

PROGRAM

of the International Conference «Volga Neuroscience Meeting – 2021»

Tuesday, August 24

	BIOPHOTONICS	COGNITIVE NEUROSCIENCE	COMPUTATIONAL NEUROSCIENCE	MOLECULAR AND CELLULAR NEUROSCIENCE	NEURODYNAMICS AND ARTIFICIAL INTELLIGENCE	WORKSHOP MOLECULAR MECHANISMS OF AGING
	Sergey Gudkov	Alexander Hramov	Grigory Osipov	Victor Tarabykin	Alexander Gorban	Claudio Franceschi
16:00 – 18:00	Registration and accommodation of participants					
18:00 – 18:30	<p>Opening remarks (Hall A)</p> <p>Konstantin Anokhin, Prof., Academician of the Russian Academy of Sciences, P.K. Anokhin Research Institute of Normal Physiology, Moscow State University</p> <p>Olga Petrova, Minister of education, science and youth policy of the Nizhny Novgorod Region</p> <p>Elena Zagaynova, Prof., Rector, Lobachevsky State University of Nizhny Novgorod, Russia</p> <p>Mikhail Ivanchenko, Prof., Vice-Rector, Lobachevsky State University of Nizhny Novgorod, Russia</p>					
18:30 – 19:20	<p>Plenary lectures (Hall A)</p> <p>THE MOLECULAR LOGIC OF SYNAPSE FORMATION</p> <p><i>Aleksandr Petrenko memorial lecture</i></p> <p>Prof. Thomas C. Südhof</p> <p>2013, Nobel Prize in Physiology or Medicine</p> <p>Stanford University, United States of America</p>					
19:30 – 21:30	<p>(Hall B)</p> <p><i>Welcome party</i></p>					

8:00 – 10:30	<i>Breakfast</i>
10:30 – 11:20	<p>Plenary lectures (Hall A) INFLAMMAGING FROM THEORY TO BEDSIDE Prof. Claudio Franceschi Mater Studiorum University of Bologna, Italy</p>
11:20 – 12:10	<p>Plenary lectures (Hall A) SYNCHRONIZATION PHENOMENA IN NEURAL NETWORKS WITH TIME DELAY Prof. Jürgen Kurths Humboldt State University and Potsdam Institute for Climate Impact Research, Germany</p>
12:10 – 12:30	<p><i>SPONSORSHIP REPORT (Hall A)</i> AUTOMATIZATION IN SUPERRESOLUTION BIOIMAGING Nikolay Akimov <i>Head of Laser Scanning Microscopy Division, ZEISS</i></p>
12:30 – 12:50	<i>Coffee break</i>
12:50 – 13:40	<p>Plenary lectures (Hall A) THE ROLE OF FERROPTOSIS IN NEURODEGENERATION Prof. Marcus Conrad Institute of Metabolism and Cell Death, Helmholtz Zentrum München, Germany Laboratory of Experimental Oncology Pirogov Russian National Research Medical University, Russia</p>
13:40 – 15:00	<i>Lunch</i>

15:00 – 15:30	SECTION NEURODYNAMICS AND ARTIFICIAL INTELLIGENCE (Hall E)		WORKSHOP MOLECULAR MECHANISMS OF AGING (Hall C)	
	<p>TOWARDS HARDWARE IMPLEMENTATION OF HIGH-DIMENSIONAL BRAIN Valeri Makarov Complutense University of Madrid, Spain</p>		<p>MECHANISMS OF LONGEVITY: FROM MOLE-RATS TO WHALES Vera Gorbunova University of Rochester, United States of America</p>	
15:30 – 16:00	<p>ROTATIONAL DYNAMICS VERSUS SEQUENCE-LIKE RESPONSES Mikhail Lebedev Skolkovo Institute of Science and Technology, Russia</p>		<p>QUANTIFYING AGING AND REJUVENATION Vadim Gladyshev Harvard Medical School, Harvard University, United States of America</p>	
16:00 – 16:20	SECTION NEURODYNAMICS AND ARTIFICIAL INTELLIGENCE (Hall E)	WORKSHOP MOLECULAR MECHANISMS OF AGING (Hall C)	SECTION BIOPHOTONICS (Hall D)	
	<p>DYNAMICS OF THE NEURON MODEL WITH ADAPTIVE EXTERNAL EXCITATION, Evgeniy Seleznev Kotelnikov Institute of Radioengineering and Electronics of Russian Academy of Sciences, Russia</p>	<p>GEROPROTECTIVE POTENTIAL OF GENETIC AND PHARMACOLOGICAL INTERVENTIONS TO ENDOGENOUS HYDROGEN SULFIDE SYNTHESIS IN DROSOPHILA MELANOGASTER Alexey Moskalev Institute of Biology of Komi Science Centre of the Ural Branch of the Russian Academy of Sciences, Russia</p>	<p>DEVELOPMENT AND APPLICATION OF PHOTOCONVERSION FLUOROPOLYMER FILMS FOR GREENHOUSES Sergey Gudkov Prokhorov General Physics Institute of the Russian Academy of Sciences, Russia</p>	

