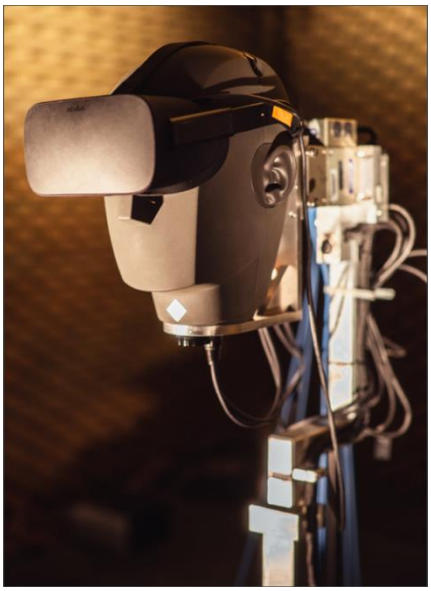
Fachausschuss Virtuelle Akustik / Technical Committee on Virtual Acoustics

Loudspeaker array
Source: Yria Chorianopoulou, Chalmers University of Technology, Göteborg (SWE)



Dummy head
Source: Raphaël Gillioz / TH Köln

The term *virtual acoustics* makes many people think of VR goggles, gaming, or the metaverse. Yet, the relevant application areas go far beyond that. Joy is indeed a relevant factor when experiencing virtual worlds. But virtual acoustics also constitutes a valuable tool that has the potential to substantially change our way of working and living in a variety of contexts.

Virtual acoustics enables placing listeners in an environment that is not actually present. Or, it allows for manipulating components of a seemingly real environment by, for example, adding virtual sound sources. Virtual product development, professional training, audiology, therapy, education, and of course social interaction over distance are examples for contexts that can rely on virtual acoustics.

The implementation of virtual acoustics requires methods for capturing and analysing spatial sound fields, signal processing for manipulating sound field representation or synthesizing them, as well as methods for playback of the signal to a listener. The playback can be interactive and may employ headphones or loudspeaker arrays alike. Psychoacoustics plays an important role in all these stages.

These are the topics that the Technical Committee on Virtual Acoustics works with. It was founded in 2015, and Stefan Weinzierl, Bernhard Seeber, and Sascha Spors chaired it from then until 2021 when Annika Neidhardt, Jens Ahrens, and Christoph Pörschmann were elected to be the new chairs. The committee comprises around 160 members and associates meanwhile, most of which work in academia. The committee maintains close ties to the DEGA Committees on Audiology, Electroacoustics, Musical Acoustics, and Building and Room Acoustics.

Activity and Goals

The committee considers the promotion of the topic of virtual acoustics in both research as well as the exploitation of the entire potential of its application as the primary focus. This comprises the advancement of the technology, the recommendation of signal representations in systems, and the perceptual evaluation of such systems. As a part of this, the committee supports the coordination and collaboration of a variety of institutions who are active in the field of virtual acoustics.

The committee actively promotes reproducible research. This comprises making accessible fundamental research data and research text as well as license models and guidelines for the documentation of audio test signals in the public domain. As an example, a memorandum on creation and documentation of audio recordings for scientific use was published. Furthermore, the committee contributed to the creation of a stimulus database for the domains of virtual acoustics, musical acoustics, and audiology.

In autumn 2021, the committee organised the 14th DEGA Symposium on “Interactive auralisation for the planning of indoor spaces“ with approximately 60 participants. The committee also supports the European *Student 3D Audio Production Competition*, which was initiated by Franz Zotter and Matthias Frank, and which was carried out in 2022 for the 6th time.

The coordination of research, application, and education of virtual acoustics will remain in the focus in the future. Currently, an overview over all free software tools that are used in research education as well as in applications is being compiled.

Annika Neidhardt, Jens Ahrens und Christoph Pörschmann