

AAC 2024

AACHEN ACOUSTICS COLLOQUIUM



PROGRAM

Development and Research in Automotive Acoustics

November 25 – 27, 2024

Aachen, Germany



www.aachen-acoustics-colloquium.com

FOREWORD

15TH AACHEN ACOUSTICS COLLOQUIUM



Parkhotel Quellenhof Aachen, Germany

MEETING VENUE

Parkhotel Quellenhof Aachen

Monheimsallee 52

52062 Aachen, Germany

+49 241 91320

info@parkhotel-quellenhof.de

www.parkhotel-quellenhof.de

Are you looking for new ideas and methods to improve the acoustics and vibrations of vehicles and drives? The Aachen Acoustics Colloquium is the perfect opportunity for experts from both industry and research to exchange knowledge and ideas within the field of acoustics and vibrations of vehicles. With 18 technical presentations, two plenary speeches and a new poster session, you can stay up-to-date in this ever-evolving field. Attend the Aachen Acoustics Colloquium to get the competitive edge that you need and to get familiar with the latest innovations and insights around acoustics and vibrations of vehicles and drives.

Aachen is one of the most important centers for development and research in automotive acoustics. This year, the Aachen Acoustics Colloquium takes place for the 15th time under the aegis of Prof. S. Pischinger, FEV Group GmbH, Prof. L. Eckstein, fka GmbH, Prof. K. Genuit, HEAD acoustics GmbH, and Prof. M. Vorländer, Institute for Hearing Technology and Acoustics of RWTH Aachen University.

Organizers

FEV Europe GmbH, fka GmbH, HEAD acoustics GmbH, Institute for Hearing Technology and Acoustics of RWTH Aachen University

FEV

fka

HEAD acoustics

IHTA

RWTH AACHEN UNIVERSITY

ORGANIZATIONAL AND LOCATIONS OF INTEREST

REGISTRATION

Please register for the Aachen Acoustics Colloquium at:
www.aachen-acoustics-colloquium.com

HOTEL RESERVATION

Please book your hotel room via aachen tourist service by using the following link:
www.aachen-acoustics-colloquium.com/accommodation

LOCATIONS OF INTEREST

- | | |
|----------------------------------|-------------------------|
| 1 Parkhotel Quellenhof | 2 Rathaus Aachen |
| Monheimsallee 52
52062 Aachen | Markt
52062 Aachen |

PAYMENT

The registration fee of € 980 (plus 19 % VAT) also includes a welcome reception as well as a banquet dinner.

Registration fee for university staff is € 490 (plus 19 % VAT).

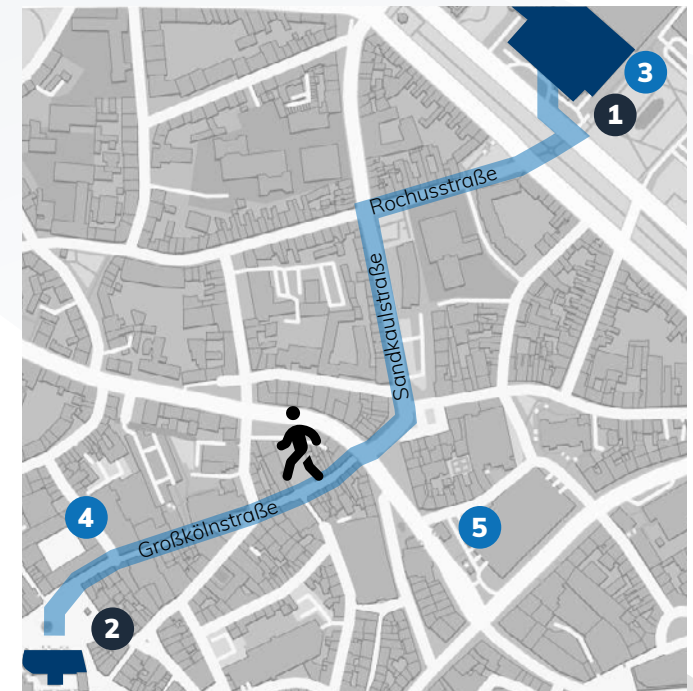
PARKING INFORMATION

This year again, participants of the Aachen Acoustics Colloquium can park free of charge in the APAG car parks (exception: car park Carolus Thermen No. 13). **The Quellenhof car park is not an APAG car park!**

You will receive a 3-day parking ticket at our information desk on request. The congress park ticket enables unlimited access to the car parks during the period of 25. – 27.11.2024.

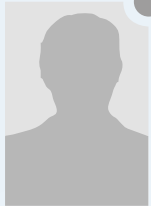
CAR PARKS

- 3** Parkhaus Eurogress
Monheimsallee 40
52062 Aachen
- 4** APAG Parkhaus Rathaus
Mostardstraße 5
52062 Aachen
- 5** APAG Parkhaus Couvenstraße
Couvenstraße 6
52062 Aachen



PLENARY SPEAKER

15TH AACHEN ACOUSTICS COLLOQUIUM



Hermann Ney
Human Language
Technology and Pattern
Recognition, RWTH
Aachen University

Speech & Language Technology: Where Do We Stand?

