

## Prediction of speech perception using pseudo-binaural room impulse responses

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### ABSTRACT

In room acoustic evaluation, speech intelligibility is typically assessed by means of monaural measures such as C50 or the Speech Transmission Index (STI) using an omnidirectional microphone. This approach, however, neglects binaural benefits (spatial release from masking, better ear listening), that also depend on the listeners head orientation (HO) relative to the speech source. Up to now, different models have been proposed which can mimic the effects of these aspects. These models typically use binaural room impulse responses (BRIRs) as input, describing the entire transfer path from the source to the ears of the binaural listener. However, to incorporate the effect of HO, BRIRs are required for every HO of interest and simulating or measuring these data is tedious and time consuming. Due to the limited spectral bandwidth of speech, however, approximated binaural representations might be sufficient, which can be measured more quickly. In the present contribution, we calculated pseudo-BRIRs based on impulse responses captured with a first order Ambisonics microphone with spatial decomposition method (SDM) processing. The accuracy of the calculated pseudo-BRIRs in predicting binaural benefits was comparable to that of BRIRs using a dummy head, indicating its suitability for speech intelligibility prediction.

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