<p>16:20 – 16:40</p>	<p>NANOCOMPOSITE POLY-PARAXYLYLENE MEMRISTORS FOR NEUROMORPHIC APPLICATIONS Anna Matsukatova Lomonosov Moscow State University, Russia</p>	<p>TRANSPOSABLE ELEMENTS - A NEW MECHANISM OF AGING Andrei Seluanov University of Rochester, United States of America</p>	<p>DESIGNING THE QUANTUM MODELS OF ELECTRON TRANSPORT AND CHARGE SEPARATION IN PHOTOSYNTHETIC PIGMENT-PROTEIN COMPLEXES Roman Pishchalnikov Prokhorov General Physics Institute of the Russian Academy of Sciences, Russia</p>
<p>16:40 – 17:00</p>	<p>SHORT TERM FORECAST OF WIND SPEED USING DATA FROM WEATHER STATIONS AND NEURAL NETWORKS ON THE EXAMPLE OF THE STAVROPOL TERRITORY RF Sergei Strijhak Ivannikov Institute for System Programming of the Russian Academy of Sciences, Russia</p>	<p>DLX5/6 EXPRESSION IN GABAERGIC NEURONS AFFECTS METABOLISM AND LONGEVITY: IMPLICATIONS FOR HUMAN EVOLUTION Giovanni Levi Muséum national d'Histoire naturelle, France</p>	<p>PARAMETERS OF PHOTOSYNTHESIS AND PRODUCTIVITY OF LETTUCE DURING GROWTH UNDER LIGHT WITH DIFFERENT SPECTRA Lyubov Yudina Lobachevsky State University of Nizhny Novgorod, Russia</p>
<p>17:00 – 17:20</p>	<p>ARTIFICIAL NEURAL NETWORK SPECIAL DESIGN TO PREDICT QUALITY CHARACTERISTICS OF PETROLEUM PRODUCTS Viacheslav Kuvykin Lobachevsky State University of Nizhny Novgorod, Russia</p>	<p>CONTRIBUTION OF SEX- AND AGE-ASSOCIATED DNA METHYLATION REMODELING IN ALZHEIMER'S DISEASE Maria Giulia Bacalini IRCCS Istituto delle Scienze Neurologiche di Bologna, Italy</p>	<p>LASER INTERFEROMETRY AND OTHER OPTICAL METHODS FOR STUDYING LYSOZYME DENATURATION Ruslan Sarimov Prokhorov General Physics Institute of the Russian Academy of Sciences, Russia</p>
<p>17:20 – 17:40</p>	<p>ON THE USE OF MACHINE LEARNING TECHNIQUES FOR THE SPEEDUP OF GLOBAL OPTIMIZATION ALGORITHMS Konstantin Barkalov Lobachevsky State University of Nizhny Novgorod, Russia</p>	<p>MODULATION OF MITOCHONDRIAL METABOLISM AS AN ADAPTATION MECHANISM IN NEURODEGENERATION AND AGING Vasily Popov Voronezh State University of Engineering Technologies, Russia</p>	<p>LASER SPECTROSCOPY FOR IN-SITU CHEMICAL ANALYSIS DURING METAL ADDITIVE MANUFACTURING Vasily Lednev Prokhorov General Physics Institute of the Russian Academy of Sciences, Russia</p>

