

# Maximilian A. März

## *Curriculum Vitae*

Technische Universität Berlin  
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### Education

- since 05/2016 **PhD Student**, Technical University Berlin.  
Topics include sparsity models in compressive sensing
- 04/2013 – 05/2016 **Studies in Mathematics (M. Sc.)**, Technical University Berlin.  
Final grade: 1.0
- 08/2014 – 06/2015 **Exchange Student**, Emory University, Atlanta.  
Course work, research project about quantitative susceptibility mapping
- 10/2009 – 09/2012 **Studies in Mathematics (B. Sc.)**, University of Konstanz.  
Final grade: 1.0 with distinction
- 10/2007 – 03/2008 **Early Enrollment at TU Kaiserslautern**, Kaiserslautern.  
Studies in mathematics while being still at school
- 09/1999 – 06/2008 **Kreisgymnasium Hochschwarzwald**, Titisee-Neustadt.  
Higher education entrance qualification, Final Grade: 1.1

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### Professional Experience

- since 05/2016 **Scientific Employee**, Technical University Berlin.  
Applied Functional Analysis Group
- 10/2015 – 05/2016 **Student Research Assistant**, TU Berlin.  
Applied Functional Analysis Group
- 10/2013 – 05/2016 **Student Teaching Assistant**, TU Berlin.  
Tutor, Analysis I and II for Engineers
- 10/2012 – 03/2013 **Internship at Reinsurance Company Munich Re**, Munich.  
Corporate Pricing and IT
- 10/2011 – 08/2012 **Student Teaching Assistant**, University of Konstanz.  
Tutor, Analysis I and II
- 09/2008 – 07/2009 **Civilian Service**, Freiburg.  
Radiology section of a hospital

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### List of Publications

- M. Genzel, J. Macdonald, and M. März. “Solving Inverse Problems With Deep Neural Networks – Robustness Included?” arXiv preprint: 2011.04268. (2020)
- M. März, C. Boyer, J. Kahn, and P. Weiss. “Sampling Rates for  $\ell^1$ -Synthesis”. arXiv preprint: 2004.07175. (2020)
- J. Macdonald, M. März, L. Oala, and W. Samek. “Interval Neural Networks as Instability Detectors for Image Reconstructions”. arXiv preprint: 2003.13471. (2020)

- L. Oala, C. Heiß, J. Macdonald, M. März, et al. “Interval Neural Networks: Uncertainty Scores”. arXiv preprint: 2003.11566. (2020)
- M. Genzel, M. März, and R. Seidel. “Compressed Sensing with 1D Total Variation: Breaking Sample Complexity Barriers via Non-Uniform Recovery”. arXiv preprint: 2001.09952. (2020)
- T. A. Bubba, G. Kutyniok, M. Lassas, M. März, et al. “Learning the invisible: a hybrid deep learning-shearlet framework for limited angle computed tomography”. In: *Inverse Problems* 35.6 (2019)
- C. Lazarus, M. März, and P. Weiss. “Correcting the ADC effects in MR image reconstruction”. In: *Journal of Mathematical Imaging and Vision* (2020)
- M. Genzel, G. Kutyniok, and M. März. “ $\ell^1$ -Analysis Minimization and Generalized (Co-)Sparsity: When Does Recovery Succeed?” In: *Applied and Computational Harmonic Analysis* (2020). in press
- H. Boche, G. Caire, R. Calderbank, M. März, et al., eds. *Compressed Sensing and its Applications. Second International MATHEON Conference 2015*. Applied and Numerical Harmonic Analysis. Birkhäuser-Springer, 2017
- G. Kutyniok, J. Ma, and M. März. “Mathematical Methods in Medical Image Processing”. In: *Quantification of Biophysical Parameters by Medical Imaging*. Ed. by I. Sack and T. Schäffter. Springer, 2017
- T. A. Bubba, M. März, Z. Purisha, M. Lassas, et al. “Shearlet-based regularization in sparse dynamic tomography”. In: *Wavelets and Sparsity XVII, Proc. SPIE 10394*. Ed. by Y. M. Lu, D. Van De Ville, and M. Papadakis. 2017
- J. Ma, M. März, S. Funk, J. Schulz-Menger, et al. “Shearlet-based Compressed Sensing for fast 3D cardiac MR imaging using iterative reweighting”. In: *Physics in Medicine and Biology* 63.23 (2018)
- J. Ma and M. März. “A multilevel based reweighting algorithm with joint regularizers for sparse recovery”. arXiv preprint: 1604.06941. (2016)
- M. März and L. Ruthotto. “Combined Background Field Removal and Reconstruction for Quantitative Susceptibility Mapping”. In: *Bildverarbeitung für die Medizin 2016*. Ed. by T. Tolxdorff, T. M. Deserno, H. Handels, and H.-P. Meinzer. Springer Vieweg, 2016, pp. 8–13

#### Theses

- *Compressed Sensing using Block Sampling Strategies and the Analysis Formulation*. Master’s Thesis, Supervisor: Prof. Dr. Gitta Kutyniok. 2016
- *Abbildungsgrade und Anwendung auf nichtlineare Gleichungen*. Bachelor’s Thesis, Supervisor: Prof. Dr. Robert Denk. 2012

