



Sonderforschungsbereich/Transregio 31 "Das aktive Gehör"

---

# EINLADUNG

zum Vortrag im Rahmen des Seminars des SFB/TRR 31

**Freitag, 11. Februar 2011, 14 Uhr c.t.**

im Raum W2 1-143 der Universität Oldenburg  
und Raum H28 / R 2.31 med. Campus Magdeburg,  
(per Videoübertragung)

***"Modelling the role of the auditory efferent system in the recognition of noisy and reverberant speech"***

**Guy Brown**

Speech and Hearing Research Group  
Department of Computer Science  
University of Sheffield

The ability of human listeners to recognize speech in noisy and reverberant conditions is far superior to that of 'machine hearing' systems, such as automatic speech recognizers. One factor that might contribute to human robustness is the auditory efferent system, which exerts a suppressive effect on the response of the basilar membrane. In this talk, I will describe two studies that concern the putative role of the auditory efferent system in robust speech recognition. In the first, a computer model of auditory efferent processing is used to provide acoustic features for a statistical automatic speech recognizer. Recognition performance is poor in the presence of noise when efferent activity is disabled. However, performance is much improved when efferent activity is applied, which is likely due to a 'release from adaptation' in the simulated auditory nerve response to noisy speech. In the second study, a model of auditory efferent processing is shown to exhibit compensation for the effects of reverberation on speech recognition. In the model, the presence of reverberation is detected as a change in the dynamic range of the simulated auditory nerve response. In turn, this leads to suppression via an efferent feedback loop. The computer model provides a qualitative match to a range of perceptual data, suggesting that auditory mechanisms under efferent control might contribute to compensation for reverberation in particular speech identification tasks.