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Part I AIMEE2018 Conference Schedule

Oral Session

Saturday, 6 October 2018

Time	Activity	Location
9:00-9:30	Registration	
9:30-10:00	Opening Ceremony	
10:00-10:30	Keynote Speech: PARALLEL ROBOTS IN MEDICAL AND TRAINING SYSTEMS Speaker: Prof. Victor A. Glazunov	“Emerald” conference hall of Moscow Salut Hotel
10:30-11:00	Keynote Speech: FROM STANDARD GENETIC CODE TO UNIVERSAL HUMAN EMOTIONS Speaker: Prof. He Matthew	
11:00-11:20	Coffee Break	Конференц-зал «Изумруд» -
11:20-11:40	Moon Ho Lee, Sung Kook Lee, and K. M. Cho A Life Ecosystem Management with Base Complementary DNA	Гостиница «Салют»
11:40-12:00	Sergei V. Kozyrev Code Biology and Kolmogorov Complexity	
12:00-12:20	Elena Fimmel, Sergey V. Petoukhov Genetic Code Modeling from the Perspective of Quantum Informatics	
11:20-11:40	Valeriya Gribova, Alexander Kleschev, Philip Moskalenko, Vadim Timchenko, Elena Shalfeeva The Technology for Development of Decision-making Support Services with Components Reuse	
11:40-12:00	Vitaliy A. Romanchuk, Ruslan I. Bazhenov The Technique for Data Parallelism in Neural Processing Units	
12:00-12:20	A.A. Potapov, A.A. Pakhomov, V.I. Grachev Development of Methods for Solving Ill-Posed Inverse Problems in Processing Multidimensional Signals in Problems of Artificial Intelligence, Radiolocation and Medical Diagnostics	
12:20-12:40	I. N. Statnikov, G.I. Firsov Numerical Approach to Solving the Problem of Choosing the Rational Values of Parameters of Dynamic	

Systems

- 12:40-14:00 **Launch Buffet**
- 14:00-14:20 Sergey Eremeev, Ekaterina Seltsova **Algorithms for Topological Analysis of Spatial Data**
- 14:20-14:40 Nikolay A. Balonin, Mikhail B. Sergeev **Determinant Optimization Method**
- 14:40-15:00 M.M. Gourary, S.G. Rusakov **Analysis of Oscillator Ensemble with Dynamic Couplings**
- 15:00-15:20 Nikita E. Shklovskiy-Kordi, Victor K. Finn, Lev I. Ehrlich, Abir U. Igamberdiev **The Genetic Language: Natural Algorithms, Developmental Patterns, and Instinctive Behavior**
- 15:20-15:40 Ganiev R.F., Panin S.S, Dovbnenko M.S, Bryzgalov E.A **Application of Neural Networks for Controlling the Vibrational System based on Electric Dynamic Drive**
- 15:40-16:00 Baldin A.V., Dosko S.I., Kucherov K.V., Liu Bin, Spasenov A.Yu., Utenkov V.M., Zhuk D.M. **ECG Signal Spectral Analysis Approaches for High resolution Electrocardiography**
- 16:00-16:20 **Coffee Break**
- 16:20-16:40 Sergey N. Sayapin, Pavel M. Shkapov, Firuz G. Nazyrov, Andrey V. Devyatov **Novel Approach to a Creation of Probe to Stop Bleeding from Esophageal Varicose Veins based on Spiral-Compression Method**
- 16:40-17:00 Kirichenko A.V., Lariushkin P.A. **Parallel Mechanisms in Layout of Human Musculoskeletal System**
- 17:00-17:20 G.I. Firsov, I.N. Statnikov **Methods of Mutual Analysis of Random Oscillations in the Problems of Research of the Vertical Human Posture**
- 17:20-17:40 Anna A. Kiseleva, Petr V. Luzhnov, Dmitry M. Shamaev **Verification of Mathematical Model for Bioimpedance Diagnostics of the Blood Flow in Cerebral Vessels**
- 17:40-18:00 Anna S. Bobrovskaia, Sergey S. Gavriushin, Alexander V. Mitronin
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**Evaluation of Adhesive Bond Strength of Dental Fiber Posts by
«Torque-Out» Test**

