

ACOUSTICS2008/1296
Signal processing in hearing aids: results of the HEARCOM project

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Digital hearing aids of today allow the application of advanced signal processing strategies. In recent years a number of promising signal processing approaches have been designed and developed. However, most of these different evolutions have been evaluated only in a limited way. Within the framework of the HEARCOM EU-research project a number of signal enhancement techniques have been further developed and evaluated based on a representative set of real-life recordings and physical performance measures. Different auditory profiles, representing common categories of hearing aid users, have been taken into account. A selection of 5 of these signal enhancement techniques (single-channel noise suppression, blind source separation, dereverberation, multi-microphone adaptive processing, feedback reduction) has been implemented on a single common hard- and software test platform, the Master Hearing Aid (MHA). These signal processing strategies have been evaluated perceptually based on speech reception thresholds, listening effort and preference rating, at 5 different test-sites for a number of speech-and-noise listening scenarios. Fifty normal hearing subjects and 100 hearing aid users according to 2 auditory profiles, took part in this study.