



# EINLADUNG

zum Vortrag im Rahmen des Seminars des SFB/TRR 31

**Freitag, 7. Juni 2013, 14 Uhr c.t.**

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

***"The computational architecture of the human auditory cortex  
perception"***

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In this talk I will present research combining functional neuroimaging, machine learning and computational modeling to understand the neural basis of human auditory perception. First, I will discuss a series of studies that use machine learning methods to unravel the neural representation of "auditory objects" and related computational properties (e.g. robustness to acoustic variations and to background noise). In contrast to strictly hierarchical models of auditory processing, results indicate that primary and early cortical auditory networks encode abstract representations of complex sounds beyond the analysis of basic acoustic features. Second, I will discuss recent research combining natural sound stimulation, high field functional MRI (3 and 7 Tesla) and computational modeling to examine computational architecture of the human auditory cortex. Results shed light on neuronal filtering mechanisms that are pivotal to the transformation of a sensory (tonotopic) image of a natural sound into higher level (perceptual) representations. Finally, I will give an outlook on ongoing work examining the anatomical, functional and computational architecture of the human auditory cortex at sub-millimeter resolution.