

Investigation of local variations of room acoustic parameters
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Abstract

In room acoustics the impulse response is an important piece of information because it is used in the determination of different acoustical parameters. Has been observed that the values of the parameters can change depending on the positions of the source and transducer used in the measurements, obtaining significant differences by a minimal position change.

The objective of this thesis is to investigate if these large variations around a given position are audible.

This project makes use of a continuous impulse response measurement system consisting of a microphone acquiring data through a constant movement in a defined trajectory. The data acquired is then processed to estimate the impulse responses with very high spatial resolution over the whole revolution of the microphone and consequently the subjective parameters are computed. The system has been tested in three different environments. The results are then compared with the ones from a standard measurement showing a good compatibility of the mean values.

An informal subjective evaluation has been carried out to verify the perception of the parameter variations. While large parameter changes that occur between locations at a significant distance from each other are clearly audible, equally large parameter changes that occur locally are only partly audible. This suggests that some of the observed local variation is caused by inaccuracies of the measurement procedure.

Keywords: room acoustics measurements, continuous acquisition data in sound field synthesising, subjective perception, local variations of room acoustics parameters.