

Tatyana Krivobokova

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Current position

2020 – *Professor for Statistics with Applications in Economics*
Department of Statistics and Operations Research, University of Vienna

Member of the research network *Data Science @ Uni Vienna*

Research interests

High dimensional statistics and dimension reduction

Covariance matrix estimation

Nonparametric regression

Simultaneous inference

Bayesian modelling and inference

Education

2007 *PhD in Statistics*, Bielefeld University, Germany

2002 *MSc in Financial Mathematics*, University of Kaiserslautern, Germany

1996 *Diploma in Applied Mathematics*, Kazakh State National University, Almaty

Appointments held

2010-2020 *W2 Professor*, Institute for Mathematical Statistics, University of Göttingen, Germany

2008-2010 *Junior Professor*, CRC “Poverty, equity and growth”, University of Göttingen, Germany

2007-2008 *Postdoctoral researcher*, ORSTAT, KU Leuven, Belgium

2003-2007 *Research assistant*, Chair of Statistics, Bielefeld University, Germany

2000-2003 *Student research assistant*, Fraunhofer IESE, Kaiserslautern, Germany

Publications

Preprints

- 2023 Finocchio, G., Krivobokova, T. (2023) An extended latent factor framework for ill-posed linear regression.
- 2023 Krivobokova, T., Finocchio, G., Maryasin, B. (2023) Factorizing Yields in Buchwald-Hartwig Amination

Journal articles

- 2024 Klockmann, K., Krivobokova, T. (2024) On second-order statistics of the log-average periodogram. *IEEE signal processing letters*, to appear.
- 2024 Klockmann, K., Krivobokova, T. (2024) Efficient non-parametric estimation of Toeplitz covariance matrices. *Biometrika*, 111(3), 843-864.
- 2023 Platero-Rochart, D., Krivobokova, T., Gastegger, M., Reibnegger, G., Sanchez Murcia, P.A. (2023) Prediction of enzyme catalysis by computing reaction energy barriers via steered QM/MM Molecular Dynamics Simulations and Machine Learning. *Journal of Chemical Information and Modeling*, 63, 15, 4623-4632.
- 2023 Kramlinger, P., Schneider, U., Krivobokova, T. (2023) Uniformly valid inference based on the Lasso in linear mixed models. *Journal of Multivariate Analysis*, 198, 105230.
- 2022 Krivobokova, T., Serra, P., Rosales, F., Klockmann, K. (2022) Joint estimation of mean and autocovariances for Gaussian processes. *Computational Statistics and Data Analysis*, 173, 107519.
- 2022 Kramlinger, P., Krivobokova, T., Sperlich, S. (2022) Marginal and conditional multiple inference for linear mixed models predictors. *Journal of the American Statistical Association*, <https://doi.org/10.1080/01621459.2022.2044826>.
- 2021 Schneider, L.F., Krajina A., Krivobokova, T. (2021) Threshold selection in univariate extreme value analysis. *Extremes*. <https://doi.org/10.1007/s10687-021-00405-7>.
- 2019 Dunker, F., Klasen, S., Krivobokova, T. (2019) Asymptotic distribution and simultaneous confidence bands for ratios of quantile functions. *Electronic Journal of Statistics*, 13(2):4391-4415 .
- 2018 Yoon, J., Krivobokova, T. (2018) Treatments of non-metric variables in partial least squares and principal component analysis. *Journal of Applied Statistics*, 45(6): 971-987.
- 2017 Singer, M., Krivobokova, T., Munk, A. (2017) Kernel partial least squares for stationary data. *Journal of Machine Learning Research*, 18(123):1-41.
- 2017 Serra, P., Krivobokova, T. (2017) Adaptive empirical Bayesian smoothing splines. *Bayesian Analysis*, 12(1): 219-238.
- 2016 Singer, M., Krivobokova, T., Munk, A. and de Groot, B.L. (2016) Partial least squares for dependent data. *Biometrika*, 103 (2): 351-362.
- 2016 Schwarz, K., Krivobokova, T. (2016) A unified framework for spline estimators. *Biometrika*, 103(1): 103-120.
- 2016 Klasen, S., Krivobokova, T., Greb. F., Lahoti, R., Pasaribu, S., Wiesenfarth, M. (2016) International poverty measurement: which way now? *Journal of Economic Inequality*, 14(2): 199-225.

