Sound Localization Performance Comparison of Different HRTF-Individualization Methods

Abstract:

The bottleneck for an immersive binaural sound synthesis is the acquirement of individual Head-Related Transfer Functions (HRTF). Manifold HRTF approaches to circumvent the obstacle of HRTF measurement are topic in research. The localization performance of three more or less individualized HRTF-datasets is related to the individually measured HRTF. An intuitive experimental design, using laser pointing for indicating the perceived sound source direction, is introduced to evaluate those individualization approaches. Besides the impact of head-tracking is investigated. The results show that the azimuth localization error does not differ significantly for an generic dummy-head HRTF, the individually measured HRTF and the HRTF selected from a certain set of other person's HRTFs, if head-tracking is available. In the case without head-tracking the measured HRTF grants the smallest reversal rate. This results can be taken into account for designing an binaural auditory application.