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Research interests

Research Interests Algorithms of Bioinformatics, Repeats in Genomes and Proteomes,
Spectral Analytical Methods, High Performance and Parallel
Computations.

Education

2008 Diploma of Docent in bioinformatics
2004 Candidate of Physico-Mathematical Sciences, Dorodnicyn Computing Centre of
Russian Academy of Sciences,
Ph.D. thesis: «*Algebraic Operations on Orthogonal Series in Data Processing
Problems*», advisers prof. F.F.Dedus and prof. V.D.Lakhno
1994-1996 Pushchino State University, Master's Degree in Applied Mathematics and

Informatics,
M.S. thesis: «*Solution of the Nonlinear Schrödinger Equation for a Polaron in a Neutral Cluster*», adviser prof. A.M.Molchanov

1989-1994 Lomonosov Moscow State University, the Faculty of Computational Mathematics and Cybernetics,
B.S. thesis: «*Spatially homogeneous periodic solutions in the reaction NO + CO on platinum*», adviser prof. G.G.Elenin

1987-1989 Kolmogorov's boarding school of Moscow State University

Academic employment

2005 - present Senior Researcher at the IMPB RAS

2000 - 2005 Researcher at the IMPB RAS

1995 - 2000 Junior Researcher at the IMPB RAS

Skills

Bioinformatics Advanced usage of alignment algorithms. Development of new instruments for investigation of different types of repeats in genomes and proteins.

Parallel computing OpenMP

Programming languages and tools C/C++, Matlab, Mathematica, LaTeX, Javascript

Grants and Awards

2015-2017 Russian Foundation for Basic Research (RFBR) Grant: Web services to solve the problems of recognition of inexact repetitive patterns in genomes and proteins

2014-2016 RFBR Grant: Spectral analytical method for recognition of repetitive structures in genomes and proteins

2011-2013 RFBR Grant: Program system for intellectual analysis of experimental data on the base of orthogonal expansions of high order

2011 T-Platforms Company Grant, Effective use of GPU accelerators for large tasks

2010 Intel Company Contest, [32 Core Testing Plan Winners](#)

2008-2009 RFBR Grant: Creation of a data and knowledge base on the structural and functional elements of genomes based on spectral-analytical method for the analysis of primary DNA sequences

2005 Personal grant for Candidate of Russian Academy of Sciences

Teaching Activity

2005-present Visiting Associate Professor at the Department of Mathematical Biology of Pushchino State Institute of Natural Science

2013 Doctoral Dissertation Adviser: PhD in Biophysics, Institute of Theoretical and

Experimental Biophysics RAS, thesis: «*Spectral-analytical method for the search of long repetitive nucleotide sequences in genomes*» by Maxim I. Pyatkov

2005-2013 Visiting Associate Professor at the Department of Mathematical Methods of Forecast, Faculty of Computational Mathematics and Cybernetics, Lomonosov Moscow State University

2001-2005 Visiting Assistant Professor at the Department of Mathematical Methods of Forecast, Faculty of Computational Mathematics and Cybernetics, Lomonosov Moscow State University

List of Publications:

1. A.N.Pankratov, R.K.Tetuev, M.I.Pyatkov LSCGAT: Long Sequences Customizable Global Alignment Tool// Journal of Bioinformatics and Genomics, [No 1 \(10\) 2019](#)
2. Pankratov A.N., Tetuev R.K., Pyatkov M.I. Distributed realization of parallel algorithm for global alignment of long sequences// Proceedings of the International Conference “Mathematical Biology and Bioinformatics”. Ed. V.D. Lakhno. Vol. 7. Pushchino: IMPB RAS, 2018. [Paper No. e64](#). doi: 10.17537/icmbb18.92
3. Maxim Pyatkov, Anton Pankratov, and Ruslan Tetuev Hilbert Spaces and Computational Bioinformatics The Seventh German-Russian Week Of The Young Researcher “Computational Biology And Biomedicine” Skoltech, Moscow, September 11-14, 2017, [Abstract](#)
4. Tetuev R.K., Pyatkov M.I., [Pankratov A.N.](#) Parallel algorithm for global alignment of long aminoacid and nucleotide sequences. Math. Biol. Bioinf. 2017;12(1):[137-150](#)
5. I. V. Florinsky & [A. N. Pankratov](#) (2016) A universal spectral analytical method for digital terrain modeling, International Journal of Geographical Information Science, 30:12, [2506-2528](#)
6. [A.N. Pankratov](#), R.K. Tetuev, M.I. Pyatkov, V.P. Toigildin, N.N. Popova Spectral analytical method of recognition of inexact repeats in character sequences. Proceedings of the Institute for System Programming Volume 27 (Issue 6). 2015 y. pp. [335-344](#)
7. Florinsky I.V., [Pankratov A.N.](#) Digital terrain modeling with orthogonal polynomials. Machine Learning and Data Analysis, 2015, Vol. 1, № 12, [pp. 1647-1659](#)
8. Pyatkov M.I., [Pankratov A.N.](#) SBARS: fast creation of dotplots for DNA sequences on different scales using GA-,GC-content. Bioinformatics, Vol. 30, № 12, 2014, [pages 1765-1766](#)
9. Rudnev V.R., [Pankratov A.N.](#), Kulikova L.I., Dedus F.F., Tikhonov D.A., Efimov A.V. Conformational Analysis of Structural Motifs of α - α -Corner in the Computational Experiment of Molecular Dynamics. Math. Biol. Bioinf. 2014;9(2):[575-584](#)
10. Rudnev V.R., [Pankratov A.N.](#), Kulikova L.I., Dedus F.F., Tikhonov D.A., Efimov A.V. Recognition and Stability Analysis of Structural Motifs of α - α -corner Type in Globular Proteins. Math. Biol. Bioinf. 2013;8(2):[398-406](#)
11. [Pankratov A.N.](#), Pyatkov M.I., Tetuev R.K., Nazipova N.N., Dedus F.F. Search for Extended Repeats in Genomes Based on the Spectral-Analytical Method. Math. Biol. Bioinf. 2012;7(2):[476-492](#)
12. Pyatkov M.I., Filippov V.V. and [Pankratov A.N.](#) Consensus of repeated region of rabbit chromosome 17 containing over 15 huge approximate tandem repeats. Rebase Reports. 2012. 12(3) [256-256](#)
13. Ustinin M.N., Polikarpov M.A., [Pankratov A.N.](#), Rykunov S.D., Naurzakov S.P., Grebenkin A.P., Panchenko V.Ya. Comparative Analysis of Magnetic Encephalography Data Sets. Math. Biol. Bioinf. 2011;6(1):[63-70](#)
14. Tetuev R.K., Nazipova N.N., [Pankratov A.N.](#), Dedus F.F. Search for Megasatellite Tandem Repeats in Eukaryotic Genomes by Estimation of GC-content Curve Oscillations. Math.

- Biol. Bioinf. 2010;5(1):[30-42](#)
15. Pankratov Anton Long-Range Monitoring Of Fuel Consumption Of Car Based On Generalized Spectral-Analytical Method. Driver Car Interaction & Interface 2010, The Book Of Proceedings, Prague 3rd December, 2010, [p.49-50](#)
 16. Pankratov A.N., Gorchakov M.A., Dedus F.F., Dolotova N.S., Kulikova L.I., Makhortykh S.A., Nazipova N.N., Novikova D.A., Olshevets M.M., Pyatkov M.I., Rudnev V.R., Tetuev R.K., and Filippov V.V. Spectral Analysis for Identification and Visualization of Repeats in Genetic Sequences. Pattern Recognition and Image Analysis, 2009, Vol. 19, №4, [pp. 687-692](#)
 17. Pankratov A.N. On the Implementation of Algebraic Operations on Orthogonal Function Series. Computational Mathematics and Mathematical Physics, 2004, Vol.44, №12, [pp.2017-2023](#)
 18. Britenkov A.K., Pankratov A.N. Stable Algorithms of Adaptive Approximation for Acoustic Signals Description by Orthogonal Polynomials. Physics of Wave Phenomena, 2004, Vol.12, №3, [pp.168-174](#)
 19. Lakhno V.D., Pankratov A.N. Electron States Coupled by a Polar Dielectric Sphere. Bulletin of the Russian Academy of Sciences, Physics, 2000, Vol.64, №8, [pp. 1172-1174](#)
 20. Balabaev N.K., Lakhno V.D., Pankratov A.N., Ustinin M.N. Polaron States in Uncharged Molecular Clusters. Bulletin of the Russian Academy of Sciences, Physics, 1997, Vol.61, №9, [pp.1428-1432](#)