



Sonderforschungsbereich/Transregio 31 "Das aktive Gehör"

EINLADUNG

zum Vortrag im Rahmen des Seminars des SFB/TRR 31

Freitag, 23. April 2010, 14 Uhr c.t.

im Raum W2 1-143 der Universität Oldenburg
und im Raum G26.1 – 010
Rechenzentrum der Universität Magdeburg
(per Videoübertragung)

Laminar and Temporal Distribution of Stimulus Information in Field Potentials Points to an "Event Based" Operation of Auditory Cortex

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A number of recent electrophysiological studies suggest that stimulus evoked activity in sensory cortices may need to be interpreted in the context of ongoing neural network dynamics. For instance, the local field potential (LFP) phase of spikes has been shown to carry stimulus related information, and phase resetting mechanisms may underlie such phenomena as attentional modulation and cross-modal integration. The objective of this study was to pinpoint the origin of the stimulus informative LFP phases within the laminar organization of cortical columns. Information analysis of current source densities (CSD) recorded with multielectrode arrays during naturalistic stimulation in the primary auditory area A1 of rats revealed that the bulk of the LFP phase information is tightly localized in both space and time. Thus, most of the LFP phase information was found to originate from granular/superficial layer CSD dipoles which occur as discrete "CSD events" and which appear to reflect burst of thalamocortical activation. These events occur both during spontaneous and stimulus driven periods, at rates in the delta range (ca 3-4 Hz), and they generated LFP waveforms which contained a variable amount of beta and gamma power. Interestingly, the CSD events we identified appear to come in a limited number of discrete classes. Our findings point to an "event driven" mode of operation of sensory cortex which may nevertheless give rise to apparently oscillatory behavior.