

SFB 874 - COLLOQUIUM

Wednesday, October 10th, 4pm

Location: IGSN seminar room FNO 01/117

Cortical gating: top down control of early sensory responses

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Abstract:

Movements have enormous consequences for our sensory systems. Sensory gating, in which neural responses to a stimulus are reduced during motion, is found in active sensing systems spanning several species and modalities and is compromised in several neurological diseases. The rodent whisker system, an excellent active touch apparatus, is no exception with cortical and thalamic responses to whisker stimulation attenuated during whisker motion. However, the origins of sensory gating and the neural substrates on which they act remain unclear. Where in sensory processing does gating first occur? More importantly, is gating under top down cortical control or is it a bottom up peripheral phenomenon? In an active touch paradigm in awake rodents, we show that early sensory responses in the brainstem trigeminal nuclei are attenuated during whisker movements by somatosensory cortex. Interestingly, sensory gating is not correlated with movement kinematics. These results raise crucial questions about the relationship of sensory gating to the predictive efference-copy based correction of ego motion. Most importantly, is sensory gating simply a manifestation of efference copy, or does it have a hitherto unknown function?

Host: Christian Klaes (Neurosurgery, Knappschafts Krankenhaus Bochum, RUB)