# Marie-Christine Düker


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## Affiliation

Postdoctoral Associate, *Cornell University* 2020–present
Advisors: Dr. David Matteson, Dr. Gennady Samorodnitsky

## Education

*Ruhr-University Bochum*, Faculty of Mathematics 2016–2020
Ph.D. Mathematics
*Summa Cum Laude*
Thesis: *High-dimensional time series under long-range dependence and nonstationarity*
Advisor: Dr. Herold Dehling

*The University of North Carolina at Chapel Hill*, 2018–2019
Department of Statistics and Operations Research
Visiting Scholar
Advisor: Dr. Vladas Pipiras

*Ruhr-University Bochum*, Faculty of Mathematics 2014–2016
MS Mathematics with Minor Economics
*Summa Cum Laude*

*Ruhr-University Bochum*, Faculty of Mathematics 2011–2014
BS Mathematics with Minor Economics

## Publications

### Published Papers

[1] M.-C. Düker, V. Pipiras, and R. R. Sundararajan. Cotrending: testing for common deterministic trends in varying means model. *Journal of Multivariate Analysis*, page 104825, 2021.

[2] M.-C. Düker. Limit theorems in the context of multivariate long-range dependence. *Stochastic Processes and their Applications*, 130(9):5394–5425, 2020.

[3] M.-C. Düker and V. Pipiras. Asymptotic results for multivariate local Whittle estimation with applications. *8th IEEE International Workshop on Computational Advances in Multi-Sensor Adaptive Processing (CAMSAP)*, pages 1–5, 2019.

[4] M.-C. Düker. Limit theorems for Hilbert space-valued linear processes under long-range dependence. *Stochastic Processes and their Applications*, 128(5):1439–1465, 2018.

### Preprints

[5] M.-C. Düker, R. Lund and V. Pipiras. High-dimensional latent Gaussian count time series: Concentration results for autocovariances and applications. *Preprint*, 2023.

[6] A. Betken and M.-C. Düker. Second order asymptotics of the empirical process under long-range dependence. *Preprint*, 2022.

[7] M.-C. Düker, S.-O. Jeong, T. Lee, C. Baek. Detection of multiple change-points in high-dimensional panel data with cross-sectional and temporal dependence. *Preprint*, 2021.

[8] C. Baek, M.-C. Düker, and V. Pipiras. Local Whittle estimation of high-dimensional long-run variance and precision matrices. *Preprint*, 2021.

[9] Y. Xu, M.-C. Düker, D. S. Matteson. Testing Simultaneous Diagonalizability. *Preprint*, 2021.

[10] M.-C. Düker. Sample autocovariance operators of long-range dependent Hilbert space-valued linear processes. *Preprint*, 2020.

### Interdisciplinary Papers

[8] C. Goolsby, J. Losey, Y. Xu, M.-C. Düker, M. Sherman Getmansky, D. S. Matteson, M. Moradi. Addressing the embeddability problem in transition rate estimation. *Preprint*, 2021.

[9] M. Davidow, M. Cory, J. Che-Castaldo, T. Schafer, M.-C. Düker, D. Corcoran, D. S. Matteson. Clustering Future Scenarios Based on Predicted Range Maps. *Preprint*, 2021.

### Available upon request

## Awards and Fellowships

Outstanding thesis award in STEM, Dr. Heinrich-Kost-Preis Gesellschaft der Freunde der RUB

Ph.D. Fellowship, DFG (German Research Foundation) funded,
Research Training Group 2131 *High-dimensional Phenomena in Probability* — 2016–2019

## Employment

*Postdoctoral Associate*, Cornell University, Department of Statistics and Data Science — 2020–present

*Research Assistant*, Ruhr-University Bochum, Faculty of Mathematics
Research Training Group 2131 *High-dimensional Phenomena in Probability* — 2016–2020

*Student Research Assistant*, Ruhr-University Bochum, Faculty of Mathematics
Collaborative Research Center 823 *Statistical modeling of nonlinear dynamic processes* — 2015–2016

*Student Teaching Assistant*, Ruhr-University Bochum, Faculty of Mathematics — 2015–2016

*Student Research Assistant*, Ruhr-University Bochum, Institute of Hydrology,
Water Resources Management and Environmental Engineering — 2014–2015

## Teaching

Teaching Assistant Financial Mathematics (Summer term 2020)

Teaching Assistant Analysis III (Winter term 2017)

Teaching Assistant Analysis I (Winter term 2016)

Co-advisor for the seminar ”Statistics in everyday life" (Winter term 2015)

## Presentations

Conference “Adaptive and high-dimensional spatio-temporal methods for forecasting", CIRM Luminy, September 2022 (invited).

Seminar, Econometrics and Statistics, University of Chicago, Booth School of Business, virtual, March 2022 (invited).

Seminar, Department of Statistics, University of Wisconsin Madison, virtual, February 2022 (invited).

Seminar, Department of Statistics, University of Michigan, January 2022 (invited).

10th International Conference of the ERCIM WG on Computational and Methodological Statistics, virtual, 18–20th December 2021 (invited).

Stochastic Seminar, Department of Mathematics, University of Utah, October 2021 (invited).

Joint Statistical Meeting 2021, virtual, 7–12th August 2021.

10th World Congress, virtual, July 19th–23rd.

Graduate Seminar, Department of Statistics and Operations Research, UNC Chapel Hill, September 2019.

40th Conference on Stochastic Processes and their Applications, Gothenburg, 11–15th of June 2018.

13th German Probability and Statistics Days, Freiburg, 27th February–02nd March 2018.

10th International Conference of the ERCIM WG on Computational and Methodological Statistics, London, 16–18th December 2017.

Graduate Seminar, Department of Statistics and Operations Research, TU Dortmund, November 2017.

31st European Meeting of Statisticians, Helsinki, 24–28th July 2017.

## Professional Service

Referee for the following journals:

- Annals of Statistics
- Biometrika
- Stochastic Processes and their Applications
- Journal of Econometrics
- Journal of Statistical Planning and Inference
- Econometrics and Statistics
- The American Statistician
- Journal of the Korean Statistical Society
- Applications of Mathematics
- ASA Student paper award 2021

Assistant Editor for the journal Data Science in Science.

Co-organizer KDD 2021 Workshop *Risk identification and quantification in complex human-natural systems via convergent data intensive research.*

## Languages and Computer skills

German, English

R, MATLAB, Python, C, VBA

Last updated: February 12, 2023