

Psychoacoustics and its Application

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Psychoacoustics is a very significant parameter of sound quality which is influencing the perceived quality of products and soundscape. Sound Quality means the adequacy or suitability of a sound attached to the object emitting it. It evolves from a process, in which recognized features are compared to some kind of reference. It is not often distinguished between sound character and sound quality, sound character represents basic attributes (sensory properties), sound quality perception is affected by context, cognition, interaction. Sound quality engineering has to consider customers' judgment behavior, which is influenced by their experience, expectation and context. A combination of different methods is appropriate to determine valid, reliable results. The terms subjective and objective are associated with aspects related to human perception and physical measures. Measurements of the physical as well as measurements of the perceptual world must both pass the reliability and validity check. Physical measurements could have a high reliability but low validity, whereas perceptual measurements often possess a relatively low reliability but relatively high validity. Objectivity describes the independency of test results from the respective researcher. Reliability considers whether the same results would be achieved, if the research procedure would be repeated. Validity means whether a method measures what it is intended to measure.



Klaus Genuit studied electronic engineering from 1971 to 1976—and economics until 1979—at the RWTH Aachen University and was awarded a PhD in 1984 for the doctoral thesis “A model for the description of outer-ear transmission characteristics.” In 1986 he founded HEAD acoustics GmbH, a leading supplier in the areas of binaural signal processing and analysis, auralization of virtual environments, NVH analysis and telecommunication measurements. Dr. Genuit has published more than 280 scientific papers and is a member of various associations, such as the Audio Engineering Society, the Society of

Automotive Engineers of Japan, Society of Automotive Engineers, the German Acoustical Society (DEGA), and the Acoustical Society of America (ASA). He was elected a Fellow of ASA in 2004. In addition, he participates in working groups dealing with the standardization of measurement regulations and psychoacoustic parameters (ITU, DIN DKE, NALS, ISO). He has been active in the field of soundscape research and teaching psychoacoustics at the RWTH Aachen University for over 15 years where he became honorary professor in 2008. Dr. Genuit received a Certificate of Honor for active national and international work regarding standardization of loudness and sound events from the VDI (DIN/NALS) in 2016. In 2008 he founded the HEAD-Genuit-Stiftung, a charitable foundation supporting research for a better acoustical life.