The success of data-driven methods for speech recognition started more than 50 years ago. While these methods were originally designed only for speech recognition, i.e. the conversion of the speech signal to written text, they turned out to be most successful also for a wide variety of other tasks in language processing tasks like machine translation and natural language understanding. This talk will review the development of data-driven approaches to speech & language technology.



Dr. Stefan Heuer
MAN Truck & Bus

Heavy Commercial Vehicle NVH Development

Meeting customer expectations in terms of interior and exterior sound quality is one main target while developing heavy commercial vehicles. Based on NVH simulation as well as testing activities this is being realized today. One of the challenges in the commercial vehicle sector is product variance. The driver of a long haul truck lives and works in his vehicle all year round and expects a high level of comfort, another driver uses his truck mainly in the gravel pit and expects robustness above all. The task is to bring together all these demands for the different use cases and by this to contribute simplifying our customer's business to maximum possible. Conventional diesel as well as carbon dioxide free drive concepts will be discussed here. Some examples of component development will be presented. This article gives an inside into the NVH development of heavy commercial vehicles at MAN.

SCIENTIFIC COMMITTEE

15TH AACHEN ACOUSTICS COLLOQUIUM



Prof. Uwe Baake
fmr. Head of Mercedes-Benz
Trucks Product Engineering
Daimler Truck AG



Dr. Michael Fischer
Chief Expert and Head
Center of Competence NVH
Robert Bosch GmbH



Dr. Christian Schuster
Manager Vehicle NVH
Ford-Werke GmbH



Dr. Per-Olof Sturesson
Consultant, Cum Scientia
Engineering, Sweden
Researcher
KTH Royal Institute of
Technology, Sweden



Prof. Otto von Estorff
Head of the Institute of
Modelling and Computation
Technische Universität
Hamburg



Thomas Weidlich
Head of Acoustics /
Structural durability and
fatigue
AUDI AG

PROGRAM

25TH & 26TH NOVEMBER

November 25TH

19:00 Welcome Reception for Colloquium Attendees

The welcome reception will take place at the exhibition, Parkhotel Quellenhof Aachen, with drinks and food. The reception is free of charge for our participants.

November 26TH

08:30 Welcome and Opening

Prof. Klaus Genuit
Prof. Michael Vorländer

INFOTAINMENT IN THE VEHICLE

Session Chair:
Prof. Michael Vorländer
Institute for Hearing
Technology and Acoustics
(IHTA), RWTH Aachen
University

08:45 Speech & Language Technology: Where Do We Stand?

Hermann Ney
Human Language
Technology and Pattern
Recognition, RWTH Aachen
University

09:30 Hybrid Speech Enhancement Solutions for Multi-Zone Voice Assistants in Vehicles

Dr. Tim Haulick
Cerence GmbH

10:00 Personalized sound playback adjustment for automotive audio

Dr. Jan Rennies
Fraunhofer IDMT | Hearing,
Speech and Audio
Technology

10:30 Coffee Break & Snacks

Numerical Methods, Simulation, Virtual Reality

Session Chair:
Prof. Lutz Eckstein
Institute for Automotive
Engineering (ika), RWTH
Aachen University

11:00 Tire identification for airborne SEA Simulation

Dr. Jan Kralicek
Dr. Ing. h.c. F. Porsche AG

11:30 Speed-dependent directivity patterns of road traffic sound sources

Christian Dreier
Institute for Hearing
Technology and Acoustics,
RWTH Aachen University



PROGRAM

26TH NOVEMBER

November 26TH

12:00 **Simulation of AVAS for Prototypes using FE and PML**
Nils Schönfeld
Technical University of Munich (TUM)

12:30 **Lunch**

POSTER SESSION

Session Char:
Prof. Roland Sottek
HEAD acoustics GmbH
Dr. Lukas Aspöck
Institute for Hearing Technology and Acoustics (IHTA), RWTH Aachen University

13:45 **Poster Pitch**
Short pitches of 2 – 3 minutes each, followed by discussions in the poster exhibition area

14:15 **Poster Session**

15:15 **Coffee Break**

NVH MEASUREMENT, SYSTEM-ANALYSIS, MEASUREMENT TECHNOLOGY

Session Chair:
Dr. Matthias Wegerhoff
HEAD acoustics GmbH

15:45 Applied NVH-Characterization of Automotive Steer-By-Wire Systems - Methods and Results

Mark Nichols
Schaeffler Technologies AG & Co. KG

16:15 Investigation of Noise-Intensive Driving Patterns under Real Driving Conditions

Carina Diemel
Institute for Automotive Engineering (ika), RWTH Aachen University

16:45 **Coffee Break & Snacks**

17:15 Topology Optimization for Active Noise Control Systems Combining Multiple Sensor Layouts

Prof. Alessandro Fortino
University of Applied Science Dortmund

17:45 Study on the install location of acoustic metamaterials absorbing tire noise

Shunji Suzuki
Honda R&D Co., Ltd.

19:30 **Champagne Reception**

20:00 Banquet

Prof. Lutz Eckstein
The banquet will take place at the historical city hall of Aachen and is free of charge for attendees.

