Overview Tutorials

Monday + Tuesday (15:00 – 17:00)

General Timetable

	Monday, 05.03.2018	Tuesday, 06.03.2018	Wednesday, 07.03.2018
Sound Quality of Audio Systems	9:00 -10:30	9:00 -10:30	9:00 -10:30
Break	10:30 - 10:45	10:30 - 10:45	10:30 - 10:45
Sound Quality of Audio Systems	10:45 - 12:00	10:45 - 12:00	10:45 - 12:00
Lunch	12:00 - 13:00	12:00 - 13:00	12:00 - 13:00
Sound Quality of Audio Systems	13:00 - 14:30	13:00 - 14:30	13:00 - 14:30
Break	14:30 - 14:45	14:30 - 14:45	14:30 - 14:45
Sound Quality of Audio Systems			14:45 – 16:00
Tutorials	15:00 - 17:00	15:00 - 17:00	No Tutorials offered on Wednesday
	1) Hands-on Tutorial Nonlinear Speaker Control Part 1	1) Hands-on Tutorial Nonlinear Speaker Control Part 2	
	or	**or**	
	2) dB-Lab: Effective Project Management and Hidden Features	3) Statistical Analysis of Measurement Results	
	or	**or**	
	4) Sensitive Rub&Buzz Tests	5) Suspension Part Testing	
	or	**or**	
	6) New Auralization Methods (Live Audio Analyzer + DIF-AUR)	7) Optimizing Simulation of Cone Vibration with Scanner Data	
	or	**or**	
	8) Anechoic Tests in Normal Rooms	9) Large Signal Testing in R&D and QC	

1) Hands-on Tutorial Nonlinear Speaker Control

This tutorial gives an introduction into adaptive loudspeaker control and how it can be used to equalize, stabilize, linearize and protect transducers.

Topics addressed in this tutorial:

- Practical application of nonlinear adaptive loudspeaker control
- Extending the limits of passive loudspeakers by digital signal processing
- Introduction on speaker control with live demonstrations and measurements
- Adaptive Parameter Identification
- Reliable Speaker Protection
- Nonlinear Distortion Compensation
- Stabilization of Voice Coil Position
- Consequences for Transducer and Amplifier Design

2) dB-Lab: Effective Project Management and Hidden Features

Learn how to utilize the features and structure of dB-Lab to organize your development projects, measurements and templates!

Topics addressed in this tutorial:

- Folders, Objects and Operations: how to organize your Measurements on different Levels
- Working with Klippel provided Measurement Templates
- Organize and share your Measurement Setups in Templates
- New Features and Maintenance with Klippel KA3

3) Statistical Analysis of Measurement Results

Learn from Production and find Needles in the Haystack!

Topics addressed in this Tutorial:

- Determine Statistical Values (mean, standard deviation, …) of Measurement Results
- Group Test Objects in good/borderline/bad categories
- Apply Automatic Classification to identify Golden Defects
- Calculate Production Limits and close the loop to QC

4) Sensitive Rub&Buzz Tests

Topics addressed in this tutorial:

- Practical Demo of Woofer and passive Box
- Practical Meta Hearing Demo and Explanation
- Time Frequency Analysis of Rub&Buzz defects
- Transfer Function Analysis of defects with laser mic mapping
- Listening to the fine structure (Root Cause Analysis)

5) Suspension Part Testing

The Sum of its Elements – identify the Performance of Suspension Parts

Topics addressed in this tutorial:

- Practical Measurements for Soft Parts (spider, cone, small membrane of microspeaker, passive radiator)
- Dynamic Testing of Linear and Nonlinear Parameters
- Dedicated to R&D and End-of-Line Testing

6) New Auralization Methods (Live Audio Analyzer + DIF-AUR)

How does your defect sound when playing music? A practical guide from measurement to auralization.

Topics addressed in this tutorial:

- Practical Evaluation of problems of the Audio System with music
- Measurement of state of the Audio System (u,I,x,p)
- Isolation of the Acoustical Symptom for the selected music
- Short Introduction to Auralization Methods

7) Optimizing Simulation of Cone Vibration with Scanner Data

A Practical introduction to the Measurement of Cone Vibration.

Topics addressed in this tutorial:

- Short Overview of Scanner Software
- Deploying Modal Analysis for deeper understanding of Cone Vibration
- Optimizing Material Parameter of FEA models bringing together Simulation and Measurement

8) Anechoic Tests in Normal Rooms

Topics addressed in this tutorial:

- Performing Directivity Measurement in Normal Rooms
- Practical Near-Field-Scanner Measurement of a Transducer mounted in a Baffle
- Fast non-anechoic Measurement – how to use a Compensation Filter to measure non-linear symptoms in a Normal Room
- Practical Measurement Examples: CEA 2010 maximum SPL Test (Peak CEA2010 A + continuous CEA2010 B)

9) Large Signal Testing in R&D and QC

Topics addressed in this Tutorial:

- Common Features and Differences between Large Signal Identification and Motor + Suspension Check
- What is relevant in R&D and what in QC
- Linking R&D and QC (practical demo)
- Coil Offset: Symmetry Point vs. Relative Definition
- Why testing nonlinear Parameters and not only Symptoms in End-of-Line Test (SIM example)