17:40 – 18:00	REAL-TIME NEUROSIMULATIONS Maxim Talanov B-Rain Labs Kazan Federal University, Russia	ANALYSIS OF MULTIDIMENSIONAL MARKERS FOR EARLY DIAGNOSIS Oleg Blyuss University of Hertfordshire, United Kingdom	CELL DEATH IN PHOTODYNAMIC THERAPY: NEW INSIGHTS IN EFFICIENT TREATMENT OF BRAIN TUMORS Tatiana Mishchenko Lobachevsky State University of Nizhny Novgorod, Russia
18:00 – 18:30	<i>Coffee break</i>		
18:30 – 18:50	SECTION MOLECULAR AND CELLULAR NEUROSCIENCE (Hall F)	WORKSHOP MOLECULAR MECHANISMS OF AGING (Hall C)	SECTION BIOPHOTONCS (Hall D)
	KINASES AND PHOSPHATASES AS PHARMACOLOGICAL TARGETS IN EPILEPTIC DISORDERS Mutig Kerim Institute of Functional Anatomy, Charité – Universitätsmedizin Berlin, Germany	INTELLIGENCE AND CONSCIOUSNESS IN GENETIC, NEURON-ASTROCYTE NETWORKS Alexey Zaikin University College London, United Kingdom	MULTIPARAMETRIC OPTIMIZATION OF THE CAROTENOID LINEAR OPTICAL RESPONSE SIMULATION Denis Chesalin Prokhorov General Physics Institute of the Russian Academy of Sciences, Russia
18:50 – 19:10	LACTATE SUPPLY OVERTAKES GLUCOSE WHEN NEURAL COMPUTATIONAL AND COGNITIVE LOADS SCALE UP Yulia Dembitskaya Center for Interdisciplinary Research in Biology, Collège de France, France	AGE-RELATED CHANGES IN THE BEHAVIOR AND EXPRESSION OF BRAIN-DERIVED NEUROTROPHIC FACTOR AND ITS RECEPTORS IN ZBTB33 KNOCKOUT MICE Elizabeth Kulikova Institute of Cytology and Genetics of Siberian Branch of the Russian Academy of Sciences, Russia	
19:10 – 19:30	THE EFFECTS OF TRAUMATIC EXPERIENCE ON THE BEHAVIOR, C-FOS EXPRESSION AND FUNCTIONAL CONNECTIONS IN THE MOUSE BRAIN RESTING STATE NETWORKS Ksenia Toropova National Research Center «Kurchatov Institute», Russia		

19:30 - 20:00	<i>Dinner</i>
20:30 – 22:00	(Hall B) Poster Session
22:00 – 24:00	<i>Evening event</i>

8:00 - 10:30	<i>Breakfast</i>		
10:30 – 11:20	Plenary lecture (Hall A) EPIGENETIC REGULATION OF LONG-TERM PLASTICITY Prof. Pavel Balaban Institute of Higher Nervous Activity and Neurophysiology of the Russian Academy of Sciences, Russia		
11:20 -12:10	Plenary lectures (Hall A) AI MULTICORRECTORS: ALGORITHMS, GEOMETRIC BACKGROUNDS, AND COMPUTATIONAL TEST Prof. Alexander Gorban (Joint work with B. Grechuk, E.M. Mirkes and I.Y. Tyukin) University of Leicester, United Kingdom and Lobachevsky University, Russia		
12:10 – 12:30	<i>SPONSORSHIP REPORT (Hall A)</i> COMPLEX NGS SEQUENCING SOLUTIONS FROM SKYGEN Gleb Churbanov <i>product manager of SkyGen company</i>		
12:30 – 13:00	SECTION COGNITIVE NEUROSCIENCE (Hall D)	SECTION COMPUTATIONAL NEUROSCIENCE (Hall A)	SECTION MOLECULAR AND CELLULAR NEUROSCIENCE (Hall F)
	EXTREME SYNCHRONIZATION EVENTS IN THE EPILEPTIC BRAIN: DATA ANALYSIS AND MODELS Alexander Hramov Innopolis University, Russia	HIERARCHICAL NETWORKS OF COUPLED MICRO-OSCILLATORS WITH INTELLIGENT FUNCTIONS Vladimir Vanag Immanuel Kant Baltic Federal University, Russia	BRAIN ORGANOID IN NEURODEGENERATIVE DISEASE MODELING Maria Lagarkova Federal Scientific and Clinical Center of Physical and Chemical Medicine of the Federal Medical and Biological Agency, Russia
13:00 – 13:30	MODELING METASTABLE VISUAL PERCEPTION AND NEUROPHYSIOLOGICAL EXPERIMENTS Alexander Pisarchik Polytechnic University of Madrid, Spain	FITZHUGH–NAGUMO OSCILLATORS ON COMPLEX NETWORKS MIMIC EPILEPTIC-SEIZURE-RELATED SYNCHRONIZATION PHENOMENA Eckehard Schöll Technische Universität Berlin and Bernstein Center for Computational Neuroscience Berlin, Germany	THERMOGENETICS: STRENGTH AND LIMITATIONS Vsevolod Belousov Federal Center of Brain Research and Neurotechnologies of the Federal Medical and Biological Agency, Russia

