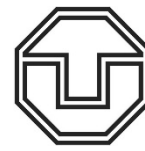


Lecture Invitation

SOUND QUALITY OF AUDIO SYSTEMS

MODELING, MEASUREMENT & CONTROL



**TECHNISCHE
UNIVERSITÄT
DRESDEN**

March 11th -13th 2019 (Technical University Dresden, Germany)

The 2019 lecture on "Sound Quality of Audio Systems" presented by Prof. Dr. Wolfgang Klippel, honorary professor of the Institute of Acoustics and Speech Communication, will give you a deep understanding on the latest measurement and diagnostic techniques used in telecommunication, automotive, multi-media and professional applications to design small, light and cost-effective loudspeakers.

The generation of signal distortion is modelled by linear, nonlinear and time-variant systems with lumped and distributed parameters. The course makes the relationship between symptoms and physical causes of the distortion more transparent. Practical sections will give each participant further opportunities for learning by doing.



HIGHLY RECOMMENDED FOR

- Students and teachers of the electro-acoustics
- Engineers of the Audio Industry active in Research & Development, Manufacturing, Quality Control

Key Topics

Benefit from the over 30 years of fundamental research by Prof. Dr. Klippel and apply this gained knowledge to your own field of work to improve the way you design and/ or manufacture your loudspeaker.

- Comprehensive Assessment of Audio Systems
- Physical Measurement and perceptual Evaluation
- Root Cause Analysis of Signal Distortion
- Designing Green Speakers - providing more output with higher efficiency and lower cost
- Active control of Electro-acoustical Transducers

MORE INFORMATION

Date and Time:

11.-13.03.2019 (9am - 5 pm)

Address:

Dresden University of Technology
Barkhausen-Bau (Room: BAR 205)
Helmholtzstr. 18
01069 Dresden, Germany

Language:

English

**free of charge for students and
university staff!**

Contact:

Contact Jasmin for more
information about agenda and your
registration.

Jasmin Klaue

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Content



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ELECTRO-ACOUSTICAL MODELLING:

- Fundamentals - transduction, vibration, radiation
- Abstraction - models with lumped and distributed parameters
- Small Signal Performance - linear approximation and transfer function
- Large Signal Performance - thermal dynamics and nonlinearities
- Time-varying properties - influence of climate and aging

MEASUREMENTS AND ANALYSIS

- Persistent excitation - artificial and natural stimuli
- Monitored signals - electrical, mechanical and acoustical sensors
- Complex structures - digital and analogue components
- Sound field - measurements in the near and far field
- Interaction with the room - direct and diffuse sound part
- Measurement time - ultra-fast and long-term (power) testing
- Distortion analysis - linear and nonlinear components
- System identification - optimal fitting and parameter estimation
- Transformations - Fourier, wavelet and perceptual modelling
- Data compression - separation of unique and redundant information

INTERPRETATION AND DIAGNOSTICS

- Interpretation - measured symptoms and physical causes
- Perception - audibility and impact on perceived sound quality
- Evaluation - selection of optimal drive units for system design
- Specification - minimal but comprehensive set of data
- Tolerances - variation of parameters and influences

NEW TOPICS ADDRESSED THIS YEAR:

- Measurement of the nonlinear mechanical damping Air nonlinearities in leaky boxes
- Experimental modal analysis
- Measurement of smart-phones
- Active stabilization of voice coil rest position

TUTORIALS

Tutorials will be offered on Monday and Tuesday from 15:00 to 17:00.

Attendees can choose one option per day.

Notifications of subscriptions will be sent out at the end of February by Jasmin.

MONDAY, MARCH 11TH, 2019

Topics to be confirmed

TUESDAY, MARCH 12TH, 2019

Topics to be confirmed