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Acoustic Photo- and Cinematography - State of Research at the GFal Berlin

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Abstract

A new time domain technique is introduced to localise far and moving acoustic objects, compare with http://www.gfai.de/www_open/perspg/heinz.htm. The algorithm was called 'H- Interference Transformation' (HIT)*. HIT reproduces mirrored (optical) projections just as non-mirrored reconstructions of different sources dependent of the direction of time axis.

Basing on time domain calculations the introduced method reproduces an approximation for different source points in a grid matrix, arranged in an virtual space or array or field in physical dimensions of the measured scene.

At the first time it is possible, to reconstruct acoustic single-time events to cinematographies (movies). The maximum image rate is the sample frequency of time functions. In dependence of the integration interval it is possible to reconstruct images, wave fields or movies.

Some properties of HIT, influence of time functions properties and channel number, different algorithmical tasks, relations between time and space, aliasing and reconstruction parameters are discussed.

At hand of examples we will show:

- the equipment (software, hardware, mechanics, array-types)
- leading results (farest, smallest, fastest)
- some industrial tasks with solutions.

* Heinz at all: Time pattern, data addressing, coding and topographic maps between multiple connected neural fields - a physical approach to neural superimposition and interference. BioNet'96, Berlin, ISBN 3-00-001107-2

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\technicalarea{invited, acoustic imaging}
\specialsession{numerical methods for computing sound radiation}
\specialequipment{projector with video-interface for laptop to play movies}
\preferredmethod{lecture}
\numberwords{}