

Siegfried Hörmann

Université libre de Bruxelles
Department of Mathematics
CP 210, local O.9.115
Bd. du Triomphe, 1050 Brussels, Belgium

Phone: +32-2-650.58.86
Fax: +32-2-650.58.67
Email: shormann@ulb.ac.be
Homepage: <http://homepages.ulb.ac.be/~shormann/>

Personal

Nationality: Austrian.

Languages: German, English, French.

Education

November 2006.

Ph.D. in Mathematics (with excellence), Graz University of Technology, Austria.

Thesis: *"Fluctuation analysis of dependent random processes"*.

Advisor: István Berkes.

April 2003.

M.S. in Mathematics (with excellence), University of Salzburg, Austria.

Thesis: *"Theory and application of ladder variables"*.

Advisor: Maximilian Thaler.

Research Interests

Time series analysis (econometric models, functional time series);

Statistics (applied problems, change-point analysis, dimension reduction, functional data);

Probability (empirical processes, invariance principles, limit theorems, weak dependence);

Employment

August 2009 –

Chargé de Cours, Département de Mathématique, Université libre de Bruxelles, Belgium.

July 2007 – June 2009

Assistant Professor (Lecturer), Department of Mathematics, University of Utah, USA.

Aug 2003 – Jul 2007

Research Assistant, Department of Statistics, Graz University of Technology, Austria.

Honors and Awards

- 2016–2019** ARC (Action de Recherche Concertée) consolidation project of the *Communauté Française de Belgique*.
- 2016** Prix Jacques Deruyts (quadrennial price in Analysis) of the *Royal Academie of Belgium*.
- 2012–2017** IAP (Interuniversity attraction poles) of the *Belgian Science Policy Office*.
- 2010–2015** ARC (Action de Recherche Concertée) of the *Communauté Française de Belgique*. Joint with C. Dehon and D. Paindaveine.
- 2010** Research grant from the *Banque nationale de Belgique*.
- 2008** Laha Award of the *IMS*.
- 2007** Award of the *Austrian Mathematical Society* for my doctoral thesis.
- 2003** Hans-Stegbuchner–Award from the *Department of Mathematics, University of Salzburg*, for my master's thesis.

Journal Publications

1. Cerovecki, C. and Hörmann, S. (2017). *On the CLT for discrete Fourier transforms of functional time series*. *Journal of Multivariate Analysis*, 154, 282–295. [pdf]
2. Hörmann, S., Kidziński, Ł., and Kokoszka, P. (2015). *Estimation in functional lagged regression*. *Journal of Time Series Analysis*, 36, 541–561. [pdf]
3. Hörmann, S., Kidziński, Ł., and Hallin, M. (2015). *Dynamic functional principal components*. *Journal of the Royal Statistical Society: Series B*, 77, 319–348. [arXiv]
4. Aue, A., Dubart Norinho, D., Hörmann, S. (2015). *On the prediction of stationary functional time series*. *Journal of the American Statistical Association*, 110, 509, 378–392. [arXiv]
5. Hörmann, S., Kidziński, Ł. (2015). *A note on estimation in Hilbertian linear models*. *Scandinavian Journal of Statistics*, 42, 43–62. [arXiv]
6. Gabrys, R., Hörmann, S., Kokozka, P. (2013). *Monitoring the intraday volatility pattern*. *Journal of Time Series Econometrics*, 5, 87–116. [pdf]
7. Aue, A., Hörmann, S., Horváth, L., Hušková, M. (2014). *Dependent functional linear models with applications to monitoring structural change*. *Statistica Sinica*, 24, 1043–1073. [pdf, supp]
8. Dominicy, Y., Hörmann, S. Ogata, H., and Veredas, D. (2013). *Marginal Quantiles for Stationary Processes*. *Statistics and Probability Letters*, 83, 28–36. [pdf]
9. Hörmann, S., Swan, Y. (2013). *A remark on the normal approximation error of randomly weighted self-normalized sums*. *Periodica Mathematica Hungarica*, 67, 143–154. [pdf]
10. Hörmann, S., Horváth, L., and Reeder, R. (2013). *A functional version of the ARCH model*. *Econometric Theory*, 29, 267–288. [pdf]
11. Hörmann, S., Kokoszka, P. (2013). *Consistency of the mean and the principal components of spatially distributed functional data*. *Bernoulli*, 19, 1535–1558. [pdf,supp]

