



Two Ph.D. student positions in Systems Neuroscience: “Neural circuits synchronisation and regulation of innate behaviors”

Prof. Alexey Ponomarenko at the Institute of Physiology and Pathophysiology of the Friedrich-Alexander University Erlangen-Nuremberg (FAU) is looking for highly motivated students interested in **neurophysiology, neuronal circuits and behavior** and/or in **mathematical biology and computational neuroscience**.

Our team is interested in neuronal computations, which enable innate behaviors and regulatory responses - such as food seeking and intake, exploratory behavior and regulation of vigilance states - depending on environmental stimuli, experience and the current physiological state. We showed that the processing of this information by the hypothalamus – the orchestrator of innate behaviors - involves organization of neuronal activity at fine time scales of network oscillations (Bender et al., Nature Commun., 2015, Herrera et al., Nature Neurosci., 2016, Carus-Cadavieco et al., Nature, 2017). Using high-density neuronal recordings across brain regions in combination with optogenetics in rodents performing various behavioral tasks we study **dynamics of neuronal circuits supporting innate behaviors and their cognitive regulation**. Our projects are well supported (including present and past funding from FAU, the German Research Foundation (DFG) and the Leibniz Association). The lab features a complete chain of methods for studies of neuronal activity in behaving rodents (workshop, surgical equipment, multichannel recording and optostimulation setups, computational resources) and has access to advanced microscopy facilities.

One of the two projects will have primary accents on state-of-the-art neurophysiological methods, first of all ***in vivo* unitary and local field potential recordings, opto- and chemogenetics, neurobiological, behavioural** and, later, **data analytical investigations**. Applications from students with a Master’s degree in Neuroscience or related disciplines and a passionate interest in brain function are welcome. Prior experience in *in vivo* studies and in behavioral neuroscience would be an advantage.

For another project we are looking for a student with a Master’s degree in Computational Neuroscience, Mathematics or Physics, background in contemporary mathematics and enthusiasm for interdisciplinary work. Independent studies of relevant fields including **signal processing, information theory and geometry, experimentation (recording in behaving mice) and application of quantitative methods to neuronal activity datasets** will be integral for this doctoral project.

If one of these positions sparked your interest, please email your full CV, a motivation letter, transcript of MSc’s grades and contact details of 2 references to:

Prof. Dr. Alexey Ponomarenko
Institut für Physiologie und Pathophysiologie
Universität Erlangen-Nürnberg
Universitätsstr. 17, 91054 Erlangen, Germany
e-mail: alexey.ponomarenko@fau.de

Web sites for additional details: www.physiologie1.fau.de/Ponomarenko/
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