DR. QUIRIN AUMANN

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EDUCATION AND SCIENTIFIC CAREER

Postdoctoral researcher **10/2021 - Present**
Max Planck Institute for Dynamics of Complex Technical Systems *Magdeburg, Germany*

- Interpolation-based and data-driven model order reduction methods for complex engineering systems.
- Member of DFG CRC/TR96 Thermo-energetic design of machine tools. Model order reduction for thermo-elastic multibody systems.

PhD Research **3/2017 - 9/2021**
Technical University of Munich, Chair of Structural Mechanics *Munich, Germany*

- Thesis title: Efficient and robust interpolation-based model order reduction of vibro-acoustic problems. Final grade "magna cum laude".

Research stay **9/2019 - 10/2019**
Mecha(tro)nic System Dynamics, KU Leuven *Leuven, Belgium*

M.Sc. Computational Mechanics **10/2014 - 2/2017**
Technical University of Munich *Munich, Germany*

- Final grade "passed with high distinction" (1.2)
- Thesis title: Simulating wind fields over complex terrain – From digital terrain model to CFD simulation. Final grade "Very good" (1.0).

Research stay **5/2016 - 10/2016**
International Centre for Numerical Methods in Engineering (CIMNE) *Barcelona, Spain*

B.Sc. Civil Engineering. Final grade "passed with merit" (1.9). **10/2010 - 9/2013**
Technical University of Munich *Munich, Germany*

Abitur, majoring in mathematics and biology. Final grade "good" (1.9). **9/2000 - 6/2009**
Ernst-Mach-Gymnasium Haar *Haar, Germany*

LIST OF PUBLICATIONS

Selected original publications

- **Aumann, Q.** and Werner, S. W. 2023, "Structured model order reduction for vibro-acoustic problems using interpolation and balancing methods," *J. Sound Vib.*, vol. 543, p. 117 363, DOI: 10.1016/j.jsv.2022.117363.
- **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, DOI: 10.1016/j.cma.2022.115076.
- **Aumann, Q.** and Müller, G. 2022, "Robust error assessment for reduced order vibro-acoustic problems," *J. Sound Vib.*, p. 117 427, DOI: https://doi.org/10.1016/j.jsv.2022.117427.
- **Aumann, Q.** and Müller, G. 2021, "Predicting near optimal interpolation points for parametric model order reduction using regression models," *PAMM*, vol. 20, no. S1, DOI: 10.1002/pamm.202000352.
- Jagodzinski, D. J., Miksch, M., **Aumann, Q.**, and Müller, G. 2020, "Modeling and optimizing an acoustic metamaterial to minimize low-frequency structure-borne sound," *Mech. Based Des. Struct. Mach.*, pp. 2877–2891, DOI: 10.1080/15397734.2020.1787842.

· **Aumann, Q**, Miksch, M, and Müller, G. 2019, "Parametric model order reduction for acoustic metamaterials based on local thickness variations," *J. Phys. Conf. Ser.*, vol. 1264, no. 1, p. 012 014, DOI: 10.1088/1742-6596/1264/1/012014.

Selected conference talks and proceedings

· **Aumann, Q.**, Benner, P., 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.

· **Aumann, Q.**, Deckers, E., Jonckheere, S., Desmet, W., and Müller, G. 2021, *A reduction method for frequency dependent poro-elastic materials*, 14th World Congress in Computational Mechanics, Paris, France.

· **Aumann, Q.** and Müller, G. 2020, "Robust error assessment for reduced order vibro-acoustic problems," in *Proceedings of ISMA 2020*, KU Leuven - Department of Mechanical Engineering, pp. 1901–1914.

· **Aumann, Q.**, Miksch, M., and Müller, G. 2019, *Parametric model order reduction for acoustic metamaterials based on local thickness variations*, XIIIth International Conference on Recent Advances in Structural Dynamics, Lyon, France.

· **Aumann, Q.**, Mittermeier, F., and Müller, G. 2019, *An adaptive reduction method for poro-acoustic systems with frequency dependent material properties*, 4th Workshop on Model Reduction of Complex Dynamical Systems - MODRED 2019, Graz, Austria.

REFEREE FOR INTERNATIONAL JOURNALS

Applied Acoustics, Journal of Sound and Vibration, Mechanics Based Design of Structures and Machines

TEACHING EXPERIENCE

Teaching Assistant **2017 - 2021**
Technical University of Munich, Munich, Germany

· Conceptualization, organization, and realization of a course on advanced modeling and simulation methods in structural dynamics offered to Master's students. Awarded with TUM fund *Study-related initiatives to strengthen the excellence strategy 2019* (€ 58.369).

· Lecturer for groups of up to 250 students. Responsible for curriculum development, course administration, and grading. In total four undergraduate and two graduate courses.

Supervisor **2017 - 2021**
Technical University of Munich, Munich, Germany

· Supervising and grading semester projects, Bachelor's, and Master's theses. In total 15 project works, nine Bachelor's theses, and six Master's theses.