12. Aue, A., Hörmann, S., Horváth, L., Hušková, M., Steinebach, J. (2012). *Sequential testing for the stability of high frequency portfolio betas*. *Econometric Theory*, 28, 1–34. [pdf]
13. Hörmann, S., Kokoszka, P. (2012). *Functional Time Series*. *Handbook of Statistics*. Vol. 30, 157–186. [pdf]
14. Aistleitner, C., and Hörmann, S. (2011). *Upper and lower class separating sequences for Brownian motion with random argument*. *Probability and Mathematical Statistics*, 31, 183–202. [pdf]
15. Berkes, I., Hörmann, S., Schauer, J. (2011). *Split invariance principles for stationary processes*. *The Annals of Probability*, 39, 2441–2473. [pdf]
16. Hörmann, S., Kokoszka, P. (2010). *Weakly dependent functional data*. *The Annals of Statistics*, 38, 1845–1884. [pdf]
17. Berkes, I., Hörmann, S., Weber, M. (2010) *Upper–lower class tests for weighted i.i.d. sequences and martingales*. *Journal Theoretical Probability*, 23, 428–446. [pdf]
18. Berkes, I., Hörmann, S., Horváth, L. (2010). *On functional versions of the arc-sine law*. *Journal Theoretical Probability*, 23, 109–126. [pdf]
19. Hörmann, S. (2009). *Berry-Esseen bounds for econometric time series*. *ALEA*, 6, 377–397. [pdf]
20. Aue, A., Hörmann, S., Horváth, L., Reimherr, M. (2009). *Break detection in the covariance structure of multivariate time series models*. *The Annals of Statistics*, 37, 4046–4087. [pdf]
21. Berkes, I., Hörmann, S., Schauer, J. (2009). *Asymptotic results for the empirical process of stationary sequences*. *Stochastic Processes and their Applications*, 119, 1298–1324. [pdf]
22. Berkes, I., Hörmann, S., Horváth, L. (2008). *The functional central limit theorem for a family of GARCH models*. *Statistics and Probability Letters*, 78, 2725–2730. [pdf]
23. Hörmann, S. (2008). *Augmented GARCH sequences: dependence structure and asymptotics*. *Bernoulli*, 14, 543–561. [pdf]
24. Stadlober, E., Hörmann, S., Pfeiler, B. (2008). *Quality and performance of a PM₁₀ daily forecasting model*. *Atmospheric Environment*, 42, 1098–1109. [pdf]
25. Hörmann, S. (2007). *On the universal a.s. central limit theorem*. *Acta Mathematica Hungarica*, 116, 377–398. [pdf]
26. Hörmann, S. (2007). *Critical behavior in almost sure central limit theory*. *Journal of Theoretical Probability*, 20, 613–636. [pdf]
27. Hörmann, S. (2006). *An extension of almost sure central limit theory*. *Statistics Probability Letters*, 76, 191–202. [pdf]
28. Hörmann, S., Pfeiler, B., Stadlober, E. (2005). *Analysis and prediction of particulate matter PM₁₀ for the winter season in Graz*. *Austrian Journal Statistics*, 34, 307–326.
29. Hörmann, S. (2005). *A note on the almost sure convergence of central order statistics*. *Probability and Mathematical Statistics*, 25, 317–329. [pdf]
30. Hörmann, S. (2004). *Optimal averaging procedures in almost sure central limit theory*. *Metodološki zvezki*, 2, 407–418.

Proceedings and Book Chapters

31. M. Hallin and S. Hörmann (2012). *Principal components*, In Encyclopedia of Environmetrics Second Edition, A.-H. El-Shaarawi and W. Piegorisch (eds). John Wiley & Sons Ltd, Chichester, UK, 1987–1988.
32. Friedl, H., Hörmann, S. (2008). *Frequentist probability theory*, In: Handbook of Probability. Theory and Applications, Sage Publications.
33. Hörmann, S. (2006). *Asymptotic properties of augmented GARCH (1,1) sequences*. In: Proc. Prague Stochastics, 407–417.

Invited Presentations

CMStatistics 2016 (ERCIM 2016), Sevilla (Spain), December 2016.

From change point detection to functional data. (Conference in honor of the 60th birthday of Lajos Horváth), Graz (Austria), October 2016.