- 2015 Peter, P., Weickert, J., Munk, A., Krivobokova, T., Li, H. (2015) Justifying tensor-driven diffusion from structure-adaptive statistics of natural images. *Energy Minimization Methods in Computer Vision and Pattern Recognition*, 8932, 263–277.
- 2014 Greb, F., Krivobokova, T., Munk, A., von Cramon-Taubadel, S. (2014) Regularized Bayesian estimation of generalized threshold regression models. *Bayesian Analysis*, 9(1): 171–196.
- 2013 Greb, F., von Cramon-Taubadel, S., Krivobokova, T., and Munk, A. (2013) The estimation of threshold models in price transmission analysis. *American Journal of Agricultural Economics*, 95(4): 900–916.
- 2013 Krivobokova, T. (2013) Smoothing parameter selection in two frameworks for penalized splines. *Journal of the Royal Statistical Society, Series B*, 75(4): 725–741.
- 2012 Krivobokova, T., Briones, R., Hub, J., Munk, A., de Groot, B. (2012) Partial least squares functional mode analysis: application to the membrane proteins AQP1, Aqy1 and CLC-ec1. *Biophysical Journal*, 103(4): 786–796.
- 2012 Wiesenfarth, M., Krivobokova, T., Klasen, S., Sperlich, S. (2012) Direct simultaneous inference in additive models and its application to model undernutrition. *Journal of the American Statistical Association*, 107(500): 1286–1296.
- 2011 Kauermann, G., Krivobokova, T., Semmler, W. (2011) Filtering time series with penalized splines. *Studies in Nonlinear Dynamics and Econometrics*, 15(2).
- 2010 Krivobokova, T., Kneib, T., Claeskens, G. (2010) Simultaneous confidence bands for penalized spline estimators. *Journal of the American Statistical Association*, 105(490): 852–863
- 2009 Claeskens, G., Krivobokova, T., Opsomer, J.D. (2009) Asymptotic properties of penalized spline estimators. *Biometrika*, 96(3): 529–544.
- 2009 Kauermann, G., Krivobokova, T., Fahrmeir, L. (2009) Some asymptotic results on generalized penalized spline smoothing. *Journal of the Royal Statistical Society, Series B*, 71(2): 487–503.
- 2008 Krivobokova, T., Crainiceanu, C.M., Kauermann, G. (2008) Fast adaptive penalized splines. *Journal of Computational and Graphical Statistics*, 17(1): 1–20.
- 2007 Krivobokova, T., Kauermann, G. (2007) A note on penalized spline smoo with correlated errors. *Journal of the American Statistical Association*, 102(480): 1328–1337.
- 2006 Krivobokova, T., Kauermann, G. and Archontakis, T. (2006) Estimating the term structure of interest rates with penalised splines. *Statistical Papers*, 47(3): 443–459.
- 2004 Pfahl D., Laitenberger O., Ruhe G., Dorsch J. and Krivobokova T. (2004) Evaluating the learning effectiveness of using simulations in software project management education: results from a twice replicated experiment. *Information and Software Technology*, 46(2): 127–147.

Recent invited talks

- 2024 Machine learning and statistical methods for high-throughput experimental data. Invited talk, *IMS International Conference on Statistics and Data Science, Nice*
- 2024 Iterative regularisation methods for ill-posed generalised linear models. Seminar, *University of Linz*
- 2024 Iterative regularisation methods for ill-posed generalised linear models. Plenary talk, *26th International Conference on Computational Statistics*
- 2024 Machine learning and statistical methods for high-throughput experimental data. Invited

- talk, *International Symposium on Nonparametric Statistics 2024*
- 2024 Iterative regularisation methods for ill-posed generalised linear models. Seminar, *Wirtschaftsuniversität Wien*
- 2024 Iterative regularisation methods for ill-posed generalised linear models. Invited talk, *Joint Fudan-Vienna Workshop on Applied Mathematics and Data Science*
- 2023 Iterative regularisation methods for ill-posed generalised linear models. Invited talk, *IMS International Conference on Statistics and Data Science, Lisbon*
- 2023 Uniformly valid inference based on the Lasso in linear mixed models. Invited talk, *64th ISI World Statistics Congress*
- 2023 Iterative regularisation methods for ill-posed generalised linear models. Seminar, *Université catholique de Louvain*
- 2023 Iterative regularisation methods for ill-posed generalised linear models. Seminar, *Katholieke Universiteit Leuven*
- 2023 Iterative regularisation methods for ill-posed generalised linear models. Seminar, *ESSEC Business School, Paris*
- 2023 Iterative regularisation methods for ill-posed generalised linear models. Seminar, *University of Bonn*
- 2022 Efficient nonparametric estimation of Toeplitz covariance matrices. Invited talk, *15th International Conference of ERCIM, London*
- 2022 Joint estimation of mean and autocovariances for Gaussian processes. Invited talk, *International symposium on nonparametric statistics, Paphos*
- 2022 Efficient non-parametric estimation of Toeplitz covariance matrices. Seminar, *University of Poitiers*
- 2022 Statistical challenges in protein dynamics modelling. Seminar, *DASHH Data Science Colloquium, Hamburg*
- 2021 Factor analysis for data with heterogenous blocks. Invited talk, *14th International Conference of ERCIM, London*
- 2019 Adaptive estimation and testing in regression with dependent errors. Invited talk, *Annual conference of the Royal Statistical Society of Belgium*
- 2018 Adaptive estimation and testing in regression with dependent errors. Gumbel Lecture, *Statistische Woche 2018*
- 2018 Partial least squares for dependent data. Seminar, *University of Cambridge*
- 2017 Partial least squares for dependent data. Seminar, *Tsinghua University, Beijing*
- 2017 Kernel Partial least squares for stationary data. Van Dantzig Seminar, *University of Delft*

Organised workshops and sessions

- 2022 Invited session at ERCIM 2022 “Topics in dimension reduction”
- 2021 Session “Nonparametric and asymptotic statistics” at German Probability & Statistics Days 2021 (together with Ursula Müller)
- 2017 Invited session at ERCIM 2017 “Nonparametric modelling of dependent data”
- 2016 Invited session at ERCIM 2016 “Advances in model specification tests in regression”
- 2013 Workshop “Dependent functional data”, University of Göttingen
- 2010 Workshop “Econometric aspects of price transmission analysis”, University of Göttingen.

