

Manfred Kaltenbacher
Graz University of Technology
Institute of Fundamentals and Theory in Electrical Engineering (4370)



Scientific Career

2020 - Head of Institute of Fundamentals and Theory in Electrical Engineering, TU Graz, Austria
2012 - 2021 Full Professor for Measurement and Actuator Technology, Institute of Mechanics and Mechatronics, TU Wien, Austria
2008 - 2012 Full Professor for Applied Mechatronics, Institute of Smart System Technologies, University of Klagenfurt, Austria
PostDoc, Department of Sensor Technology, Friedrich-Alexander University Erlangen-Nuremberg, Germany
1992 - 1999 Research and teaching assistant, Institute of Measurement Technology, Johannes Kepler University Linz, Austria

Honors

Doctor Honoris Causa (Dr. h.c.) from Budapest University of Technology and Economics
Kaltenbacher, Manfred (Recipient), 2020

Österreichische Akademie der Wissenschaft
Kaltenbacher, Manfred (Recipient), 2017

Activities

Acta Acustica (Journal)
Manfred Kaltenbacher (Editor)
1 May 2020 → ...

International Commission for Acoustics (External organisation)
Manfred Kaltenbacher (Member)
1 Oct 2019 → 30 Sep 2022

Österreichische Akademie der Wissenschaften (External organisation)
Manfred Kaltenbacher (Member)
1 May 2017 → ...

DEGA - Deutsche Gesellschaft für Akustik e.V. (External organisation)
Manfred Kaltenbacher (Member)
Mar 2017 → ...

Acta Mechanica (Journal)
Manfred Kaltenbacher (Editorial board member)
2017 → ...

Austrian Acoustics Association (External organisation)
Manfred Kaltenbacher (Chair)
2017 → ...

Austrian National Committee for Theoretical and Applied Mechanics (External organisation)
Manfred Kaltenbacher (Chair)

2017 → ...

Österreichische Akademie der Wissenschaften (External organisation)

Manfred Kaltenbacher (Member)

2017 → ...

Gesellschaft für Angewandte Mathematik und Mechanik e.V. (External organisation)

Manfred Kaltenbacher (Member)

2016 → ...

Journal of Theoretical and Computational Acoustics (Journal)

Manfred Kaltenbacher (Editorial board member)

2013 → ...

The American Institute of Aeronautics and Astronautics (External organisation)

Manfred Kaltenbacher (Member)

2005 → ...

International Compumag Society (External organisation)

Manfred Kaltenbacher (Member)

1999 → ...

IEEE Magnetics Society (External organisation)

Manfred Kaltenbacher (Member)

1997 → ...

Journal publications (at TU Graz)

Aeroacoustic formulations for confined flows based on incompressible flow data

Maurerlehner, P., Schoder, S., Tieber, J., Freidhager, C., Steiner, H., Brenn, G., Schäfer, K-H., Ennemoser, A. & Kaltenbacher, M., 14 Oct 2022, In: Acta Acustica. 6, 14 p., 45.

Semi-implicit fluid–structure interaction in biomedical applications

Schussnig, R., Pacheco, D. R. Q., Kaltenbacher, M. & Fries, T. P., 1 Oct 2022, In: Computer Methods in Applied Mechanics and Engineering. 400, 115489.

Nonconforming finite element formulation for the simulation of impedance cardiography

Kaltenbacher, M., Badeli, V. & Reinbacher-Koestinger, A., 16 Sep 2022, (E-pub ahead of print) In: International Journal of Numerical Modelling.

Error detection and filtering of incompressible flow simulations for aeroacoustic predictions of human voice

Schoder, S., Kraxberger, F., Falk, S., Wurzinger, A., Roppert, K., Kniesburgs, S., Döllinger, M. & Kaltenbacher, M., 1 Sep 2022, In: The Journal of the Acoustical Society of America. 152, 3, p. 1425-1436 12 p.