CRoNoS Workshop on Functional Data Analysis, Oviedo (Spain), August 2016.

3rd International Conference on Nonparametric Statistics, Avignon (France), June 2016.

Workshop on Functional Data Analysis, Les Diablerets (Switzerland), May 2016.

Seminar. Department of Economics, UC San Diego (USA), April 2016.

New Developments in Functional and Highly Multivariate Statistical Methodology, Mathematisches Forschungsinstitut Oberwolfach (Germany), February 2016.

Seminar. Departement Wiskunde, KU Leuven (Belgium), December 2015.

Jahrestagung der Deutschen Mathematiker-Vereinigung, Hamburg (Germany), September 2015.

Recent developments in statistics for complex dependent data, Loccum (Germany), August 2015.

ISNPS Meeting 2015, Medical University of Graz (Austria), July 2015.

European Meeting of Statisticians 2015, Amsterdam (Netherlands), July 2015.

New Frontiers in Functional Data Analysis, Banff International Research Station (Canada), June 2015.

Workshop on New Developments in Econometrics and Time Series, University of Bochum (Germany), June 2015.

Seminar. Institut für Mathematische Stochastik, Technische Universität Braunschweig (Germany), June 2015.

Workshop on Functional Data Analysis (LMU/TUM), Munich (Germany), May 2015.

Multivariate Analysis Today: Topical Expository Reviews, Open University, Milton Keynes (UK), May 2015.

Workshop. Short and long memory in probability and statistics, University of Bochum (Germany), January 2015.

Seminar. Statistics Laboratory, University of Cambridge (UK), November 2014.

Seminar. CREATES, University of Aarhus (Denmark), November 2014.

- Workshop. High dimensional, high frequency and spatial data, Karlsruhe (Germany), October 2014.
- 11th International Vilnius Conference on Probability and Mathematical Statistics, Vilnius (Lithuania), July 2014.
- 3rd International Workshop on Functional and Operatorial Statistics, Stresa (Italy), June 2014.
- 2nd Conference of the International Society of Nonparametric Statistics, Cádiz (Spain), June 2014.
- Seminar. Center of Econometrics and Empirical Economics, University of Mannheim (Germany), November 2013.
- 29th European Meeting of Statisticians. Budapest (Hungary), July 2013.
- Seminar. Department of Statistics, University College London (UK), May 2013.
- Seminar. Department of Statistics, UC Davis (USA), April 2013.
- Seminar. Weierstrass Institute, Berlin (Germany), February 2013.
- International Workshop on Recent Advances in Mathematical Statistics in honor of Professor Marie Hušková, Charles University, Prague (CZ), November 2012.
- Seminar. Department of Mathematics and Statistics, Nikosia (Cyprus), November 2012.
- Seminar. Statistics Department of London School of Economics, London (UK), October 2012.
- 1st Conference of the International Society of Nonparametric Statistics. Chalkidiki (Greece), June 2012.
- Recent Advances in Time Series Analysis, Protaras (Cyprus), June 2012.
- Institut für Angewandte Statistik. Johannes Kepler Universität Linz (Austria), June 2012.
- Seminar. Centre de Recherche en Économie et Statistique, Paris (France), May 2012.
- Time Series: Models, Breaks and Applications, Karlsruhe (Germany), February 2012.
- Seminar. Institute of Advanced Studies, Vienna (Austria), January 2012.
- ERCIM congress, London (UK), December 2011.
- Seminar. Department of Operations Research and Financial Engineering, Princeton University (USA), December 2011.
- Wakayama Symposium, Wakayama (Japan), December 2011.
- Recent Developments in Statistics, Empirical Finance and Econometrics. Kyoto (Japan), Novembre 2011.
- Seminar. School of Public Health, University of Tampere (Finland), May 2011.
- Dependence in Probability and Statistics, CIRM Luminy (France). April 2011.
- Seminar. Department of Statistics, Charles University in Prague, (Czech Republic), April 2011.
- Seminar. Institute for Mathematical Stochastics, University of Göttingen (Germany), January 2011.
- Seminar. Mathematical Faculty, Ruhr-University Bochum (Germany), November 2010.
- Seminar. Department of Statistics, Graz University of Technology (Austria), November 2010.

