

DR. QUIRIN AUMANN

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qaumann

EXPERIENCE

Postdoctoral researcher

Max Planck Institute for Dynamics of Complex Technical Systems

Oct 2021 – Ongoing

Magdeburg, Germany

I work on robust and adaptive algorithms for model order reduction based on interpolation-based and data-driven methods. I develop software to make them readily available and do my best to comply to the FAIR principles for sustainable research data. My methods are applicable to complex, parameterized engineering systems.

Research assistant

Technical University of Munich

Mar 2017 – Mar 2021

Munich, Germany

I focused on interpolatory model order reduction and developed data-driven methods for the reduction of parameterized models. My main application cases were vibro-acoustic problems. I contributed to the open-source FE framework Kratos Multiphysics.

PROJECTS

CRC/TR 96: Thermo-energetic design of machine tools

German Research Foundation

Oct 2021 – Ongoing

I apply data-driven strategies to compute efficient models to simulate the work process of machine tools.

Master's Thesis

International Centre for Numerical Methods in Engineering (CIMNE)

May 2016 – Oct 2016

Barcelona, Spain

During a research stay I worked on my Master's Thesis "Simulating wind fields over complex terrain – From digital terrain model to CFD simulation".

PUBLICATIONS

Selected Journal Articles

- Aumann, Q. and Werner, S. W. R. 2023, "Structured model order reduction for vibro-acoustic problems using interpolation and balancing methods," *J. Sound Vib.*, vol. 543, p. 117 363,
- Aumann, Q., Deckers, E., Jonckheere, S., Desmet, W., and Müller, G. 2022, "Automatic model order reduction for systems with frequency-dependent material properties," *Comput. Methods Appl. Mech. Eng.*, vol. 397, p. 115 076,
- Aumann, Q. and Müller, G. 2021, "Predicting near optimal interpolation points for parametric model order reduction using regression models," *PAMM*, vol. 20, no. S1,

Selected Conference Talks

- Aumann, Q., Benner, P., Gosea, I. V., Saak, J., and Vettermann, J. 2022, *Data driven reduced-order modeling of thermo-mechanical models of machine tools*, MORE – Model Reduction and Surrogate Modeling, Berlin, Germany.
- Aumann, Q. and Müller, G. 2022, *An adaptive method for reducing second-order dynamical systems*, 10th Vienna International Conference on Mathematical Modelling, Vienna, Austria.

TECHNICAL SKILLS

Matlab

C++

Python



Git

Microsoft Office

ANSYS Workbench / APDL



LANGUAGES

German

English



INTERSHIPS

AJG Ingenieure

May 2014 – Jul 2014

Munich, Germany

Structural engineering and FE modeling

AECOM Germany

Feb 2014 – Apr 2014

Munich, Germany

Project management

MüllerBBM

Oct 2013 – Jan 2014

Planegg, Germany

Engineering acoustics

EDUCATION

Ph.D. (Dr.-Ing.)

Technical University of Munich

Mar 2017 – Aug 2022

Thesis title: Efficient and robust interpolation-based model order reduction of vibro-acoustic problems.

M.Sc. Computational Mechanics

Technical University of Munich

Oct 2014 – Feb 2017

B.Sc. Civil Engineering

Technical University of Munich

Oct 2010 – Sep 2013

REFERENCES

Prof. Dr. Peter Benner

Max Plank Institute for Dynamics of Complex Technical Systems

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Prof. Dr. Gerhard Müller

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