Fundamental Investigation of Wave Propagation inside IC-Striplines upon Excitation with Hertzian Dipole Moments

Kreindl, D., Bauernfeind, T., Weiss, B., Stockreiter, C., Yenumula, S. K., Narayanan, B. & Kaltenbacher, M., 10 Aug 2022, In: Electronics. 11, 16, 2488.

Numerical Investigation of Signal Launch Imperfections for Edge Mount RF Connectors

Riener, C. M., Bauernfeind, T., Kvasnicka, S., Roppert, K., Hackl, H. & Kaltenbacher, M., 1 Jul 2022, In: Electronics. 11, 13, 1990.

3D modeling of inductive and capacitive coupling between surface-mounted multilayer-capacitors

Riener, C. M., Bauernfeind, T., Baumgartner, P., Hackl, H., Ibel, M. G., Kvasnicka, S., Prestros, R., Roppert, K. & Kaltenbacher, M., 27 Jun 2022, (E-pub ahead of print) In: International Journal of Numerical Modelling. 35, p. 1-20 e3046.

Predicting Spatial Distributions of Lighthill's Aeroacoustic Source Terms Using Steady-State RANS Simulations in Turbocharger Compressors

Freidhager, C., Maurerlehner, P., Roppert, K., Heinisch, M., Renz, A., Schoder, S. & Kaltenbacher, M., 1 Jan 2022, In: Journal of Aerospace Engineering. 35, 1, 14 p., 04021101.

Impact of Aortic Wall Stiffness on the Morphology of Impedance Cardiography Signal

Badeli, V., Reinbacher-Köstinger, A., Kaltenbacher, M. & Museljic, E., 2022, In: International journal of bioelectromagnetism. 24

A New Method for Sound Generation Based on Digital Sound Reconstruction

Mayrhofer, D. & Kaltenbacher, M., Dec 2021, In: Journal of Theoretical and Computational Acoustics. 29, 4, 2150021.

Effiziente numerische Simulation der menschlichen Stimme basierend auf einem dreidimensionalen Modell mit hybridem aerodynamischen Ansatz

Maurerlehner, P., Schoder, S., Freidhager, C., Wurzinger, A., Hauser, A., Kraxberger, F., Falk, S., Kniesburges, S., Echternach, M., Döllinger, M. & Kaltenbacher, M., Jun 2021, In: Elektrotechnik und Informationstechnik. 138, 3, p. 219-228 10 p.

Investigation of a new method for sound generation – Advanced Digital Sound Reconstruction

Mayrhofer, D. & Kaltenbacher, M., Jun 2021, In: Elektrotechnik und Informationstechnik. 138, 3, p. 148-154 7 p.

Mikroperforierte Platten zur Schallreduktion

Floss, S., Czwielong, F., Becker, S. & Kaltenbacher, M., Jun 2021, In: Elektrotechnik und Informationstechnik. 138, 3, p. 171-178 8 p.

Schallquellenlokalisierung: state of the art und neues inverses Verfahren

Gombots, S., Nowak, J. & Kaltenbacher, M., Jun 2021, In: Elektrotechnik und Informationstechnik. 138, 3, p. 229-243 15 p.

Simulationen von Strömungsakustik in rotierenden Bauteilen zur Entwicklung von Antriebskonzepten der Autos der Zukunft

Freidhager, C., Maurerlehner, P., Roppert, K., Wurzinger, A., Hauser, A., Heinisch, M., Schoder, S. & Kaltenbacher, M., Jun 2021, In: Elektrotechnik und Informationstechnik. 138, 3, p. 212-218 7 p.

3D-FV-FE aeroacoustic larynx model for investigation of functional based voice disorders

Falk, S., Kniesburges, S., Schoder, S., Jakubaß, B., Maurerlehner, P., Echternach, M., Kaltenbacher, M. & Döllinger, M., 8 Mar 2021, In: Frontiers in Physiology. 12, 616985.

