

HRA TC Meeting in Madrid (Hybrid live/online) - June 16, 2024

Although the Madrid AES was smaller than the previous European convention in Helsinki, there were multiple presentations relevant to high resolution, both from TC members and others.

Madrid events from our TC (or related):

1. Wireless technology
 - a. Workshop: “High Quality Audio over Wireless”, (J. McClintock, D. Burgos, moderated by V. Melchior)
 - b. Workshop: “UWB for Audio” (moderated by J. McClintock)
2. Psychoacoustics of immersive audio
 - a. Tutorial: “Psychoacoustics and Practices of Immersive Sound Recording” (H. Lee)
3. Properties of the auditory system and their relationship to the design of audio components
 - a. Workshop: “High Performance Audio through the Lens of a New Understanding of Hearing” (H. van Maanen, T. Heeb, M. Kunchur, J. Angus et.al)
 - b. Tutorial: “The Human Auditory System and Audio” (M. Kunchur)
 - c. Tutorial: “Tutorial on Artefacts Generated in Audio Equipment” (H. van Maanen)

N.B. Slide decks are available for 1a, 1b, 3c. Contact Vicki for 1a, 1b and Hans or Vicki for 3c.

Workshop on high res immersive streaming.

A notable workshop given by Kimio Hamasaki and Bert von Daele, on “New Trends in Streaming for High Quality Immersive Sound”, demonstrated a new audio codec, Auro-CX. The codec is able to stream high channel-count immersive audio at 96kHz and 192kHz over the internet, is scalable and adaptive for data rate and channel count, and contains multiple options for binaural, stereo, and additional mixes. It is aimed at both live broadcast and on-demand streaming. Pure Audio (Stefan Bock) announced that they are starting a streaming service using Auro-CX and professional tools have already incorporated it (e.g. Korg Live Extreme). Also mentioned was a forthcoming demo comparing Auro-CX to Dolby. There is more info and a white paper at auro-3D.com, search under “Professional”.

TC Meeting Discussion.

1. Trends.

Noteworthy directions in the last couple of years are the emergence of wireless technologies that can carry high res or at least lossless CD data rates, and the continued

dissatisfaction with Atmos and Apple along with their binaural versions, leading to industry initiatives like Auro-CX that have the infrastructure to record and stream immersive and binaural mixes from live broadcast or from conventional streaming services. Auro-CX can carry object-based audio too but is not reliant on Dolby.

Wireless initiatives include UWB, which is just coming to market and for which AES is developing a standard. UWB is high bandwidth, low latency and can handle 192 kHz and multichannel. Also Bluetooth LE, which is the latest generation of Bluetooth, has several new codecs written to optimize for better sound quality (up to lossless CD) and replacing the old low bit rate Bluetooth SBC codec. Another initiative is the AIRIA wireless codec (a.k.a. SCL6) from Lenbrook, which is agnostic to wireless type (BT, BT LE, UWB, WiFi) but optimizes sound quality as it adaptively changes data rate. AIRIA will be available in streaming applications very soon.

2. TC events for the fall AES in NYC.

- a. Hyunkook and Vicki will co-moderate a workshop panel on binaural audio, its promises and problems.
- b. ASRC tutorial. This is on hold for now.
- c. Interest in an advanced dither workshop was mentioned by Bob Stuart but a spring date would be likely.

3. Given the small turnout in Madrid, discussion of Europe 2025 was left to the fall meeting, which will undoubtedly be online since WiFi in Javits is out.