

# Mario Teixeira Parente

## Academic CV

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### Experience

- 03/2021 – now *University of Applied Sciences Munich (HM)*  
**Lecturer**  
Uncertainty Quantification, Linear Algebra
- 10/2020 – now *Jülich Centre for Neutron Science (JCNS)*  
**Postdoctoral researcher**  
Machine learning-based data analysis of neutron experiments



### Education

- 10/2016 – 09/2020 *Technical University of Munich (TUM)*  
**Mathematics (Dr. rer. nat.)**  
PhD Thesis Active Subspaces in Bayesian Inverse Problems
- 10/2013 – 04/2016 *Ludwig-Maximilians-Universität Munich (LMU)*  
**Mathematics (M.Sc.)**  
Master Thesis Brownian Motion and the Dirichlet Problem
- 10/2010 – 09/2013 *University of Applied Sciences Munich (HM)*  
**Scientific Computing (B.Sc.)**  
Bachelor Thesis N.V. Krylov's Proof of the de Moivre-Laplace Theorem

### Scholarships

- 04/2012 – 05/2016 **German Academic Scholarship Foundation** (Studienstiftung des deutschen Volkes)
- 04/2012 – 04/2016 **Max Weber Program of the State of Bavaria** (Max Weber-Programm Bayern)
- 10/2011 – 03/2012 **Deutschlandstipendium**

### Volunteering

- 10/2021 – now **Mentor for the Max Weber Program of the State of Bavaria**, Supervision of scholarship holders, Munich
- 2016 – now **Committee member for admissions seminars of the German Academic Scholarship Foundation**, Evaluation of personal interviews and group discussions, Germany

### Teaching

- Summer 2022 **Fundamentals of Uncertainty Quantification**, *Lecturer*, HM
- Winter 2021/22 **Linear Algebra**, *Lecturer*, HM
- Summer 2021 **Fundamentals of Uncertainty Quantification**, *Lecturer*, HM
- Summer 2020 **Mathematical Models for UQ in Hydrology**, *Module construction*, TUM
- Winter 2019/20 **Introduction to Numerical Linear Algebra**, *Exercise coordinator*, TUM
- Summer 2019 **Numerics of PDEs for Engineers**, *Exercise coordinator*, TUM
- Winter 2018/19 **Modeling and Simulation with ODEs**, *Tutor*, TUM
- Summer 2018 **Numerics for ODEs**, *Tutor*, TUM
- Winter 2017/18 **Introduction to Numerical Linear Algebra**, *Tutor*, TUM
- Summer 2017 **Introduction to Programming**, *Tutor*, TUM
- Summer 2017 **Hauptseminar: Uncertainty Quantification with Efficient Monte Carlo Methods**, TUM
- Winter 2015/16 **Stochastics**, *Tutor*, LMU
- Winter 2014/15 **Analysis I**, *Tutor*, LMU

Winter 2011/12 **Linear Algebra, Software Engineering, Tutor**, HM

### Certificates

- 2017 – 2019 **Certificate for Teaching in Higher Education of the Bavarian Universities**, *Advanced level*, TUM ProLehre
- 2017 – 2019 **Certificate for Teaching in Higher Education of the Bavarian Universities**, *Introductory level*, TUM ProLehre

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### Articles

#### Preprints

#### Journal papers

- 2022 **TP., M.**, Schneidewind, A., Brandl, G., Franz, C., Noack, M., Boehm, M., & Ganeva, M. (2022). Benchmarking autonomous scattering experiments illustrated on TAS. *Frontiers in Materials*, 8, 772014. doi:10.3389/fmats.2021.772014
- 2020 **TP., M.**, Wallin, J., & Wohlmuth, B. (2020). Generalized bounds for active subspaces. *Electronic Journal of Statistics*, 14(1), 917–943. doi:10.1214/20-EJS1684
- 2020 Bittner, D., **TP., M.**, Mattis, S., Wohlmuth, B., & Chiogna, G. (2020). Identifying relevant hydrological and catchment properties in active subspaces: An inference study of a lumped karst aquifer model. *Advances in Water Resources*, 135, 103472. doi:10.1016/j.advwatres.2019.103472
- 2019 **TP., M.**, Bittner, D., Mattis, S., Chiogna, G., & Wohlmuth, B. (2019). Bayesian calibration and sensitivity analysis for a karst aquifer model using active subspaces. *Water Resources Research*, 55(8), 7086–7107. doi:10.1029/2019WR024739
- 2019 **TP., M.**, Mattis, S., Gupta, S., Deusner, C., & Wohlmuth, B. (2019). Efficient parameter estimation for a methane hydrate model with active subspaces. *Computational Geosciences*, 23(2), 355–372. doi:10.1007/s10596-018-9769-x

#### Not published

**TP., M.**, *A probabilistic framework for approximating functions in active subspaces*

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### Talks, Conferences, etc.

- 12/2021 **MLZ User Meeting**, *Benchmarking autonomous TAS experiments*, Heinz Maier-Leibnitz Zentrum
- 11/2021 **Workshop on SAXS@XFELs and HI & HE laser driven matter**, *Benchmarking autonomous TAS experiments*, Helmholtz-Zentrum Dresden-Rossendorf
- 10/2021 **Workshop on Innovative Inelastic Neutron Scattering**, *Benchmarking autonomous scattering experiments illustrated on TAS*, Institut Laue-Langevin
- 02/2021 **Workshop on Autonomous Discovery in Science and Engineering**, *Autonomous Experiments for Neutron Three-Axis Spectrometers (TAS) with Log-Gaussian Processes*, Center for Advanced Mathematics for Energy Research Applications, Lawrence Berkeley National Laboratory
- 03/2020 **SIAM UQ 2020**, *Solving a Bayesian Inverse Problem for a Karst Aquifer Model with Active Subspaces*, Garching (canceled due to outbreak of SARS-CoV-2)
- 05/2019 **Statistics Seminar**, *Active subspaces in Bayesian inverse problems*, Department of Statistics, Lund University
- 03/2018 **M2 Oberseminar**, *Active subspaces for Bayesian inversion, Application for a methane hydrate model*, Garching

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### Trainings

- 03/2017 **Parallel Programming of High Performance Systems**, Leibniz Computing Centre (LRZ)
- 02/2017 **Advanced C++ with Focus on Software Engineering**, Regionales RechenZentrum Erlangen (RRZE)

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### Other experiences

- 05/2019 **Research stay abroad**, Department of Statistics, Lund University, Topic: Theory of active subspaces
- 02/2019 – 03/2018 **Research stay abroad**, University of Texas at Austin (UT), Project: UNcertainties due to boundary conditions in predicting MIXing in groundwater (UNMIX)
- 06/2016 – 09/2016 **Student assistant**, HM, Project: Modeling and simulation of pedestrian movement
- 04/2016 – 05/2016 **Research internship**, Yale University (USA), Image processing of nanoscopic images in cell biology
- 10/2012 – 11/2013 **Student assistant**, HM, Project: Modeling and simulation of pedestrian movement

Munich, August 23, 2022