Aeroacoustic Sound Source Characterization of the Human Voice Production - Perturbed Convective Wave Equation

Schoder, S., Maurerlehner, P., Wurzinger, A., Hauser, A., Falk, S., Kniesburges, S., Döllinger, M. & Kaltenbacher, M., 2 Mar 2021, In: Applied Sciences. 11, 6, 2614.

Sliding Non-Conforming Interfaces for Edge Elements in Eddy Current Problems

Roppert, K., Schoder, S., Wallinger, G. & Kaltenbacher, M., 1 Mar 2021, In: IEEE Transactions on Magnetics. 57, 3, p. 1-6 6 p., 9312633.

Application limits of conservative source interpolation methods using a low Mach number hybrid aeroacoustic workflow

Schoder, S., Wurzinger, A., Junger, C., Weitz, M., Freidhager, C., Roppert, K. & Kaltenbacher, M., Mar 2021, In: Journal of Theoretical and Computational Acoustics. 29, 1, 2050032.

Influence of a micro-perforated duct absorber on sound emission and performance of axial fans

Czwielong, F., Floss, S., Kaltenbacher, M. & Becker, S., Mar 2021, In: Applied Acoustics. 174, 107746.

Impact of the Sub-Grid Scale Turbulence Model in Aeroacoustic Simulation of Human Voice

Lasota, M., Šidlof, P., Kaltenbacher, M. & Schoder, S., 2 Feb 2021, In: Applied Sciences. 11, 4, p. 1-19 19 p., 1970.

A pseudo density topology optimization approach in nonlinear electromagnetism applied to a 3D actuator

Seebacher, P., Kaltenbacher, M., Wein, F. & Lehmann, H., 2021, In: International Journal of Applied Electromagnetics and Mechanics. 65, 3, p. 545-559 15 p.

Capabilities of inverse scheme for acoustic source localization at low frequencies

Gombots, S., Kaltenbacher, M. & Kaltenbacher, B., 2021, In: Acta Acustica. 5, 44.

Design of an in-duct micro-perforated panel absorber for axial fan noise attenuation

Floss, S., Czwielong, F., Kaltenbacher, M. & Becker, S., 2021, In: Acta Acustica. 5, 24.

Sound reduction in heat exchanger modules by integrating plate absorbers with sub-millimeter openings

Czwielong, F., Floss, S., Kaltenbacher, M. & Becker, S., 2021, In: Acta Acustica. 5, 35.

Helmholtz's decomposition for compressible flows and its application to computational aeroacoustics

Schoder, S., Roppert, K. & Kaltenbacher, M., 6 Nov 2020, In: Partial Differential Equations and Applications. 1, 20 p., 46.

Computational aeroacoustics of the EAA benchmark case of an axial fan

Schoder, S., Junger, C. & Kaltenbacher, M., 14 Oct 2020, In: Acta Acustica. 4, 5, 17 p., 22.

Bi-Stable Aluminum Nitride-Based Piezoelectric Micromachined Ultrasonic Transducer (PMUT)

Schneider, M., Dorfmeister, M., Moll, P., Kaltenbacher, M. & Schmid, U., Oct 2020, In: Journal of microelectromechanical systems. 29, 5, p. 948-953 6 p., 9130699.

Applicability of two hybrid sound prediction methods for assessing in-duct sound absorbers of turbocharger compressors

Freidhager, C., Schoder, S., Maurerlehner, P., Renz, A., Becker, S. & Kaltenbacher, M., 15 Sep 2020, In: Acta Acustica. 6, 13 p., 37.

Aeroacoustic source term computation based on radial basis functions

Schoder, S., Roppert, K., Weitz, M., Junger, C. & Kaltenbacher, M., 15 May 2020, In: International Journal for Numerical Methods in Engineering. 121, 9, p. 2051-2067 17 p.