13:30 – 14:30	<i>Lunch</i>		
14:30 – 15:00	SECTION COGNITIVE NEUROSCIENCE (Hall D)	SECTION COMPUTATIONAL NEUROSCIENCE (Hall A)	SECTION MOLECULAR AND CELLULAR NEUROSCIENCE (Hall F)
	SENSORY SUBSTITUTION: AN OVERVIEW Aleksandr Sergeev Ural Federal University, Russia	RARE CHAOS IN NEURAL SYSTEMS Andrey Shilnikov Georgia State University, United States of America	PROCESSING OF HIPPOCAMPAL NETWORK ACTIVITY IN THE ENTORHINAL CORTEX Andrey Rozov Federal Center of Brain Research and Neurotechnologies of the Federal Medical and Biological Agency, Russia
15:00 – 15:30	MATHEMATICAL MODELING AND METHODS FOR ANALYSIS THE ELEMENTS OF AUTONOMIC CONTROL OF BLOOD CIRCULATION Anatoly Karavaev Saratov Branch of Kotelnikov Institute of Radioengineering and Electronics of Russian Academy of Sciences, Russia	SPIKING NEURON NETWORKS: MODELING BRAIN CIRCUITS AND FUNCTIONS Victor Kazantsev Lobachevsky State University of Nizhny Novgorod, Russia	THE DIVERSITY OF GDNF AND ITS ROLE IN THE REGENERATIVE MEDICINE OF THE HUMAN NERVOUS SYSTEM Galina Pavlova Institute of Higher Nervous Activity and Neurophysiology of the Russian Academy of Sciences, Russia
15:30 – 15:50	DIFFERENTIATION OF COGNITIVE RESERVES IN PATIENTS WITH CORONARY ARTERY DISEASE USING CLUSTERIZATION BY DISCRETE OPTIMIZATION WITH A MINIMAX CRITERION Olga Razumnikova Novosibirsk State Technical University, Russia	RECONSTRUCTION OF NODES AND COUPLINGS IN THE NETWORK OF NEURONAL OSCILLATORS Vladimir Ponomarenko Saratov Branch of Kotelnikov Institute of Radioengineering and Electronics of Russian Academy of Sciences, Russia	EFFECTS OF THE SEROTONIN 5-HT7 RECEPTOR OVEREXPRESSION IN THE RAPHE NUCLEI AREA ON DEPRESSIVE- LIKE BEHAVIOR AND BRAIN 5-HT SYSTEM IN MICE Vladimir Naumenko Institute of Cytology and Genetics of Siberian Branch of the Russian Academy of Sciences, Russia

