Efficient Representation of Sound Images: Recent Developments in Parametric Coding of Spatial Audio

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Abstract: Like with pictures, humans talk about a "sound image" when they try to characterize an acoustic scene containing salient spatial aspects. This talk will review the basic aspects of stereophonic / multi-channel audio that determine the perceived sound image and will outline how these aspects can be represented efficiently. One of the most remarkable innovations in this context was the recent development of the "Spatial Audio Coding" (SAC) approach. Exploiting the human perception of spatial sound, such coding schemes are capable of transmitting high quality surround sound using bitrates that have been used for carrying traditional two-channel stereo audio so far. The talk will outline the underlying ideas and describe the architecture of the recently finalized "MPEG Surround" specification. Equipped with a set of attractive capabilities, the technology enables introduction of surround sound into existing distribution infrastructures while retaining full compatibility to mono or stereo receivers. Finally, an outlook is provided of a next technology generation envisaged for standardization within ISO/MPEG allowing for bit-efficient and backward compatible coding of several sound objects.