Olesia Dogonasheva

odogonasheva@gmail.com

EDUCATION

École normale supérieure, Doctorale Cerveau, cognition, comportement (ED3C), Paris   2024
PhD

Alferov University, Nanobiotechnology department, Saint-Petersburg   2020
MA in Physics

ITMO University, Department of higher mathematics, Saint-Petersburg   2015
BA in Applied Mathematics and Computer Science

COMPLEMENTARY EDUCATION

Bioinformatics Institute, Saint-Petersburg   2020
Statistics, data analysis, machine learning, bioinformatics tools

Computer Science Center, Saint-Petersburg   2012
Algorithms and data structures, C++

PUBLICATIONS

O. Dogonasheva, E. Postnikov, A. Lavrova "Shaping spiking patterns through synaptic parameters as revealed by conventional and wavelet-based bifurcation analysis", *The European Physical Journal Special Topics*, p. 1-13, 2023

O. Dogonasheva, D. Kasatkin, B. Gutkin, D. Zakharov "Multistability and evolution of chimera states in a network of type II Morris-Lecar neurons with asymmetrical nonlocal inhibitory connections", *Chaos: An Interdisciplinary Journal of Nonlinear Science*, vol. 32, no. 10, p. 101101, 2022

O. Dogonasheva, D. Kasatkin, B. Gutkin, D. Zakharov "Robust universal approach to identify travelling chimeras and synchronized clusters in spiking networks", *Chaos, Solitons and Fractals: the interdisciplinary journal of Nonlinear Science, and Nonequilibrium and Complex Phenomena*, vol. 153, p. 111541, 2021

PREPRINTS

V. Tiselko O. Dogonasheva, A. Myshkin, N. Khoroshavkina, O. Valba "K-clique percolation in human structural connectome", *arXiv:2210.07218*, 2022.

CONFERENCES

O. Dogonasheva, O.Platonova, D. Zakharov, A.L.Giraud, B. Gutkin "Brain-Rhythm-based Inference (BRyBI) for time-scale invariant speech processing", *Neuroscience (SfN)*, Washington, USA, Nov 2023.

O. Dogonasheva, D. Zakharov, A.L.Giraud, B. Gutkin "Hierarchical Oscillation as a Mechanisms for Speech Parsing", *Bernstein*, Berlin, Germany, Sep 2023.

O. Dogonasheva, D. Zakharov, A.L.Giraud, B. Gutkin "Delta-theta-gamma interplay for contextualized speech parsing", *32nd Annual Computational Neuroscience Meeting*, Leipzig, Germany, Jul 2023.

O. Dogonasheva, B. Gutkin, D. Zakharov "Correlation dimension as a measure of chimera states", *NoDycon*, Rome, Italy, Jun 2023.

O. Dogonasheva, D. Zakharov, B. Gutkin "Brain-Rhythm-based Inference (BRyBI) for time-scale invariant speech processing", *Cosyne*, Montreal, Canada, Mar 2023.

O. Dogonasheva, B. Gutkin, D. Zakharov "Identification of multistable coherent regimes in spiking neural networks", *Dynamics Day Europe*, Aberdeen, Scotland, UK, Aug 2022.

O. Dogonasheva, B. Gutkin, D. Zakharov "Calculation of travelling chimera speeds for dynamical systems with ring topologies", *BF-NAICS 2021: Baltic Forum: Neuroscience, AI and Complex Systems*, Kaliningrad, Russia, Sep 2021.

O. Dogonasheva, B. Gutkin, D. Zakharov "Multistability of coherent states in ring networks of type II neurons with asymmetrical nonlocal inhibitory connectivity", *30th Annual Computational Neuroscience Meeting*, Jul 2021.

O. Dogonasheva, B. Gutkin, D. Zakharov "A new universal approach for studying synchronization processes in networks of active elements based on adaptive synchronization measure", *Nonlinear days 2021*, Saratov, Russia, Apr 2021.

O. Dogonasheva, G. Novikov, "A new method for the molecular geometry optimization during the quantum-chemical modeling of chemical and biochemical reactions", *SPbOpen 2019*, Saint-Petersburg, Russia, Apr 2019.