15:50 – 16:10	<p>SYNCHRONIZATION OF METASTABLE OSCILLATIONS IN EVOLUTIONARY GAMES Olga Vershinina Lobachevsky State University of Nizhny Novgorod</p>	<p>NEURON-LIKE SPIKING AND BURSTING IN SUPERCONDUCTING JOSEPHSON JUNCTION Syamal Kumar Dana Jadavpur University, India</p>	<p>MECHANISMS OF HYALURONIDASE-INDUCED AUDIOGENIC SEIZURES IN THE MICE NEONATAL PERIOD OF ONTOGENESIS Irina Mukhina Privolzhsky Research Medical University, Russia</p>
16:10 – 16:30	<p>FORECASTING OF ADAPTIVE NETWORK'S DYNAMICS BY RESERVOIR COMPUTING Andrey Andreev Innopolis University, Russia</p>	<p>DYNAMICS OF RATE AND SPIKING NEURAL NETWORKS TRAINED TO PERFORM COGNITIVE TASKS Oleg Maslennikov Institute of Applied Physics of the Russian Academy of Sciences, Russia</p>	<p>CRISPR/CAS9-MEDIATED GENE EDITING AS A TOOL FOR MODELING AND TREATING NEURODEGENERATIVE DISEASES Mikhail Stepanichev Institute of Higher Nervous Activity and Neurophysiology of the Russian Academy of Sciences, Russia</p>
16:30 – 16:50	<p>MATHEMATICAL MODEL FOR THE DYNAMICS OF THE CARDIOVASCULAR SYSTEM IN THE AWAKE STATE AND DIFFERENT STAGES OF SLEEP Yurii Ishbulatov Saratov Branch of Kotelnikov Institute of Radioengineering and Electronics of Russian Academy of Sciences, Russia</p>	<p>MODEL-INFORMED DRUG DEVELOPMENT IN NEUROSCIENCE Kirill Peskov M&S Decisions, Russia</p>	<p>ON THE ROLE OF SEROTONIN 5-HT1A RECEPTOR TRANSCRIPTIONAL FACTOR CC2D1A/FREUD-1 IN THE BRAIN 5-HT AND BDNF SYSTEMS CROSS-TALK AND BEHAVIORAL PLASTICITY Elena Kondaurova Institute of Cytology and Genetics of Siberian Branch of the Russian Academy of Sciences, Russia</p>
16:50 – 17:10	<p>EFFECTS OF HTR7 GENE OVEREXPRESSION IN MIDBRAIN FOLLOWED PROLONGED ETHANOL EXPOSURE ON BEHAVIOR AND BRAIN 5-HT SYSTEM OF C57BL/6J MICE Aleksandr Rodnyy Institute of Cytology and Genetics of Siberian Branch of the Russian Academy of Sciences, Russia</p>	<p>MODELING EPILEPTIC SEIZURE INITIATION BY MEANS OF MESOSCALE ENSEMBLES OF NEUROSCILLATORS Ilya Sysoev Saratov Branch of Kotelnikov Institute of Radioengineering and Electronics of Russian Academy of Sciences, Russia</p>	<p>OPTOGENETIC APPROACHES TO CONTROL OF ASTROGLIA-DRIVEN BRAIN PLASTICITY Alla Salmina Research Center of Neurology, Russia</p>
17:10 – 17:30	<i>Coffee break</i>		

	SECTION COGNITIVE NEUROSCIENCE (Hall D)	SECTION COMPUTATIONAL NEUROSCIENCE (Hall A)	SECTION MOLECULAR AND CELLULAR NEUROSCIENCE (Hall F)
17:30 – 17:50	<p>BETA-BAND POWER PREDICTS EXPLORATORY CHOICES IN PROBABILISTIC ENVIRONMENT Boris Chernyshev Moscow State University of Psychology and Education, Russia</p>	<p>SYNCHRONIZATION BETWEEN PROCESSES OF LOW-FREQUENCY REGULATION OF BLOOD CIRCULATION IN AWAKE AND SLEEP Ekaterina Borovkova Saratov State University, Russia</p>	<p>THE OVEREXPRESSION OF TRUNCATED FORM OF TRKB RECEPTOR (TRKB.T1) IN THE HIPPOCAMPUS DIFFERENTIALLY REGULATE THE BEHAVIOR IN DEPRESSIVE AND NON-DEPRESSIVE MICE Anton Tsybko Institute of Cytology and Genetics of Siberian Branch of the Russian Academy of Sciences, Russia</p>
17:50 – 18:10	<p>RECONSTRUCTING SINGLE FINGER TRAJECTORIES FROM INTRACRANIAL BRAIN ACTIVITY Marc M. Van Hulle Katholieke Universiteit Leuven, Belgium</p>	<p>BRAIN-COMPUTER INTERFACE FOR OLFACTION: ACCOUNTING FOR RESPIRATION AND DECODING ODORS FROM EEG Ivan Ninenko HSE University, Russia</p>	<p>MOLECULAR AND CELLULAR MECHANISMS OF POSTTRAUMATIC STRESS DISORDER Olga Ivashkina National Research Center «Kurchatov Institute», Russia</p>
18:10 – 18:30	<p>RECURRENCE QUANTIFICATION ANALYSIS FOR SINGLE TRIAL P300 DETECTION Elena Pitsik Innopolis University, Russia</p>	<p>EFFICIENT REDUCTION OF THE COLLECTIVE DYNAMICS OF NEURAL POPULATIONS WITH REALISTIC FORMS OF HETEROGENEITY Sergei Kirillov Institute of Applied Physics of the Russian Academy of Sciences, Russia</p>	<p>SEROTONIN 5-HT_{2A} AND TRKB RECEPTORS FORM OLIGOMERIC HETEROCOMPLEXES IN VITRO AND IN VIVO Tatiana Ilchibaeva Institute of Cytology and Genetics of Siberian Branch of the Russian Academy of Sciences, Russia</p>
18:30 – 18:50		<p>TOWARDS MORE BIOLOGICALLY PLAUSIBLE CPG MODELS Valentina Baruzzi University of Genoa, Italy</p>	<p>EFFECT OF THE TUMOR NECROSIS FACTOR GENE KNOCKOUT ON SENSITIVITY TO LIGHT REGIME DISTURBANCES IN MICE: THE ROLE OF BDNF AND BRAIN SEROTONIN SYSTEM Darya Bazovkina The Institute of Cytology and Genetics Siberian Branch of Russian Academy of Sciences</p>

