# The *PLUS FWF/ÖAQ* "EARLY CAREER" projects at our department

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## The Enigma of Paradoxical Sleep: Towards a deeper understanding of the Structure and Functions of Rapid Eye Movement (REM) Sleep - Dr. Mohamed Ameen



Mammalian sleep comprises rapid eye movement (REM) sleep and non-rapid eye movement (NREM) sleep. While a large body of research has meticulously investigated the nuanced microstructure of NREM sleep and its functions, the structure and functions of REM sleep have been comparatively overlooked. REM sleep, traditionally seen as uniform, has been subdivided into phasic and tonic substates over 50 years ago. This project aims to investigate the differences between these states and their impact on cognitive functions like sensory processing and memory consolidation. Utilizing advanced methodologies such as EEG and MEG, alongside machine learning algorithms, we seek to provide a nuanced understanding of REM sleep's structure and functions, enriching our scientific knowledge of brain activity during this crucial phase of sleep.

*https://www.plus.ac.at/psychologie/fachbereich/sgp/vortragsreihe/*

# Somatosensory Map Architecture reflects Self-Touch Intra-actions (SOMASTI) - Dr. Xaver Fuchs



What drives humans and other mammals to self-touch so often? Body-centered self-care and therapy suggest positive effects on well-being, but they often lack a robust scientific basis. Potentially, self-touch shapes the brain by closing a sensorimotor loop that aligns motor commands, posture, and touch and facilitates self-calibration and body learning. In line with current concepts in neuroscience, self-touch might connect the touching body parts in the brain and shape the architecture of the cortical body map. The project aims to investigate the relationship between self-touch, neuroplasticity, body representation, and emotional well-being. Exploring self-touch and its impact on the brain might help clarify the link between self-touch and human well-being, bridging the gap between neuroscience and body-centered practices.

# The role of momentary craving in the effectiveness of approach-avoidance trainings for dietary improvement - Dr. Sercan Kahveci
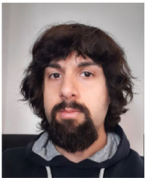


One driver of dietary failure may be automatic approach tendencies towards tasty foods, particularly when craving is high. Unhealthy food intake and craving may be reduced using an Approach-Avoidance Intervention (AAI), in which unhealthy food images are repeatedly paired with avoidance-responses. In parallel, machine-learning has been used to deliver tips and warnings through the smartphone when overeating is predicted to occur. We will integrate these paradigms and test a mobile AAI that is delivered "just-in-time" during and before high food craving to reduce the risk of dietary lapse. High-craving episodes will be anticipated using a personalized machine-learning model. We will compare this to an AAI that is delivered when low craving is predicted instead, and to a placebo AAI.