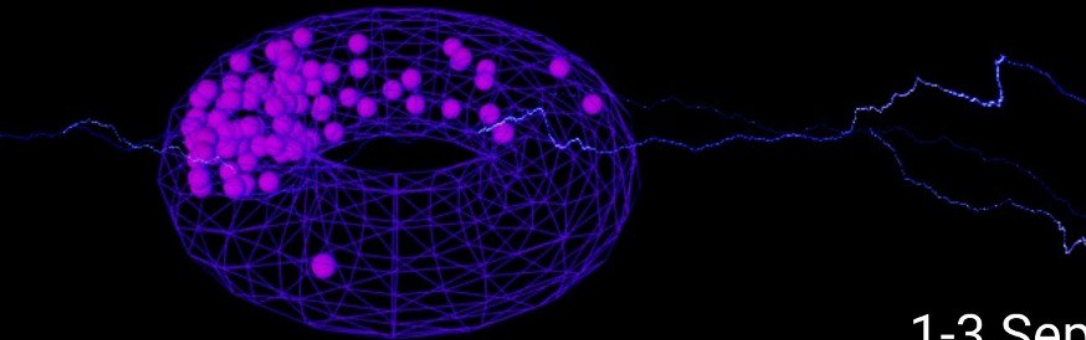Факультет
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Computer Methods of Cognitome Analysis

International Conference

1-3 September, Moscow

Schedule

Thursday, 1 September, online English Session

10:00–11:15		**Ivan Limonchenko, Konstantin Sorokin** ATA, FCS HSE	Opening of the conference, Pure mathematics of Cognitome
11:30–12:45		**Tomoki Fukai,** Okinawa Institute of Science and Technology	Emergent individual behavior traits from neural dynamics
13:00–14:15		**Tom Burns** Okinawa Institute of Science and Technology	Intrinsic topology and geometry of gridworld dynamics, learned representations, and a social place cell hypothesis
14:30 –16:00		Lunch	
16:00–17:15		**Nachum Ulanovsky** Weizmann Institute of Science	Neural codes for natural behaviors in flying bats
17:30–18:45		**Moo K. Chung** University of Wisconsin-Madison	Wasserstein graph clustering in the state-space estimation
19:20–20:35		**Alexei Ossadtchi** HSE, FMBA, AIRI	Methods for MEG based functional connectivity analysis in health and disease

Friday, 2 September, Russian session

10:00–11:15		**Konstantin Anokhin** Institute for the Advanced Brain Studies Lomonosov Moscow State University, Moscow Laboratory for Neurobiology of Memory P.K.Anokhin Research Institute of Normal Physiology	Cognitome: basic principles of the neural hypernetwork theory
11:30–12:45		**Max Talanov** CRO at B-Rain Labs LLC, Docent at ITIS KFU	Emotional AI
13:00–14:15		**Viktor Erokhin** University of Parma	Hardware realization of neuromorphic systems using organic memristive devices
14:30–16:00		Lunch	

16:00–17:15		**Alex SImak** Research Team Lead, Neuromorphic Computing Group, Huawei Technologies	Neuromorphic Computing and Industrial Application Introduction
17:30–18:45		**Yuri Dabaghian** University of Texas Health Science Center at Houston	Topology through the spikes. Hyppocampal activity analysis
19:20–20:35		**Vladimir Itskov** The Pennsylvania State University	Convex neural codes in recurrent neural networks and sensory systems

Saturday, 3 September, Russian session

10:00–11:15		**Anton Ayzenberg** ATA FCS HSE	Formal concepts application for neural codes studies
11:30–12:45		**Dmitry Ivanov** Department of Super Computers and Quantum Informatics, Moscow State University	Neuromorphic processing units and their properties
13:00–14:15		**Alexandra Bernadotte** MSU, MISIS, CEO NeuroSputnik	AI for Brain-Computer interfaces
14:30–16:00	**Lunch**		
16:00-19:00	**Young scientists session**		

About

Cognitome is a representation of a brain as a neural hypernetwork structure. In this approach consciousness is a special type of dynamic in this network. One of the main tools to reveal it's structure and functioning mechanisms is pure mathematics, in particular, algebraic topology, and computer science.

The conference is aimed at mathematicians, physicists and computer scientists interested in applying their knowledge and intuition to the problems of brain-function mechanisms.

The main focus of the conference is the studying neural circuit dynamics at the cellular level during spatial navigation and episodic memory tasks (two fundamental mechanisms of cognition), as well as their modelling using high-performance and neuromorphic computing units.

We believe that we can inspire early-career researchers in computer science, pure mathematics and physics to devote their efforts to the great scientific problem of the mind.

Organizers

Konstantin Sorokin   ksorokin@hse.ru
Ivan Limonchenko
Konstantin Anokhin
Anton Ayzenberg

**ATA
international
laboratory**