

Cognition Colloquium

Professor Christian F. Doeller

Max Planck Institute for Human Cognitive and Brain Sciences, Leipzig, Germany

Structuring experience in cognitive spaces

The fundamental question in cognitive neuroscience—what are the key coding principles of the brain enabling human thinking—still remains largely unanswered. Evidence from neurophysiology suggests that place and grid cells in the hippocampal-entorhinal system provide an internal spatial map, the brain’s SatNav—the most intriguing neuronal coding scheme outside the sensory system. Our framework is concerned with the key idea that this navigation system in the brain—potentially as a result of evolution—provides the blueprint for a neural metric underlying human cognition. Specifically, we propose that the brain maps experience in so-called ‘cognitive spaces’. In this talk, I will give an overview of our theoretical framework and experimental approach and will present showcase examples from our fMRI, MEG and virtual reality experiments identifying cognitive coding mechanisms in the hippocampal-entorhinal system and beyond.



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