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, 28 March 2017, 17h
Place: IRH-ICUB (1 D. Brandza Str.), conference room

Prof. Bogdan Amuzescu
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Bogdan P. Amuzescu, MD (1991), obtained his PhD (2003) for research in ion channel biophysical properties. He had several fellowships at the Katholieke Universiteit Leuven (2000-2003). He is currently an associate professor in the Dept. of Biophysics & Physiology, Faculty of Biology, University of Bucharest. His managerial experience includes positions as an advisory board member of the Romanian Society of Neuroscience (2004-2012) and of the Romanian Society against Epilepsy (since 2015). His research concentrates on the biophysical and pharmacological properties of ENaC/Deg and TRP channels, the applied research in cardiac electrophysiology and cardiac safety drug testing. He has several awards and honors such as the First prize of the Romanian Neuroscience Society and the co-chair position of a platform session on cardiac electrophysiology at the 53rd BPS meeting. He is the author of over 24 research articles and 6 books or book chapters. He is a member of the Biophysical Society, AAAS, FENS, and other scientific societies.

Evolution and Perspectives in Neural Networks Modelling

My lecture intends to progressively introduce the audience to the field of mathematical modelling of neurons and neural networks towards a more profound understanding of their cognitive functions. I will describe the five levels of complexity of the neural models defined by Andreas VM Hertz et al. and I will present a series of single-point reference models and the principles of detailed section modelling, followed by a review of the top-down and bottom-up approaches according to Wulfram Gerstner et al.; I will emphasise the mezoscopic level convergence of the integrate-and-fire neural models as well as the analysis of their splitting behaviour. Then, I will present the recent achievements of the team lead by Herny Markram in modelling the functions of the neural columns in the primary somato-sensitive neocortex and the superresolution microscopy methods that allow for a detailed exploration of the synaptic connectivity and dynamics. Finally, I will present the perspectives of knowledge evolution in highlighting the architecture and the functional features of the cerebral microcircuits opened by a series of large projects such as the EU Human Brain Project, the US BRAIN Project (Brain Research through Advancing Innovative Neurotechnologies), the Japanese project Brain/MINDS (Brain Mapping by Integrated Neurotechnologies for Disease Studies) and such other projects.