

Univ-Prof. Wolfgang Polifke, Ph.D.

Technical University of Munich, Dept. of Mechanical Engineering

Education

- 1981-1987 Study of Physics at U. Regensburg, U. of Colorado in Boulder, City College of the City University of New York. *M. A. in Physics*
- 1990 Dissertation *Aspects of Helicity in Turbulent Flows*, CUNY
Ph.D. Advisor: Prof. Andreas Acrivos

Professional Experience

- 1987–1990 Research assistant, *Levich Institute* / Physics Department, CCNY
- 1988 Visiting scholar, *Center for Turbulence Research*, Stanford University
- 1990–1999 ABB Corporate Research Center, Baden-Dättwil, Switzerland (since 1994 project leader, since 1998 group leader *Fundamentals of Combustion Technology*)
- 1999 Professor (C3) at the Department of Mechanical Engineering at TUM

Honors, Prizes, Awards

- 2021 Fellow of the Combustion Institute
- 2007 Offer Professorship (W3) *Technische Verbrennung*, Universität Stuttgart
- 1998 Best Application Paper Award (Combustion & Fuels Committee of ASME/IGTI)

Referee, Advisory Activity, Memberships

- Member of the Editorial Board, *Combustion & Flame* (since 2017)
- Editor-in-Chief, *Int. J. of Spray and Comb. Dynamics* (2016–2021)
- Member of the Editorial Board, *Int. J. of Spray and Comb. Dynamics* (2008–2015)
- Referee for *AIAA Journal*, *Appl. Acoustics*, *Appl. Math. Modelling*, *ASME J. of Propulsion & Power*, *Chem. Eng. Sci.*, *Comb. & Flame*, *Comb. Sci. Tech.*, *Comb. Theory and Modelling*, *Energy*, *Flow Turbulence & Combustion*, *Ind. & Eng. Chem. Research*, *Int. J. Acoust. & Vib.*, *Int. J. Heat Mass Transfer*, *Int. J. Spray & Comb. Dyn.*, *J. Fluid Mech.*, *J. of Fluids & Structures*, *J. Eng. Gas Turbines & Power*, *J. Heat and Mass Transfer*, *J. of Fluids & Structures*, *J. Sound Vib.*, *Phys. Letters A*, *Phys. of Fluids*, *Proc. Comb. Inst.*, *Prog. Energ. Combust. Sci.*
- Referee for DFG, FFG, NSERC, SWT, World Bank Innovation Fund
- External advisor for academic promotion committees at U. Cambridge, Imperial College London, IIT Madras, U. Melbourne, U. Stanford, ETH Zürich
- Coordinator *Summer School and Workshop on non-normal and nonlinear effects in Aero- and Thermoacoustics*, May 2010 und June 2013
- Co-Chair / Chair of Colloquium *Gas Turbine Combustion* at the *Int'l. Symp. on Combustion* (2014, 2016, 2018)
- Combustion Institute, DAGA, ERCOFTAC, IIAV, VDI

Discipline

Thermo-Fluidynamics, Engineering Thermodynamics.

Research interests

Thermo-acoustic instabilities, stability analysis, machine learning, uncertainty quantification, model order reduction, (aero-)acoustics, mixing and reaction in turbulent (multi-phase) flows

See www.epc.ed.tum.de/tfd/forschung/ or ResearchGate for ongoing research activities

Publications

Selected articles published by outlets with scientific quality assurance:

1. Kah Joon Yong, Camilo F. Silva, and Wolfgang Polifke. A Categorization of Marginally Stable Thermoacoustic Modes Based on Phasor Diagrams. *Combustion and Flame*, 228:236–249, 2021
2. Abdulla Ghani and Wolfgang Polifke. An exceptional point switches stability of a thermoacoustic experiment. *J. Fluid Mechanics*, 920, 2021
3. Max Meindl, Camilo F. Silva, and Wolfgang Polifke. On the spurious entropy generation encountered in hybrid linear thermoacoustic models. *Combustion and Flame*, 223:525–540, January 2021
4. Wolfgang Polifke. Modeling and Analysis of Premixed Flame Dynamics by Means of Distributed Time Delays. *Prog. Energy Combust. Sci.*, 79:100845, 2020
5. Shuai Guo, Camilo F. Silva, and Wolfgang Polifke. A Gaussian-Process-based framework for high-dimensional uncertainty quantification analysis in thermoacoustic instability prediction. *Proceedings of the Combustion Institute*, 38(4):6251–6259, January 2021
6. A. Albayrak, M. P. Juniper, and W. Polifke. Propagation speed of inertial waves in cylindrical swirling flows. *J. Fluid Mech.*, 879:85–120, November 2019
7. Thomas Steinbacher, Alp Albayrak, Abdulla Ghani, and Wolfgang Polifke. Response of Premixed Flames to Irrotational and Vortical Velocity Fields Generated by Acoustic Perturbations. *Proceedings of the Combustion Institute*, 37(4):5367–5375, 2019
8. Camilo F. Silva and Wolfgang Polifke. Non-dimensional groups for similarity analysis of thermoacoustic instabilities. *Proceedings of the Combustion Institute*, 37:5289–5297, 2019
9. M. Merk, R. Gaudron, C. Silva, M. Gatti, C Mirat, T Schuller, and W. Polifke. Prediction of Combustion Noise of an Enclosed Flame by Simultaneous Identification of Noise Source and Flame Dynamics. *Proceedings of the Combustion Institute*, 37:5263–5270, 2019
10. A. Avdonin, Max Meindl, and W. Polifke. Thermoacoustic analysis of a laminar premixed flame using a linearized reacting flow solver. *Proceedings of the Combustion Institute*, 37:5307–5314, 2019
11. Alp Albayrak, Thomas Steinbacher, Thomas Komarek, and Wolfgang Polifke. Convective Scaling of Intrinsic Thermo-Acoustic Eigenfrequencies of a Premixed Swirl Combustor. *Journal of Engineering for Gas Turbines and Power*, 140(4):041510, November 2017
12. T. Emmert, S. Bomberg, S. Jaensch, and W. Polifke. Acoustic and Intrinsic Thermoacoustic Modes of a Premixed Combustor. *Proceedings of the Combustion Institute*, 36(3):3835–3842, 2017

Scopus Author ID 6701840649: 260+ Documents, 4700+ Citations, h-Index 37

Google Scholar: 560+ Documents, 8400+ Citations, h-Index 50

See <http://scholar.google.de/citations?hl=en&user=VWuhsecAAAAJ>

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