- Seminar. Department of Mathematics and Statistics, Utah State University, Logan (USA), September 2010.
- Seminar. Mathematical Institute, University of Cologne (Germany), June 2010.
- Seminar. OR and Business Statistics, K.U. Leuven (Belgium), Mai 2010.
- Seminar. Université Lille 3 (France), March 2010.
- Workshop on structural breaks in time series, Lambrecht (Germany), February 2010.
- Seminar. Department of Mathematics, University of Hamburg (Germany), February 2010.
- Seminar. Department of Mathematics and Computer Science, FU-Berlin (Germany), November 2009.
- Seminar. Department of Mathematical and Statistical Sciences, University of Alberta, Edmonton (Canada), September 2009.
- Symposium on "New Directions in Asymptotic Statistics", Athens (Georgia, USA), May 2009.
- ISDS Colloquium, Institut für Statistik und Decision Support Systems, Vienna (Austria), June 2008.
- Conference. IISA meeting, University of Connecticut, Storrs (USA), May 2008.
- Seminar. Department of Mathematics and Statistics, Utah State University, Logan (USA), October 2007.
- Seminar. Department of Mathematics, University of Salzburg, (Austria), June 2007.
- Conference. Statistical Models for Financial Data II, Graz (Austria), May 2007.
- Seminar. Diskussionsforum Junge Statistik, Vienna (Austria), March 2006.

Other International Conference Presentations

- Workshop on statistical inference in complex/high-dimensional problems, Vienna (Austria), July 2012.
- German Open Conference on Probability and Statistics, Mainz (Germany), March 2012.
- 2nd International Workshop on Functional and Operatorial Statistics, Santander (Spain), June 2011.
- 10th International Vilnius Conference on Probability and Mathematical Statistics, Vilnius (Lithuania), June 2010.
- German Open Conference on Probability and Statistics, Leipzig (Germany), March 2010.
- NBER-NSF Time Series Conference, Davis (USA), September 2009.
- Workshop on Limit Theorems, Prague (Czech Republic), August 2009.
- Statistical Science Symposium/Shumway Lectures, Davis (USA), April 2009.
- 7th World Congress in Probability and Statistics (Singapore), July 2008.
- Prague Stochastics 2006, Prague (Czech Republic), August 2006.
- 9th International Vilnius Conference on Probability Theory and Mathematical Statistics, Vilnius (Lithuania), June 2006.
- ROeS Seminar, Graz (Austria), September 2005.
- 9th Young Statistician Meeting, Rimini (Italy), October 2004.
- Statistische Wochen 2004, Vienna (Austria), September 2004.

Research stays

- UC Davis (invitation by A. Aue), April–May 2016.
Oberwolfach (research in pairs with A. Aue), June 2013.
UC Davis (invitation by A. Aue), April 2013.
Charles University Prague (invitation by M. Hušková), April 2011.
Utah State University (invitation by P. Kokoszka), September 2010.
Oberwolfach (invitation by Leibnitz fellow C. Aistleitner), June 2010.
University of Alberta (invitation by E. Gombay), September 2009.

Teaching

ULB: Analyse Multivariée, Calcul Stochastique, Probabilités et Statistique, Probabilité II, Graduate Statistics I, Graduate Statistics II, Stochastic models, Time Series Analysis I, Time Series Analysis II, Topics in Mathematical Statistics.

Solvay Brussels School of Economics & Management: Stochastic Analysis, Probability Theory.

University of Utah: Applied Statistics, Linear Models, Multilinear Models, Time Series Analysis.

Graz University of Technology: Höhere Wahrscheinlichkeitstheorie, Wahrscheinlichkeitstheorie und Stochastische Prozesse für Telematik.

University of Tampere: Functional Data Analysis.

Students

Lukasz Kidziński. Inference for stationary functional time series: dimension reduction and regression. (PhD Thesis.)

Abdelkamel Alj. Contribution to the estimation of VARMA models with time-dependent coefficients. (PhD Thesis, co-director.)

Julien Remy. The LASSO. (Master Thesis.)

Clément Cerovecki. Théorèmes limites pour des processus stationnaires à valeurs fonctionnelles. (Master Thesis.)

Gilles Nisol. Frequency Domain Analysis for Functional Time Series. (Master Thesis.)

R. Viroux. Revues des techniques d'agrégation des risques dans le contexte de Solvency II et Benchmarking. (Master Thesis.)

