Ambisonics Decoder Description (.ADD)

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Developing a new file format for Ambisonics decoding matrices

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Abstract

Different software solutions have been developed for the calculation and implementation of Ambisonics decoding matrices. The present paper presents and describes a new data file format which can be used as an intermediate between solutions.

Currently available software solutions use particular data conventions causing difficult compatibility and exchangeability. In the present work an open-source toolkit is developed for storing, handling and using Ambisonics decoding matrices. The toolkit includes tools for conversion from common matrix data conventions to the ADD-format and back, calculating decoding matrices, decoding Ambisonics signals and extracting existing matrices from external decoding tools.

The new ADD-format and toolkit enables increased flexibility in production workflows and eliminates the drawbacks and limitations regarding compatibility between software solutions.

1. Introduction

1.1. Ambisonics

Ambisonics is a 3D audio representation approach based on spherical harmonics. Compared to traditional multichannel audio where each channel contains the signal for one loudspeaker, in Ambisonics the channels contain information about certain properties of the acoustic field.

It was first developed in the 1970s by the British National Research Development Corporation for Broadcasting purposes.[citation needed]Recently the format has found new popularity as higher order implementations in virtual reality applications and special mutlichannel setups.

2. Ambisonics Decoding

Lorem Ipsum [1]

3. Motivation

Lorem Ipsum [2]

4. Implementation

Lorem Ipsum

5. Conclusion

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6. References

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[1] Thibaut Carpentier. 2017. Normalization schemes in ambisonic: does it matter?
[2] Jérôme Daniel. 2001. Représentation de champs acoustiques, application à la transmission et à la reproduction de scènes sonores complexes dans un contexte multimédia.