18:50 – 19:10		<p>ASSESSMENT OF OPENING THE BLOOD-BRAIN BARRIER BASED ON CROSS-RECURRENT ANALYSIS</p> <p>Danil Kulminskiy</p> <p>Saratov Branch of Kotelnikov Institute of Radioengineering and Electronics of Russian Academy of Sciences, Russia</p>	
19:10 - 20:00	<i>Dinner</i>		
20:30 – 21:00	<p>(Hall A)</p> <p>Closing of the conference</p>		
21:00 – 00:00	<p>(Hall B)</p> <p><i>Banquet</i></p>		

8:00 - 10:30	<i>Breakfast</i>
11:00 - 13:00	Transfer to Nizhny Novgorod

POSTER SESSION

Section - COGNITIVE NEUROSCIENCE

THE INFLUENCE OF RT AND BBC ON COGNITIVE ATTITUDES AND PSYCHOPHYSIOLOGICAL INDICATORS OF INDIVIDUALS

Alexandr Petukhov, Lomonosov Moscow State University, Russia

ASSOCIATIVE SEMANTIC LEARNING IN THE DEVELOPING BRAIN: SENSORIMOTOR PATTERNS EMBEDDED IN RAPID WORD ACQUISITION

Elena Artemenko, Saint Petersburg University, Russia

EEG CORRELATES OF VISUOMOTOR TRANSFORMATION WITH A P300 BRAIN-COMPUTER INTERFACE FOR POST-STROKE REHABILITATION

Marina Morozova, Skolkovo Institute of Science and Technology, Russia

NEURONAL ENCODING OF OBJECTS AND SPACE IN HIPPOCAMPUS: NEW APPROACH IN VERIFICATION OF NEURONAL SPECIFICITY

Viktor Plusnin, National Research Center «Kurchatov Institute», Russia

THE INFLUENCE OF STRESS DURING INFANT AND JUVENILE AGE PERIODS ON YOUNG ADULT BEHAVIORAL PHENOTYPE OF C57BL/6 MICE

Daria Kuzmina, Privolzhsky Research Medical University, Russia

THE EFFECT OF SYSTEMIC INFLAMMATION AND ACUTE INFLAMMATION IN THE LONG-TERM PERIOD ON COGNITIVE FUNCTIONS IN C57BL/6 MICE

Olga Zaborskaya, Privolzhsky Research Medical University, Russia

A PROTOCOL FOR ASSESSING SPATIAL ORIENTATION BEHAVIOR IN RATS EXPOSED TO CONDITIONAL ULTRASOUND

Ivan Potapov, Lobachevsky State University of Nizhny Novgorod, Russia

INFLUENCE OF VIBROTACTILE FEEDBACK ON THE MOTOR EVOKED POTENTIALS

Susanna Gordleeva, Lobachevsky State University of Nizhny Novgorod and Innopolis University, Russia

**DOES TRANSCRANIAL MAGNETIC STIMULATION EFFECTS EEG
CHARACTERISTICS OF A MOTOR IMAGERY?**

Nikita Grigorev, Lobachevsky State University of Nizhny Novgorod, Russia

**EFFECT OF TRANSCRANIAL MAGNET STIMULATION ON THE
PERFORMANCE OF A COMPLEX COGNITIVE TASK**

Andrey Savosenkov, Lobachevsky State University of Nizhny Novgorod, Russia

EMG-INTERFACE BASED ON A SPIKE NEURAL NETWORK

Ksenia Skorodelova, Lobachevsky State University of Nizhny Novgorod, Russia

**ANALYSIS OF THE HEMODYNAMIC RESPONSE IN THE MOTOR CORTEX
USING THE FNIRS TECHNIQUE**

Artem Badarin, Innopolis University, Russia

Section - COMPUTATIONAL NEUROSCIENCE

**REAL TIME METHOD OF AUTONOMIC CONTROL LOOPS
SYNCHRONIZATION DIAGNOSTICS**

Aleksandr Kurbako, Saratov State University, Russia

**DETECTION OF SPONTANEOUS ACTION POTENTIALS IN
EXTRACELLULAR RECORDINGS OF VISUAL CORTEX NEURONS USING
EEG PREDICTORS FOR A MACHINE LEARNING-BASED APPROACH**

