

# 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 acquisition of neutron experiments
- 10/2016 – 09/2020 *Technical University of Munich (TUM)*  
**Scientific employee**  
Research and teaching in applied mathematics



### 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
- 03/2015 – 02/2016 **Volunteer at Salesianum München.** Support for refugees and other disadvantaged young people

### Teaching

- Summer 2023 **Fundamentals of Uncertainty Quantification.** *Lecturer.* HM
- Winter 2022/23 **Linear Algebra.** *Lecturer.* HM
- 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 of 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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### Journal articles

- 2023 **TP., M.,** Brandl, G., Franz, C., Stuhr, U., Ganeva, M. & Schneidewind, A., (2023). Active learning-assisted neutron spectroscopy with log-Gaussian processes. *Nature Communications* **14**, 2246. doi: [10.1038/s41467-023-37418-8](https://doi.org/10.1038/s41467-023-37418-8)  
 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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/10.1007/s10596-018-9769-x)

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### Talks, Conferences, etc.

- 06/2023 **Helmholtz AI Conference 2023.** *Active learning-assisted neutron spectroscopy with log-Gaussian processes.* Helmholtz AI, Helmholtz Association  
 04/2023 **Machine Learning Workshop.** *Active learning-assisted neutron spectroscopy with log-Gaussian processes.* Lawrence Berkeley National Laboratory  
 03/2023 **ECNS 2023.** *AI-assisted neutron spectroscopy - Log-Gaussian processes for TAS.* Heinz Maier-Leibnitz Zentrum  
 10/2022 **JCMS Workshop** (invited talk). *AI-assisted neutron spectroscopy - Log-Gaussian processes for TAS.* Jülich Centre for Neutron Science  
 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). Topic: Image processing of nanoscopic images in cell biology
- 10/2012 – 11/2013 **Student assistant**. HM. Project: Modeling and simulation of pedestrian movement

Kirchheim b. München, June 19, 2023