Hybrid aeroacoustic approach for the efficient numerical simulation of human phonation

Schoder, S., Weitz, M., Maurerlehner, P., Hauser, A., Falk, S., Kniesburgs, S., Doellinger, M. & Kaltenbacher, M., Feb 2020, In: The Journal of the Acoustical Society of America. 147, 2, p. 1179-1194 16 p., 1179.

Postprocessing of Direct Aeroacoustic Simulations Using Helmholtz Decomposition

Schoder, S., Roppert, K. & Kaltenbacher, M., 1 Jan 2020, In: AIAA Journal. 58, 7, p. 3019-3027 9 p.

Modeling Nonlinear Steady-State Induction Heating Processes

Roppert, K., Kaltenbacher, M. & Toth, F., 2020, In: IEEE Transactions on Magnetics. 56, 3, 4 p., 8959364.

Non-Conforming Nitsche Interfaces for Edge Elements in curl-curl Type Problems

Roppert, K., Schoder, S., Toth, F. & Kaltenbacher, M., 2020, In: IEEE Transactions on Magnetics. 56, 5, 7 p., 9034161.

Hybrid Aeroacoustic Computations: State of Art and New Achievements

Schoder, S. & Kaltenbacher, M., Dec 2019, In: Journal of Theoretical and Computational Acoustics. 27, 4, 1950020.

Comparison of different vector Preisach models for the simulation of ferromagnetic materials

Nierla, M., Loeffler, M., Kaltenbacher, M. & Rupitsch, S. J., 21 Oct 2019, In: COMPEL - The International Journal for Computation and Mathematics in Electrical and Electronic Engineering. 38, 5, p. 1696-1710 15 p.

Revisiting infinite mapping layer for open domain problems

Schoder, S., Toth, F., Freidhager, C. & Kaltenbacher, M., 1 Sep 2019, In: Journal of Computational Physics. 392, p. 354-367

Computational Models of Laryngeal Aerodynamics: Potentials and Numerical Costs

Sadeghi, H., Kniesburges, S., Kaltenbacher, M., Schützenberger, A. & Döllinger, M., Jul 2019, In: Journal of voice. 33, 4, p. 385-400 16 p.

Towards a clinically applicable computational larynx model

Sadeghi, H., Kniesburges, S., Falk, S., Kaltenbacher, M., Schützenberger, A. & Döllinger, M., 1 Jun 2019, In: Applied Sciences. 9, 11, 2288.

Aerodynamic impact of the ventricular folds in computational larynx models

Sadeghi, H., Döllinger, M., Kaltenbacher, M. & Kniesburges, S., 1 Apr 2019, In: The Journal of the Acoustical Society of America. 145, 4, p. 2376-2387 12 p.

On the Application of Acoustic Analogies in the Numerical Simulation of Human Phonation Process

Valášek, J., Kaltenbacher, M. & Sváček, P., 15 Jan 2019, In: Flow, Turbulence and Combustion. 102, 1, p. 129-143 15 p.

Numerical investigation of the resonance behavior of flow-excited Helmholtz resonators

Weitz, M., Schoder, S. & Kaltenbacher, M., 2019, In: Proceedings in Applied Mathematics and Mechanics . 19, 1, 2 p.

Simulating induction heating processes using harmonic balance FEM

Roppert, K., Toth, F. & Kaltenbacher, M., 2019, In: COMPEL - The International Journal for Computation and Mathematics in Electrical and Electronic Engineering. 2019, 5, p. 1562-1574

Computational Aeroacoustics Based on a Helmholtz-Hodge Decomposition

Kaltenbacher, M. & Schoder, S., 13 Jun 2018, In: SAE Technical Papers. 6 p., 2018-01-1493.

Hybrid computational aeroacoustics based on compressible flow data at low Mach numbers

Schoder, S., Toth, F. & Kaltenbacher, M., 15 Mar 2018, In: Proceedings in Applied Mathematics and Mechanics . p. 687-688 2 p.