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#### Honors and Awards

- 11/2016 **Award “Best Presentation”**.  
Dies Mathematics, TU Berlin
- 10/2014 **Acceptance at Berlin Mathematical School**.  
Graduate school for mathematics
- 03/2014 **Fulbright Grant**.  
Travel scholarship for exchange year at Emory University, Atlanta
- since 04/2013 **ReMember**.  
Student loyalty program for talented interns at Munich Re

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## Invited Talks

- 02/2019 **Joint Annual Meeting of DMV-GAMM**, Vienna, Austria.
- 11/2018 **5th International Workshop on Compressed Sensing Theory and its Applications to Radar, Sonar and Remote Sensing**, Siegen, Germany.
- 06/2018 **OSA Imaging and Applied Optics Congress**, Orlando, USA.
- 06/2018 **Workshop in Microlocal Analysis**, London, UK.
- 03/2018 **Joint Annual Meeting of DMV-GAMM**, Munich, Germany.
- 11/2017 **Seminar Mathématiques de l'apprentissage**, Toulouse, France.
- 10/2017 **CMO-BIRS Workshop on Mathematical Advances in Electron Microscopy**, Oaxaca, Mexico.
- 12/2017 **Inverse Days**, Kuopio, Finland.
- 03/2015 **Scientific Computing Seminar at Emory University**, Atlanta, USA.

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## Scientific Talks and Workshops

- 03/2018 **Oberwolfach Workshop on Applied Harmonic Analysis and Data Processing**, Oberwolfach, Germany.  
Invited participant
- 02/2018 **Rhein-Ruhr-Workshop**, Bestwig, Germany.  
Conference presentation
- 07/2016 **CoSIP Colloquium**, Aachen, Germany.  
Short presentation
- 03/2016 **Joint Annual Meeting of DMV-GAMM**, Braunschweig, Germany.  
Conference presentation
- 03/2016 **Bildverarbeitung für die Medizin**, Berlin, Germany.  
Conference presentation

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## Research Visits

- 22/05 – 01/06/2018 **Institut de Mathématiques de Toulouse**.  
Invited by Claire Boyer
- 05/03 – 16/03/2018 **Institut de Mathématiques de Toulouse**.  
Invited by Pierre Weiss
- 06/11 – 23/11/2017 **Institut de Mathématiques de Toulouse**.  
Invited by Pierre Weiss
- 28/04 – 04/05/2017 **Institut de Mathématiques de Toulouse**.  
Invited by Pierre Weiss
- 04/03 – 01/05/2017 **Department of Mathematics, University of Helsinki**.  
Invited by Samuli Siltanen

- 21/02 – 04/03/2017 **Institut de Mathématiques de Toulouse.**  
Invited by Pierre Weiss
- 04/01 – 16/01/2017 **Institut de Mathématiques de Toulouse.**  
Invited by Pierre Weiss
- 11/12 – 18/12/2016 **Department of Mathematics, University of Helsinki.**  
Invited by Samuli Siltanen
- 04/10 – 14/10/2016 **Institut de Mathématiques de Toulouse.**  
Invited by Pierre Weiss

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### Academic Activities

- 29/11 – 01/12/2017 **Organizer of CoSIP Intense Course on Deep Learning.**  
Organization of a winter school together with Gitta Kutyniok and Rudolf Mathar
- 07/12 – 09/12/2016 **Organizer of CoSIP Winter Retreat.**  
Organization of a workshop together with Holger Boche, Gitta Kutyniok and Rudolf Mathar
- Ongoing **Review Work.**  
IEEE Transactions on Information Theory  
SIAM Journal on Imaging Sciences  
IEEE Access  
Acta Applicandae Mathematicae  
Journal of Synchrotron Radiation

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### Extra Curricular Activities

- 10/2010 – 03/2013 **Student Council**, University of Konstanz.  
Administrative work
- 10/2011 – 10/2012 **Student Representative**, University of Konstanz.  
Various commissions of the mathematical faculty
- 03/2012 – 07/2012 **Appointment Committee**, University of Konstanz.  
Stochastics professorship

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### Teaching Experience

- Winter Term 2018/19 **Analysis I for Engineers**, TU Berlin.  
Teaching Assistant
- Winter Term 2016/17 **Differential Equations for Engineers**, TU Berlin.  
Tutor
- Summer Term 2016 **Functional Analysis I**, TU Berlin.  
Tutor
- Winter Term 2014/15 **Analysis II for Engineers**, TU Berlin.  
Tutor
- Summer Term 2014 **Analysis II for Engineers**, TU Berlin.  
Tutor
- Winter Term 2013/14 **Analysis I for Engineers**, TU Berlin.  
Tutor

Summer Term 2012 **Analysis II**, University of Konstanz.  
Tutor

Winter Term **Analysis I**, University of Konstanz.  
2011/12 Tutor

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## Languages

English	<b>Fluent</b>	(TOEFL 113)
Latin	<b>Proficiency certificate</b>	(1.0)
French	<b>Good knowledge</b>	