



Sonderforschungsbereich/Transregio 31 "Das aktive Gehör"

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# EINLADUNG

zum Vortrag im Rahmen des Seminars des SFB/TRR 31

**Freitag, 24. Juni 2011, 14 Uhr c.t.**

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

***"In vivo juxtacellular recordings of the gerbil medial superior olive"***

**Marcel van der Heijden**

ERASMUS Center for Neuroscience, NL

Neurons in the medial superior olive (MSO) receive excitatory information from both ipsi- and contralateral spherical bushy cells of the cochlear nucleus. MSO cells are sensitive to the arrival times of tones at both ears, suggesting that they function as coincidence detectors. However, direct measurements of their synaptic inputs during auditory stimulation have not yet been reported. To investigate how MSO cells process interaural time differences we made juxtacellular recordings from anesthetized gerbils. In the absence of auditory stimulation, all recorded cells showed small, positive-going events whose durations matched those of EPSPs in slice recordings. Despite the high rate of these events (>400 events/s) the spontaneous firing rate of MSO neurons was typically low (<10 sp/s). During tone stimulation, the subthreshold activity turned more regular owing to phase locking to the stimulus. The largest events triggered spikes, which showed excellent phase locking at low frequencies (vector strength typically >0.8). The correlation between the event size and spike initiation suggests that these events represent extracellularly recorded EPSPs. Remarkably, the response to low-frequency (<300-Hz) tones presented to either ear often consisted of a stereotyped sequence of inputs with preferred delays. During stimulation with binaural beats, neurons were sensitive to phase disparities between the inputs from both ears. The resulting binaural input pattern generally matched the prediction from summation of the two monaural responses well. Our data thus show that in vivo juxtacellular recordings can be used to study the inputs from both ears to MSO neurons.