MAX PLANCK INSTITUTE FOR HUMAN COGNITIVE AND BRAIN SCIENCES LEIPZIG

Monday, 29 November 2021, 3 pm
Stephanstrasse 1 A

ZOOM Meeting

Institute Colloquium

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Research Group Neural interactions and dynamics

Cortical excitability shapes somatosensory perception with spatiotemporally structured dynamics

Neural activity is remarkably variable: Even for the very same stimulus, the brain´s response can differ from moment to moment. Although it has been hypothesized that changes of the system´s excitability may account for this variability, the underlying dynamics that link instantaneous brain state and stimulus processing remain poorly understood. Therefore, we studied the spatiotemporal organization of cortical excitability in a series of three somatosensory stimulation paradigms in humans, examining the interplay between pre-stimulus oscillatory state and short-latency somatosensory evoked potentials in the EEG, as well as their association with the consciously accessible stimulus percept. We found that these dynamics of excitability are (i) temporally structured in a special way (long-range temporal dependencies), (ii) linked to the perceived stimulus intensity already via first cortical responses, and (iii) organized with spatially confined, somatotopic patterns. Taken together, these findings may reflect a delicate balance between robustness and flexibility of neural responses to sensory stimuli, enabling the brain to adaptively change the neural encoding of even low-level stimulus features, such as the stimulus´ intensity.