- 18:00-18:20 Roman Veynberg, Rimma Tomakova, Sergey Filist, Alexey Brezhnev,
Alexandra Brezhneva **The Role of Hybrid Classifiers in Problems of
Chest Roentgenogram Classification**
- 18:20-18:40 I.N. Dashevskiy, D.A. Gribov **Patient-Specific Biomechanical Analysis
in Computer Planning of Dentition Restoration with the use of
Dental Implants**
- 18:40-19:00 Rakcheeva T. **Focal Model in the Pattern Recognition Problem**
- 19:00-21:00 **Welcome Banquet**
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Oral Session

Sunday, 7 October 2018

Time	Activity	Location
9:00-9:30	Keynote Speech: THE HURST EXPONENT APPLICATION IN THE FRACTAL ANALYSIS OF THE RUSSIAN STOCK MARKET Speaker: Prof. Alexander A. Potapov	“Emerald” conference hall of Moscow Salut Hotel
9:30-10:00	Keynote Speech: ON A GRAMMAR OF BIOLOGY AND QUANTUM-ALGORITHMIC GENETICS Speaker: Prof. Petoukhov S.V.	
10:00-10:20	Wang Ziye, Zhang Qingying, Zhang Mengya Lifelong Education of Sports Media Professionals based on System Theory	Конференц-зал «Изумруд» - Гостиница «Салют»
10:20-10:40	Coffee Break	
10:40-11:00	Glazunov V.A., Rashoyan G. V., Aleshin A. K., Shalyukhin K. A., Skvortsov S. A. Structural Synthesis of Spatial I-Coordinate Mechanisms with Additional Links for Technological Robots	
11:00-11.20	M. Mazurov Modeling of Intellect with the use of Complex Conditional Reflexes and Selective Neural Network Technologies	
11:20-11.40	Rakcheeva T. Metric Properties of the Visual Illusion of Intersection	
11.40-12.00	Victor A. Panchelyuga, Victor L. Eventov, Maria S. Panchelyuga Experimental Method for Biologically Active Frequencies Determination	
12:00-12.20	Konstantin A. Skvorchevsky, Alexander M. Sergeev, Nikita S. Kovalev From the Golem to the Robot and Beyond to the Smart Prostheses	
12.20-12:40	A. Puchkov, M. Dli, M. Kireyenkova Fuzzy Classification on the base of Convolutional Neural Networks	
12:40-14:00	Launch Buffet	

14:00-14:20	Alexander V. Shishulin, Alexander A. Potapov, Victor B. Fedoseev Phase Equilibria in Fractal Core-Shell Nanoparticles of Pb₅(VO₄)₃Cl - Pb₅(PO₄)₃Cl System: the Influence of Size and Shape
14:20-14:40	Andrey M. Valuev, Ludmila P. Volkova Problems of Intelligent Automation of Unmanned Underground Coal Mining
14:40-15:00	Anatoliy A. Solovyev, Andrey M. Valuev Structural and Parametric Control of a Signalized Intersection with Real-Time “Education” of Drivers
15:00-15:20	Eremeykin P.A., Zhargalova A.D., Gavriushin S.S. Experimental Substantiation of Soft Cutting Modes Method
15:20-15:40	G.N. Sanayeva, I.E.Kirillov, A.E. Prorokov, V.N. Bogatikov, D.P.Vent Design of Oxidative Pyrolysis Control Algorithm Based on Fuzzy Safety Area and Centre Definition
15:40-16.00	Mikhail V. Murashov Temperature Field Simulation of Gyro Unit-Platform Assembly Accounting for Thermal Expansion and Roughness of Contact Surfaces
16.00-16:20	Maria Vasilieva, Andrey Gorshenin, Victor Korolev Statistical Analysis of Probability Characteristics of Precipitation in Different Geographical Regions
16:20-16:40	Coffee Break
16:40-17:00	Natalia V. Dneprovskaya, Nina V. Komleva, Arkadiy I. Urintsov The Knowledge Management Approach to Digitalization of Smart Education
17:00-17:20	Tetiana Bilushchak, Andriy Peleshchyshyn, Ulyana Yarka, Zhanna Myna Designing an Information Retrieval System in the Archival subdivision of Higher Educational Institutions
17:20-17:40	B.V. Paliukh, V.K. Kemaykin, Yu. G. Kozlova, I.V. Kozhukhin The Manner of Spacecraft Protection from Potential Impact of Space Debris as the Problem of Selection with Fuzzy Logic
17:40-18.00	Elena V. Kokoreva, Ksenia I. Shurygina Characteristics Analysis for Corporate Wi-Fi Network Using the Buzen's Algorithm