Olga Idzhilova, Institute of Higher Nervous Activity and Neurophysiology of the
Russian Academy of Sciences, Russia

**INTERACTION OF AUTONOMIC CONTROL LOOPS OF BLOOD
CIRCULATION IN PATIENTS WITH COVID-19**

Viktoriia Skazkina, Saratov State University, Russia

**ACCESSING ATTENDED AND REMEMBERED LOCATIONS IN
PREFRONTAL CORTEX USING DEEP LEARNING APPLIED TO NEURONAL
ENSEMBLE RECORDINGS**

Georgiy Kozhevnikov, Skolkovo Institute of Science and Technology, Russia

THE RAPID DYNAMICS OF CA1 HIPPOCAMPAL PLACE CODE FORMATION

IN A NOVEL ENVIRONMENT

Vladimir Sotskov, Institute for Advanced Brain Studies Lomonosov Moscow State University, Russia

INVESTIGATION OF WORKING MEMORY CAPACITY IN SPIKING NEURAL NETWORK

Natalia Kovaleva, Lobachevsky State University of Nizhny Novgorod, Russia

INTEGRATION OF POSTUROGRAPHIC METHODS WITH NONINVASIVE BCIS

Matvey Bulat, Skolkovo Institute of Science and Technology, Russia

DYNAMICAL MESOSCALE MODEL OF ABSENCE SEIZURES

Tatiana Medvedeva, Institute of Higher Nervous Activity and Neurophysiology of the Russian Academy of Sciences, Russia

HARDWARE IMPLEMENTATION OF PULSE COUPLING FOR ELECTRONIC NEURON-LIKE GENERATOR CONNECTION

Alexander Vasin, Lobachevsky State University of Nizhny Novgorod, Russia

MULTIPLEX HETEROGENEOUS NETWORKS OF HODGKIN-HUXLEY-TYPE OF MODELS WITH BISTABILITY BETWEEN SILENT STATE AND BURST ATTRACTOR

Nataliya Stankevich, HSE University, Russia

EXPERIMENTAL INVESTIGATION THE DYNAMIC OF TWO HARDWARE NEURON MODELS CONNECTED THROUGH MEMRISTIVE ELEMENT

Denis Bolshakov, Lobachevsky State University of Nizhny Novgorod, Russia

MODELLING WORKING MEMORY IN NEURON-ASTROCYTE NETWORKS

Yuliya Tsybina, Lobachevsky State University of Nizhny Novgorod, Russia

SYNCHRONIZATION IN THE NEURON-ASTROCYTE NETWORK

Sergey Makovkin, Lobachevsky State University of Nizhny Novgorod, Russia

LOCALIZED COHERENT STATES IN A POPULATION OF NEURON-LIKE ELEMENTS WITH NON-LOCAL COUPLING

Maxim Bolotov, Lobachevsky State University of Nizhny Novgorod, Russia

**EXTREME EVENTS IN SMALL ENSEMBLE OF BURSTING NEURONS WITH
CHEMICAL AND ELECTRICAL COUPLINGS**

Egor Semenyuta, Lobachevsky State University of Nizhny Novgorod, Russia

BURSTING ACTIVITY IN A MODEL OF NEURON-GLIAL INTERACTION

Nikita Barabash, Lobachevsky State University of Nizhny Novgorod and Volga
State University of Water Transport, Russia

**ANALYSIS OF DIRECTIONAL COUPLINGS BETWEEN INFRA-SLOW
OSCILLATIONS OF BRAIN POTENTIAL AND CARDIAC INTERBEAT
INTERVALS**

Aleksey Hramkov, Saratov State University, Russia

**DYNAMICS OF ENSEMBLE OF TWO EXCITATORY COUPLED PHASE
OSCILLATOR**

Tatiana Levanova, Lobachevsky State University of Nizhny Novgorod, Russia

**Section - NEURODYNAMICS AND ARTIFICIAL
INTELLIGENCE**

**STATISTICAL ANALYSIS OF COUPLING EVOLUTION IN ABSENCE
EPILEPSY MODELS FROM SIMULATED AND EXPERIMENTAL DATA**

Anastasia Grishchenko, Saratov Branch of Kotelnikov Institute of
Radioengineering and Electronics of Russian Academy of Sciences, Russia

