

# Parametric analysis of ambisonic audio

Contributions to methods, applications and data generation

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## Abstract

Due to the recent advances in virtual and augmented reality, ambisonics has emerged as the *de facto* standard for immersive audio. Ambisonic audio can be captured using spherical microphone arrays, which are becoming increasingly popular as well. Yet, many methods for acoustic and microphone array signal processing are not specifically tailored for spherical geometries. Therefore, there is still room for improvements in the field of automatic analysis and description of ambisonic recordings. In the present thesis, we tackle this problem using methods based on the parametric analysis of the sound field. Specifically, we present novel contributions in the scope of blind reverberation time estimation, diffuseness estimation, and sound event localization and detection. Furthermore, several software tools developed for ambisonic dataset generation and management are also presented.