Principal investigator in third-party funding projects

- 2024-2025 OeAD Scientific & Technological Cooperation Austria, France “Detection of change-points in mean of Gaussian processes”
- 2015-2019 Research Project “Reducing Poverty Risk in Developing Countries”, Ministry of Science and Culture of Lower Saxony
- 2015-2020 RTG 2088 “Discovering Structure in Complex Data”, DFG
- 2012-2020 RTG 1723 “Globalisation and Development”, DFG
- 2011-2019 SFB 755 “Nanoscale Photonic Imaging”, DFG
- 2011-2015 Swiss-German FOR 916 “Statistical Regularization and Qualitative Constraints”, DFG
- 2010-2019 RTG 1644 “Scaling Problems in Statistics”, DFG
- 2008-2011 RTG 1023 “Identification in Mathematical Models – Synergy of Stochastic and Numerical Methods”, DFG

Invited research stays

- 2018 Isaac Newton Institute, University of Cambridge, UK
- 2017 Tsinghua University, Beijing, China
- 2015 University of Poitiers, France

Associate editor

- 2024- Journal of the Computational and Graphical Statistics
- 2022- Metrika
- 2019- Journal of the American Statistical Association
- 2014-2021 Scandinavian Journal of Statistics
- 2017-2018 Computational Statistics and Data analysis
- 2012-2016 Sankhya B, the Indian Journal of Statistics

Service

- 2022-2025 Member of the International Advisory Panel of DASHH, Hamburg
- 2022-2024 Vice-Dean for Research and International Affairs, University of Vienna
- 2020-2023 Member of the IMS Committee: Equality and Diversity
- 2018-2020 Managing director, Institute for Mathematical Stochastics, University of Göttingen
- 2016-2020 Elected member of the European Regional Committee (ERC) of the Bernoulli Society
- 2012-2020 Member of the steering committee of the Center for Statistics, University of Göttingen
- 2015-2017 Member of the steering committee of the DFG-AIMS initiative

PhD students

- 2024- Razvan-Andrei Morariu
- 2022- Ilaria Nadine
- 2019-2023 Karolina Klockmann, *On periodograms and efficient nonparametric Toeplitz covariance matrix*

estimators

- 2018-2023 Richard Haarburger, *Essays in quantitative economics: Improvements in measurements and macroeconomic analysis*
- 2016-2020 Peter Kramlinger, *Essays on inference in linear mixed models*
- 2016-2019 Laura Fee Nern (née Schneider), *Discrete parameter estimation for rare events: From binomial to extreme value distributions*, co-advised with Andrea Krajina
- 2013-2016 Marco Singer, *Partial least squares for serially dependent data*
- 2011-2016 Francisco Rosales, *Empirical Bayesian smoothing splines for signals with correlated errors: methods and applications*
- 2012-2015 Jisu Yoon, *Partial least squares and principal component analysis with non-metric variables for composite indices*
- 2008-2013 Katsiaryna Schwarz, *A unified framework for spline estimators*
- 2008-2012 Manuel Wiesenfarth, *Estimation and inference in special nonparametric models with applications to topics in development Economics*
- 2009-2012 Friederike Greb, *Improved estimation in threshold regression with application to price transmission modeling*

Postdoctoral students

- 2023- Dr. Karolina Klockmann
- 2021- Dr. Gianluca Finocchio
- 2020-2022 Dr. Peter Kramlinger
- 2016-2019 Dr. Marco Singer
- 2015-2017 Dr. Fabian Dunker
- 2013-2015 Dr. Paulo Serra

Teaching

- 2021, 2024 Asymptotic statistics (in English), University of Vienna
- 2020-2024 Generalised linear models (in German), University of Vienna
- 2020-2024 Linear multivariate statistics (in German), University of Vienna
- 2020-2023 Applied statistics (in German), University of Vienna
- 2020-2024 Complex statistical methods (in English), University of Vienna
- 2020-2024 Selected topics in Statistics (in English), University of Vienna
- 2016-2018 Statistical modelling and inference I - IV (in English), University of Göttingen
- 2017 Statistics for Geoscientists (in German), University of Göttingen
- 2015 Foundations of stochastics (in German), University of Göttingen
- 2015, 2016 Applied statistics (in German), University of Göttingen
- 2008-2014 Smoothing methods in statistics (in English), University of Göttingen
- 2012-2014 Discrete Stochastics (in German), University of Göttingen
- 2010-2020 Practical course in R (in English), University of Göttingen
- 2004-2006 Estimation and hypothesis testing (in German), Bielefeld University
- 2004-2007 Generalized linear models (in German), Bielefeld University

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