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 Kaiserlautern, 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 Klockmann, K., Krivobokova, T. (2023) On second-order statistics of the log-average periodogram

2023 Krivobokova, T., Finocchio, G., Maryasin, B. (2023) Factorizing Yields in Buchwald-Hartwig Amination

Journal articles

2024 Klockmann, K., Krivobokova, T. (2024) Efficient non-parametric estimation of Toeplitz covariance matrices. *Biometrika*, E-pub ahead of print, 20 Jan 2024.

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 smo 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 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 asymptotc 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 Contraints", 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

2022-2024 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

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*
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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