O. Dogonasheva, I. Popov "Solution of spectral problems for quantum graphs with delta potentials of spiral types in a magnetic field", *IV Congress of young scientists of Russia*, Saint-Petersburg, Russia, 2015.

O. Dogonasheva, I. Popov "DNA topology quantum graphs in a magnetic field", *Mathematical Challange of Quantum Transport in Nanosystems*, Saint-Petersburg, Russia, 2014.

PATENTS	**Patent for a computer program No. 2022684705**, Software package for the identification of dynamical regimes in spiking neural networks	2022
	Patent for a computer program No. 2022684101, Software package for calculation of the chimera state speed in spiking neural networks	2022
	Patent for a computer program No. 2021616670, Software package for automatic simulation of chemical reactions networks during the deposition of molecular coatings on surfaces	2021
	Patent for a computer program No. 2020615220, Software package ReaNet for automatic modeling of thermal chemical and photochemical reactions	2020
AWARDS & SCHOLARSHIPS	**Vernadsky Fellowship Award**, Ambassadeur de France en Russie	2021-2024
	Idea Foundation Fellowship, Research Center "IDEAS"	2021-2023
	Stipendium, Freien Universität Berlin, Germany	2020
	Winner of the competition "Start - Digital Technology", Innovation Promotion Fund, Moscow, Russia	2020
	Prizewinner in the "International gemini Mars design competition", The Mars society, USA	2016
SCHOOLS & INTERNSHIPS	**Neurobridges**, Scientific School in Cluny, France	2022
	Mathematics, Theoretical Physics and Mathematical Methods of Data Analysis in Neuroscience, Scientific School in Sirius Mathematics Center, Sochi, Russia	2021
	Neuromatch Academy, Summer school in Computational Neuroscience	2020
	Bioinformatics Summer School, MIPT, Moscow, Russia	2019
INVITED TALKS	**LaCNS Group, the Donders Centre for Cognitive Neuroimaging, Radboud University**, "Brain-Rhythms-Based Inference (BRyBI) model for Contextualized Speech Parsing"	2023
	Institute of Radio-engineering and Electronics RAS, Saratov, Russia, "Travelling chimera states in the ring of II-type Morris-Lecar neurons with asymmetric nonlocal inhibitory connections"	2020
TEACHING EXPERIENCE	**HSE University**, Moscow • Advanced Calculus, assistance • Theoretical neuroscience, seminars • Brain and Mind, seminars	2021 – 2022
	ITMO University, Saint-Petersburg • Higher mathematics, 3-terms course	2014 – 2017

- Probability theory and mathematical statistics, 2-terms course

RESEARCH EXPERIENCE	**Higher School of Economics**, Moscow	2020 – 2022

**RESEARCH
EXPERIENCE**

Higher School of Economics, Moscow — 2020 – 2022
- Study synchronization processes and chimera states in spiking neural networks
- Study brain rhythms influence on speech coding

Skoltech, Moscow — 2020
- Discovery of allosteric binding site in G protein-coupled receptors

Bioinformatics Institute, Saint-Petersburg — 2019
- Phenome-wide functional analysis of human genetic association data

Alferov University, Saint-Petersburg — 2018 – 2020

Researcher, Nanobiotechnology laboratory
- Development of optimization algorithms to automatic search
  of chemical reaction pathways
- Implementation of a genetic algorithm for the amino acid substitutions selection
  in the chromophore to increase the absorption coefficient
- Implementation of machine learning algorithms to optimize force field parameters

ITMO University, Saint-Petersburg — 2014 – 2017

Assistant, Department of higher mathematics
- Solving spectral problems for spiral-type quantum graphs

Scientific Center for Robotics and Technical Cybernetics, Saint-Petersburg — 2014 – 2015

Technician, Mathematical modelling department
- Solution for the inverse kinematics problem for a six-chain robot manipulator
- Ice dynamics modelling as a part of the project of rescue robots on the oil platforms

REFERENCES

- **Professor Boris Gutkin**
  Director of Research at the Centre National pour la Recherche Scientifique (CNRS) France,
  Director, Group for Neural Theory, Laboratoire de Neuroscience Cognitive, INSERM U960, DEC, ENS
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