S. Catozzi. On-line determination of the confidence degree in the kinetic model in a hybrid state observer. (Master Thesis, co-director.)

Kim Schalbar. Properties and Structure of GARCH models and their Generalizations. (Master thesis.)

Diogo Dubart Norinho. Functional AR(1) processes: asymptotic theory and forecasting. (Master thesis.)

Further Professional Activities

Associate editor: Annals of Statistics (2016 – present), Journal of Statistical Planning and Inference (2012 – present), Statistical Inference for Stochastic Processes (2013 – present), Statistics and Probability Letters (2014 – 2016).

Organizer of the statistics seminar series at ULB (2009 – present).

Erasmus coordinator of the Département de Mathématique, ULB (2013 – present).

Vice president of the Département de Mathématique, ULB (2014 – present).

President of the École Doctorale Thématique (EDT) in Statistics and Actuarial Sciences of the French speaking community in Belgium (2015 – present).

President of the jury for the Master in Statistics, ULB (2015 – present).

Referee for the following journals: Annals of Statistics, Atmosphere, Austrian Journal of Statistics, Bernoulli, Biometrika, Computational Statistics, Computational Statistics and Data Analysis, Econometric Theory, Electronic Communications in Probability, Electronic Journal of Statistics, Extremes, Glasnik Matematički, International Statistical Reviews, JASA, Journal of Applied Probability, Journal of Econometrics, Journal of Mathematical Analysis and Applications, Journal of Multivariate Analysis, Journal of Statistical Planning and Inference, Journal of Statistical Software, Journal of the Royal Statistical Society, Journal of Theoretical Probability, Journal of Time Series Analysis, Metrika, Rocky Mountain Journal of Mathematics, Periodica Mathematica Hungarica, Probability and Mathematical Statistics, Spatial Statistics, Statistical Methodology, Statistics, Statistics and Probability Letters, Stochastic Processes and their Applications.

Reviewer for Mathematical Reviews. (2007–2016).

PhD committees Rémi Dendievel (ULB, 2016), Thomas Mendlik (TU Graz, 2016), Stanislav Nagy (KU Leuven, 2016), Anne van Delft (University of Maastricht, 2016), Lorenzo Ricci (ULB, 2016), Harry-Paul Vander Elst (ULB, 2015), Christopher Van Weverberg (ULB, 2015), Sarah Dendievel (ULB, 2015), Ah Yeon Park (University College London, 2014), Christopher Bruffaerts (ULB, 2014), Marko Raseta (TU Graz, 2014), Germain Van Bever (ULB, 2013), Gregory Rayée (ULB, 2013), Abdel Kamel Alj (ULB, 2012), Guillaume Lepage (CREST and Université Lille 3, 2012), Christophe Ley (ULB, 2010).

Membership International Statistical Institute (ISI), Belgian Statistical Society (BSS), Institute of Mathematical Statistics (IMS)

Organizing committee 2nd IAP StUDyS Workshop, Brussels, 2014; Workshop on Recent Advances in Time Series and Econometrics, Brussels, 2013; Statistical Models for Financial Data III, Graz (Austria), 2012; Journées de Statistique 2012, Brussels; Young Statisticians Meeting 2005, Seggau (Austria).

Project collaborator at the EU-Life Project KAPA-GS. (2004–2007).

Collaborators

Christoph Aistleitner (Graz University of Technology)

Alexander Aue (UC Davies)

Istvan Berkes (Graz University of Technology)

Clément Cerovecki (ULB)

Yves Dominicy (ULB)
Herwig Friedl (Graz University of Technology)
Robertas Gabrys (University of Southern California)
Marc Hallin (ULB)
Lajos Horváth (University of Utah)
Marie Hušková (Charles University)
Łukasz Kidziński (Stanford University)
Piotr Kokoszka (Colorado State University)
Gilles Nisol (ULB)
Hiroaki Ogata (Waseda University)
Brigitte Pfeiler (Graz University of Technology)
Ron Reeder (University of Utah)
Matthew Reimherr (Pennsylvania State University)
Johannes Schauer (OSRAM Munich)
Ernst Stadlober (Graz University of Technology)
Josef Steinebach (University of Cologne)
Yvik Swan (University of Liège)
David Veredas (Vlerick Business School)
Michel Weber (University of Strasbourg)