

[18] Aue, A., Horváth, L., Hušková, M., Extreme value theory for stochastic integrals of Legendre polynomials, *Journal of Multivariate Analysis*, **100**, 1029–1043 (2009).

[17] Aue, A., Horváth, L., Kokoszka, P., and Steinebach, J., Monitoring shifts in mean: asymptotic normality of stopping times, *Test*, **17**, 515–530 (2008).

[16] Aue, A., Near-integrated random coefficient autoregressive time series, *Econometric Theory*, **24**, 1343–1372 (2008).

[15] Aue, A., Horváth, L., Hušková, M. and Kokoszka, P., Testing for changes in polynomial regression, *Bernoulli*, **14**, 637–660 (2008).

[14] Aue, A., *Kühn, M., Extreme value distribution of a recursive-type detector in a linear model, *Extremes*, **11**, 135–166 (2008).

[13] Aue, A., Berkes, I., and Horváth, L., Selection from a stable box, *Bernoulli*, **14**, 125–139 (2008).

[12] Aue, A., Berkes, I., and Horváth, L., A note on the existence of solutions to a stochastic recurrence equation, *Acta Scientiarum Mathematicarum*, **73**, 767–779 (2007). [Special Issue dedicated to Sándor Csörgő on his 65th birthday]

[11] Aue, A., Horváth, L., and Steinebach, J., Rescaled range analysis in the presence of stochastic trend, *Statistics & Probability Letters*, **77**, 1165–1175 (2007). [Silver Jubilee Issue dedicated to Richard A. Johnson on his 70th birthday]

[10] Aue, A., and Horváth, L., A limit theorem for mildly explosive autoregression, *Econometric Theory*, **23**, 201–220 (2007).

[9] Aue, A., Horváth, L., Hušková, M., and Kokozska, P., Change-point monitoring in linear models, *Econometrics Journal*, **9**, 373–403 (2006).

[8] Aue, A., Berkes, I., and Horváth, L., Strong approximation for the sums of squares of augmented GARCH sequences, *Bernoulli*, **12**, 583–608 (2006).

[7] Aue, A., Testing for parameter stability in RCA(1) models, *Journal of Statistical Planning and Inference*, **136**, 3070–3089 (2006).

[6] Aue, A., Horváth, L., and Steinebach, J., Estimation in random coefficient autoregressive time series, *Journal of Time Series Analysis*, **27**, 61–76 (2006).

[5] Aue, A., Statistical Terminology, In: B. Sundt and J. Teugels (eds.), *Encyclopedia of Actuarial Science*, Wiley, Chichester, 1593–1596 (2004).

[4] Aue, A., Strong approximation for RCA(1) time series with applications. *Statistics & Probability Letters*, **68**, 369–382 (2004).

[3] Aue, A., and Horváth, L., Delay time in sequential detection of change, *Statistics & Probability Letters*, **67**, 221–231 (2004).

[2] Aue, A., and Horváth, L., Approximations for the maximum of a vector-valued stochastic process with drift, *Periodica Mathematica Hungarica*, **47**, 1–15 (2003).

[1] Aue, A., and Steinebach, J., A note on estimating the change-point of a gradually changing stochastic process, *Statistics & Probability Letters*, **56**, 177–191 (2002).

**Conference Proceedings (Refereed)**

[4] Aue, A., and Klepsch, J., Estimating invertible functional time series, In: *Functional Statistics and Related Fields (G. Aneiros et al., eds)*, Springer–Verlag (June 2017), 51–58.

[3] Aue, A., and Lee, T.C.M., Statistically consistent image segmentation, *Proceedings of the IEEE International Conference on Image Processing*, Hong Kong (September 2010), 2229–2232.

[2] Aue, A., Horváth, L., and *Reimherr, M., Delay times of sequential procedures for multiple time series regression models, *Conference Proceedings, Second International Workshop in Sequential Methodologies*, Troyes, France (June 2009), six pages.

[1] Aue, A., Horváth, L., and *Horváth, Zs., Discriminating between level shifts and random walks: a delay time approach, *Conference Proceedings, Prague Stochastics 2006*, Charles University, Prague, Czech Republic (August 2006), 73–80.

## Submitted Papers and Technical Reports

[1] Schneider, M.J., Rankin, R., Burman, P., and Aue, A., Benchmarking M6 competitors: an analysis of financial metrics and discussion of incentives, Submitted 2024.

[2] *Sönmez, O., Aue, A., and Rice, G., fChange: Change-point analysis in functional data, Submitted 2018.

[3] *Cheung, R.C.Y., Aue, A., and Lee, T.C.M., Semi-supervised learning for inference in time series with missing observations, Submitted 2017.

[4] Aue, A., and *Klepsch, J., Estimating functional time series by moving average process fitting, Submitted 2017.

[5] Aue, A., and *Kühn, M., Stochastic process control based on polynomially weighted moving averages, Technical Report.

[6] Aue, A., *Lai, R.C.S., and Lee, T.C.M., An automatic information theoretic segmentation procedure for functional observations, Technical Report.

[7] Aue, A., and Horváth, L., Diagnostic checks and stability tests for a class of multivariate time series model, Technical Report.

[8] *Carpenter, R., Mokhtarian, P.L., Zhang, H.M., and Aue, A., Impacts of a major freeway reconstruction on bus ridership: A time-series analysis of Sacramento, California's Fix I-5 project, Technical Report.