

## **Abstract EFAS/DGA 2007**

### **Transient and steady-state auditory responses**

Mühler, R.

Otto-von-Guericke-University Magdeburg, Germany, Department of Experimental Audiology

For many decades the history of objective methods in audiology is closely connected with transient auditory evoked responses. However, beginning in the last decade of the 20th century, auditory steady-state responses have attracted more and more notice. A short survey of the fundamentals of transient and steady-state auditory evoked responses is given, pointing out the significant differences in stimulation, recording and response detection.

Auditory steady-state responses (ASSR) may theoretically be recorded more quickly and recognized more objectively than the more widely accepted auditory brainstem responses (ABR) or cortical electric response audiometry (CERA). Additionally, ASSR may provide a more frequency-specific assessment of hearing than the ABR because the amplitude modulated tones used to elicit ASSRs have a narrower spectral representation.

However, for most applications, a major drawback of ABR and ASSR is their low amplitude relative to the physiological background noise resulting in a poor signal-to-noise ratio (SNR). Thus the uncertainties and failures that have occurred both in research and clinical application of transient and steady-state responses may be attributed to the variable influence of the residual background noise.

Clinical data and simulations are presented, clarifying the particular importance of reliable estimates of residual noise in recordings of ABR as well as ASSR.

