

**Comparison of fitting functions for categorical loudness scaling data**

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Adaptive categorical loudness scaling (ACALOS) measures the auditory capacity on a scale ranging from inaudible, soft, and comfortable to too loud. Although the measurement procedure was standardized in ISO 16832 (2006), the benefits in diagnosis and particularly hearing aid fitting could be improved. Recently, in Kreikemeier (2011), the measurement of hearing threshold, comfortable and uncomfortable levels by ACALOS was used for adjusting hearing aids. In Jürgens (2011), the auditory nonlinearity was estimated using the ACALOS procedure. Based on these results, Ewert and Grimm (2011) suggested a hearing aid prescription rule incorporating the steepness of the lower part of the loudness function. The ACALOS-specific model function which is used to relate categorical units to level based on the raw data has a strong impact on the interpretation and use of ACALOS data. In this study, different existing (Brand, 2000) and alternative model functions were compared using the data of 13 normal-hearing and 11 hearing-impaired listeners. Functions were compared in terms of fitting errors, and prediction of the uncomfortable and hearing threshold level. We will present an optimized alternative model function which shows lower systematic errors and gives a better prediction for the hearing threshold. Additionally, it is more robust in predicting the uncomfortable level if the presentation levels are limited and only few to no judgements in the category very loud can be achieved.

Literatur:1) ISO 16832, Acoustics – Loudness scaling by means of categories, 20062) Kreikemeier et al., Verfahren zur lauteitsbasierten Anpassung von Hörgeräten mit instantanem In-situ-Perzentil-Monitoring, Z Audiol 2011 50 (2) 62–723) Jürgens et al., Assessment of auditory nonlinearity for listeners with different hearing losses using temporal masking and categorical loudness scaling, Hearing Research 280 (2011) 177-1914) Brand, Assessment of auditory nonlinearity for listeners with different hearing losses using temporal masking and categorical loudness scaling, University of Oldenburg, 20005) Ewert and Grimm, Model-based hearing aid gain prescription rule, ISAAR 2011, Nyborg Strand, Denmark