The fee for accompanying persons is € 50.



PROGRAM

27TH NOVEMBER

November 27TH

ACOUSTICS OF ELECTRIC DRIVES, FUEL CELL SYSTEMS AND HYBRID CARS

Session Chair:
Prof. Klaus Genuit
HEAD acoustics GmbH

09:00 Evaluation of the NVH behavior of an Axial Flux Machine in 2D FE simulations

Karsten Müller
Mercedes-Benz Group AG

09:30 Psychoacoustic analysis of a PMSM under different working conditions in the drive system

Carles Martrat
Nissan Technical Center Europe

10:00 Coffee Break & Snacks

VEHICLE ACOUSTICS (BODY, MECHATRONICS COMPONENTS, TIRE ROAD NOISE)

Session Chair:
Dr. Christoph Steffens
FEV Europe GmbH

10:30 Heavy Commercial Vehicle NVH Development
Dr. Stefan Heuer
MAN Truck & Bus

11:15 Study on characteristic sound emissions of city busses with different powertrain types
Dr. Michael Fischer
Robert Bosch GmbH

11:45 Quiet Charging in the Mega Watt Range for Electric Trucks: Noise Source Identification and Targeting for Cooling Systems
Dr. Michael Häußler
FEV Vehicle GmbH

12:15 Lunch



PROGRAM

27TH NOVEMBER

November 27TH

ACTIVE SOUND DESIGN AND ACTIVE COMPONENTS

Session Chair:
Prof. Stefan Pischinger
FEV Europe GmbH

13:30 Seamless Mode Shifts in next generation REX Hybrid Powertrains: Enhancing the Driving Experience with Augmented Sound

Erik Nyström
Aurobay

14:00 Personalized Active Sound Design

Dr. Markus Bodden
neosonic GmbH

14:30 Multidimensional Optimization for Performance, Environmental Adaptation, Robustness, and Wide-Space Noise Reduction:

Key Feature Analysis of Active Road Noise Cancellation (RNC) Engineering for Mass Production

Dr. Xiangjie Kong
Automotive Acoustics R&D Center, Alpha Labs, Goertek Inc.

15:00 Coffee Break & Snacks

15:15 Tuning of Active Sound Design in Electric Vehicles with Focus on In-Car Communication

Fabian Kamp
HEAD acoustics GmbH

15:45 Road-induced Tire-cavity Noise Control (RTNC) for Increased Driving Comfort and Cost Efficiency

Calvin Hartmann
Müller-BBM Active Sound Technology GmbH



POSTER SESSION

15TH AACHEN ACOUSTICS COLLOQUIUM

For the first time, AAC 2024 will also include the presentation of scientific posters. These posters will be displayed in the poster exhibition area at the back of the presentation hall during the conference. On Tuesday from 1.45 pm to 3.15 pm, a time slot is dedicated to the poster. This session will start with short pitches of 2 – 3 minutes each, followed by open presentations and discussions in the poster exhibition area

The influence of power train bearing waviness on E-vehicle noise performance.

Piet van Dalen
SKF

On the use of audio objects for in-car sound systems

Christoph Sladeczek
Fraunhofer IDMT; transfer function GmbH

Energy based Finite Element Method applied to Automotive Structures with Metamaterials

Sören Keuchel
Novicos GmbH

Simulative Evaluation of eMotor Acoustic Performance Across Varied Load Spectra and Correlation Study to Measurements

Anton Plank
Magna Powertrain Engineering Center
Steyr GmbH & Co KG

Acoustic emergency vehicle detection and lane assignment in the context of autonomous driving on highways

Danilo Hollosi
Fraunhofer IDMT-HSA

On the use of Virtual SEA for design optimization: a test case

Francesco Trainotti
Technical University of Munich, Chair of Applied Mechanics

Create, Tune and Integrate – EV Sound in the field of Professional Audio

Michael Wirtz
Bose Automotive GmbH

EXHIBITION

15TH AACHEN ACOUSTICS COLLOQUIUM

Register now and become an exhibitor of Aachen Acoustics Colloquium, including:

- ✓ A fully equipped booth (2.5 x 2.0 m)
- ✓ Entrance to the presentation and exhibition
- ✓ Entrance to the opening and welcome
- ✓ Entrance to the banquet
- ✓ Digital Proceedings
- ✓ Beverages + Lunches
- ✓ Publication of a company profile

Our exhibition company offers a complete booth with professional equipment. The exhibition fee includes the ticket for one person. If you need more booth support, please book additional tickets for a fee via our registration form.

Take a look at this year's exhibitors:
www.aachen-acoustics-colloquium.com/exhibition

CONTACT

Aachen Acoustics Colloquium GbR

✉ info@aachen-acoustics-colloquium.com
🌐 www.aachen-acoustics-colloquium.com

General questions / Attendees

Jenny Palmen and Rebecca Trapp
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☎ +49 24107 577-0
✉ orga@aachen-acoustics-colloquium.com

Exhibitors

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☎ +49 241 80-48080
✉ guenther@aachen-acoustics-colloquium.com

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