

Seminar IRH-ICUB

Consciousness and Cognition: An Interdisciplinary Approach

<https://irhunibuc.wordpress.com/2016/04/05/new-seminar-consciousness-in-philosophy-and-neuroscience/>

convenor Dr. Diana Stanciu

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Date: Tuesday, 31 January 2017, 17h

Place: IRH-ICUB (1 D. Brandza Str.), conference room

Prof. Ioan Opris
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Ioan Opris received his undergraduate and PhD degrees in Physics/Biophysics from the University of Bucharest. He conducted research on the cognitive function and neurophysiology at the University of Tennessee, Memphis, Columbia University in New York and Yale University. He is currently an Associate Scientist at the University of Miami working for the Miami Project to Cure Paralysis. His research interests include systems neuroscience, primate executive control and cognition, drug addiction, neuroeconomics and cognitive neural prostheses.

The Role of Prefrontal Cortical Microcircuits in Conscious States

A conscious state emerges from the interaction between specialized brain networks, hierarchically organized at cortical, subcortical and brainstem levels, forming the hubs of a cognitive functional connectome. To process conscious states (i.e. attention, working memory, motor planning, decision making and arousal) the prefrontal connectome hub uses the cortical microcircuits to integrate sensory, cognitive, emotional and motor stimuli that are relevant for goal-driven behavior, which is crucial for survival. Furthermore, the prefrontal cortical microcircuits play a crucial role in the integration, selection and transformation of the neural signals composing a conscious state that sub-serves a conscious behavioral act. This role was demonstrated by causal relationships using inter-laminar patterned microstimulation, which significantly augmented cognitive performance. Overall, the cognitive connectome appears to be characterized by strong interactions between the brain hub-nodes, thus yielding connectome-specific harmonic waves.