

Personalized, Model-Based, Functional Acoustic Hearing Diagnostic

Initiative: "Experiment!" (beendet)

Ausschreibung: Explorative Phase

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Projekt-Website: www.reutlingen-university.de

Audiometric methods for the detection of hearing loss are often based on the comparison of measurements with standard curves representing 'normal' hearing. These methods suffer from large inter-individual variances in middle-ear transmission and from the individually very different collaboration of the patients, in particular of small children, seriously ill or elderly patients. Thus, the specificity of current diagnostic tests on a particular clinical picture as well as the quantitative evaluation is strongly restricted. This holds true especially for differential diagnosis between inner-ear and neural impairments since the middle-ear comes first in the measurement chain. The author suggests a model-based approach based on objective measurements, e.g. wide band tympanometry. Several numerical middle-ear models are known in hearing research, but by now do not contribute to individual, patient-specific diagnostics. Their use could increase the specificity of routine diagnostic tests on common middle-ear diseases and would allow an objective quantification of the individual pathologies.

Projektbeteiligte

Prof. Dr.-Ing. Michael Lauxmann

Hochschule Reutlingen

Fakultät Technik

Reutlingen Research Institute RRI

Technical Dynamics and Biomechanics

Reutlingen

Dr.-Ing. Ernst Dalhoff

Universitätsklinikum Tübingen

HNO-Klinik

Tübingen

Open Access-Publikationen

Model-based hearing diagnostics based on wideband tympanometry measurements utilizing fuzzy arithmetic

Investigation of Tympanic Membrane Influences on Middle-Ear Impedance Measurements and Simulations

Investigation of Inhomogeneous Stiffness and Damping Characteristics of the Human Stapedial Annular Ligament

Parameter identification of a human stapedial annular ligament model in the context of a model-based hearing diagnosis of the human middle ear

Model-based Hearing Diagnosis of Middle Ear Condition Using Inverse Fuzzy Arithmetic and Artificial Neuronal Network