**DEVELOPMENT OF A FISH-LIKE ROBOT WITH A BIOMORPHIC DRIVER
THAT MODULATES OSCILLATIONS WITH INCREASING AMPLITUDE AS
THE TYPE OF THE FISH MOVEMENT**

Ilia Mitin, Lobachevsky State University of Nizhny Novgorod, Russia

**RECOGNITION OF HANDWRITING FROM ELECTROMYOGRAPHY WITH
DEEP LEARNING**

Aleksandra Medvedeva, Skolkovo Institute of Science and Technology, Russia

**TURBULENT MODEL DEVELOPMENT FOR SLOPE FLOW SIMULATION
USING TBNN**

Daria Romanova, Ivannikov Institute for System Programming of the Russian Academy of Sciences, Russia

MACHINE LEARNING FOR MIXING WITH INTERNAL WAVES ATTRACTOR

Daniil Riazanov, Ivannikov Institute for System Programming of the Russian Academy of Sciences, Russia

DIMENSIONALITY REDUCTION OF PLACE CELLS NEURAL ACTIVITY IN MICE

Nikita Pospelov, Institute for Advanced Brain Studies Lomonosov Moscow State University, Russia

SPIKING NEURONS DEMONSTRATE EXTREMELY HIGH SELECTIVITY

Innokentiy Kastalskiy, Lobachevsky State University of Nizhny Novgorod, Russia

ASSOCIATIVE LEARNING IN STRUCTURED SPIKE NEURAL NETWORKS

Alexey Zharinov, Lobachevsky State University of Nizhny Novgorod, Russia

**Section - MOLECULAR AND CELLULAR
NEUROSCIENCE**

**DEVELOPMENT OF MOLECULAR TOOLS FOR TARGETING THE
FUNCTIONAL NEURAL NETWORKS**

Anastasia Borodinova, Institute of Higher Nervous Activity and Neurophysiology of the Russian Academy of Sciences, Russia

**NEURONAL ACTIVITY IN HIPPOCAMPUS OF FREELY MOVING MICE IS
AFFECTED BY HDAC INHIBITOR SODIUM BUTYRATE**

Matvey Roshchin, Institute of Higher Nervous Activity and Neurophysiology of the Russian Academy of Sciences, Russia

**SEROTONIN INDUCES AN INCREASE OF NUCLEAR CALCIUM LEVELS IN
CORTICAL NEURONS EXPRESSING GCAMP6F**

Alyona Ziuzina, Institute of Higher Nervous Activity and Neurophysiology of the Russian Academy of Sciences, Russia

STUDY OF HIPPOCAMPAL NEURONAL ACTIVITY IN FREELY MOVING MICE DURING CONTEXT FEAR CONDITIONING TASK

Marina Roshchina, Institute of Higher Nervous Activity and Neurophysiology of the Russian Academy of Sciences, Russia

MODULATION OF THE AMPLITUDE OF GAMMA-BAND OSCILLATIONS BY STIMULUS PHASE IN MOUSE VISUAL CORTEX NEURONS IMPROVES SIGNAL ENCODING

Alexey Malyshev, Institute of Higher Nervous Activity and Neurophysiology of the Russian Academy of Sciences, Russia

MODULATION OF THE AMPLITUDE OF GAMMA-BAND OSCILLATIONS BY STIMULUS PHASE IN MOUSE VISUAL CORTEX NEURONS IMPROVES SIGNAL ENCODING

Ivan Smirnov, Institute of Higher Nervous Activity and Neurophysiology of the Russian Academy of Sciences, Russia

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Khalil Gainutdinov, Kazan Federal University, Russia

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Dmitry Eremin, Institute of Cytology and Genetics of Siberian Branch of the Russian Academy of Sciences, Russia

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Vladimir Pershin, Lobachevsky State University of Nizhny Novgorod, Russia

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Maria Gavrish, Lobachevsky State University of Nizhny Novgorod, Russia

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Natalia Maksimova, Privolzhsky Research Medical University, Russia

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