



TC-LH



## AES Technical Committee on Loudspeakers and Headphones

### Meeting Report:

AES 148<sup>th</sup> Vienna On-Line 5/June/17 18:00 (CEST)

Chair: Steve Hutt

Vice-Chair: Juha Backman

### Mission of the Loudspeaker and Headphone Technical Committee.

The committee works to ensure that the AES membership has the opportunity to learn of relevant new transducer technology as it develops, with an emphasis on sound field generation from loudspeakers and headphones.

### Introduction:

#### Trends:

- Active
  - textreme
  - graphene
    - Aura - Canada
    - tymphany guy - graphene may not be ready beyond micro-speakers
    - pietro - some hazard issues due to micr particles
  - spider spider
  - spiders: juha – guys from celestion had an interesting topic talk on this on Tuesday. definitely, on-going work.
  - meta materials – hutt asked: what is a meta material? Steve Thompson: a regular material that is formed into a 'shape' so that it behaves differently. Juha, look at wikipedia – materials with refractive properties. Steve Thompson, sees meta materials as a method but hasn't seen it in audio. Hans, thinks it should be watched re what happens in optics.
  - hearables
    - over the counter hearing assistance
      - legal ~Nov/2019 sh – is this a trend or product of the trends. Juha, last year FDA allowed calling over counter as hearing aids, as non-prescript glasses are still glasses. Cedrik, can add claims to solve some hearing loss.
      - sh, so it is a trend. Juha, yes but not radical innovation. Cedrik, when we listed it as a trend a few years ago everyone was wearing ear buds. Thompson, expect hearables to blur line to hearing aids. eg. Bose will set the stage for a direction. Gmeiner, this is approached by hearing aid companies as well as transducer companies, also connected to augmented reality, with eye-wear, with ears open so you can hear the environment with augmented audio over-layed.
  - ANC (Actives Noise Cancellation) loudspeakers
    - trend to be more robust than base audio. Gmeiner – for headphones it's almost becoming a standard with codecs etc. built in to bluetooth. Michael Hedges, automotive still growing, S. Thompson, some work to stop sound coming in through windows.
  - Electric Vehicles warning systems – Hedges, it is well defined & now standard, not a

- trend
- AMT / planar headphone.
- sound bars & steering to be zoned. hedges, still push in vehicles.
- mems is it a trend? Gmeiner, it's a small loudspeaker, cannot move a lot of air, saw some interesting applications to implement mems directly on a membrane. Hans, can give options to create wave using multiple drivers to influence radiation. would no delete it as a trend. Thompson, seen it in microspeakers to replace balanced arm drivers, a lot activity, Cedrik, can 3d print complex 3d iterations. Hedges, Usound have a demo with multiple drivers. Gmeiner, Usound is arranged with a line or plane, also glasses with loudspeaker tweeters.
- dml
  - re-trend, Juha – a 148<sup>th</sup> paper was presented on Tuesday from Tokyo
- haptics – Gmeiner, some companies using ultra-sound to support mems, would feel in your finger, not a trend. Juha, talked with someone in Scotland who manufacture something that gaming are interested in.
- Loudspeakers for Hi Resolution Audio – Hans, for tweeters to be capable of very HF the temporal resolution is improved, necessary to benefit from Hi Res recordings. crossovers obscure time resolution.
- smart speakers – transducer & DSP continue to improve

### **Workshop Concepts:**

- Revisit the topic proposed by Hans van Maanen for a workshop on time domain measurement and analysis. Hans, yes for Amsterdam,

### **Standards Liasson:**

- SC04-03:
  - AES2-R has begun discussion - drivers only.
  - x168 (systems) first draft is launched - in parallel discussion with AES2-R. Waiting publication of IEC 60268-22 ~December, 2020
  - AES56:
    - Sound source modeling - Loudspeaker polar radiation measurements
    - Reaffirmed version published 2019
  - x223 - test chambers
    - Released
  - x241 - driver end of line test standard
    - will refer to x223 for chambers
    - Input suggestions in process
  - x250 Measuring maximum linear peak SPL using noise
    - SC04-03A sub-committee formed
    - scope: This standard specifies a method for measuring the maximum linear peak SPL of a loudspeaker driver or system. It uses a mathematically derived test signal that effectively emulates the dynamic characteristics of music as a function of frequency as well as its spectral content.
    - draft target 2020
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### **Conferences of interest to TC-LH:**

- Automotive Audio target Detroit, June 2021
- Audio for Games target Tokyo mid 2021

**Standards:**

- AES-X250 SPLmax, work group is launched

new topics

Hans

A discussion of voice-coil heating affects on filters and performance is an interesting topic, has not yet seen a system that can adjust do this in real time. Juha, microdrivers us current sense, maybe talk in NY would be interesting. Slotnik, agreed. Can we have some volunteers to set up a TC-LH Voice-Coil heating effects and remedies workshop?

Interim meetings:

Attendees agreed that meetings online between conventions would be interesting.

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