18.00-18.20	Meshchikhin I.A., Gavriushin S.S. The Application of Elements of Information Theory to the Problem of Rational Choice of Measuring Instruments
18.20-18.40	Eduard B. Demishkevich, Sergey S. Gavriushin A Visco-Elastic Model of the Long-Term Orthodontic Tooth Movement
18:40-19:00	A. V. Koganov, T. A. Rakcheeva Experimental Detection of the Parallel Organization of Mental Calculations of a Person on the Basis of Two Algebras Having Different Associativity
19.00-21:00	Banquet

Poster Session

Sunday, 7 October 2018

Time	Activity	Location
Full day, Sunday, 7 October 2018	Sungchul Ji, Beum Jun Park, John Stuart Reid Planck-Shannon classifier: A Novel Method to Discriminate between Sonified Raman Signals from Cancer and Healthy Cells	“Emerald” conference hall of Moscow Salut Hotel
	György Darvas, Sergey V. Petoukhov Algebra for Transforming Genetic Codes based on Matrices Applied in Quantum Field Theories	
	Krut’ko V.N, Dontsov V.I, Markova A.M. Intelligent System for Health-Saving	Конференц-зал «Изумруд» - Гостиница «Салют»
	Matthew He, Z. B. Hu, Sergei V. Petoukhov Standard Genetic Codes and Golden Ratio Cubes	
	A Dynamic Power Flow Model Considering the Uncertainty of Primary Frequency Regulation of System Daojun Chen, Nianguang Zhou, Chenkun Li, Hu Guo, Ting Cui	
	N.Yu. Mutovkina Computer Implementation of the Fuzzy Model for Evaluating the Educational Activities of the University	
	Zhang Guoli, Gong Qingwu, Qian Wenxiao, Lu Jianqiang, Zheng Bowen, Gao He, Zheng Tingting, Wu Liuchuang, Chen Wenhui, Liu Xu, Wang Bo, Qiao Hui Power System Transient Voltage Stability Assessment Based on Kernel Principal Component Analysis and DBN	
	Zheng Ren, Jiaqi Fan, Xiaolu Chen, He Gao, Jianqiang Lu, Bowen Zheng Simulation and Analysis of Operating Overvoltage of ac System at $\pm 800\text{kV}$ Converter Station Based on EMTS/EMTPE	
	Andriy Peleshchyshyn, Oleg Mastyakash A Data Model of the Internet Social Environment	
	Olha Trach, Andriy Peleshchyshyn Development of Models and Methods of Virtual Community Life Cycle Organization	

Andriy Peleshchyn, Volodymyr Vus, Solomiia Albota,
Oleksandr Markovets **A Formal Approach to Modeling the
Characteristics of Users of Social Networks Regarding
Information Security Issues**

Nataliya Shakhovska, Khrystyna Shakhovska, Solomia Fedushko
Some Aspects of the Method for Tourist Route Creation

Yang Pengwe, Wang Rui, Xu Cai, Liu Weimng, Han Yingkun
**Simulation Study and Experimental Analysis of Current
Closure Overvoltage Caused by High Reactance on the AC Bus
at ± 800 kV Converter Station**

Sergiy Gnatyuk, Vasyl Kinzeryavyy, Iryna Stepanenko, Yana
Gorbatyuk, Andrii Gizun, Vitalii Kotelianets **Code Obfuscation
Technique for Enhancing Software Protection against Reverse
Engineering**

N.Yu. Mutovkina, V.N. Kuznetsov **Algorithms for Agreement and
Harmonization the Creative Solutions of Agents in an
Intelligent Active System**

A. Bardenhagen, M. Pecheykina, D. Rakov **Advanced
Morphological Approach for Knowledge-based Engineering
(KBE) in Aerospace**

Sergey V. Petoukhov, Elena S. Petukhova **On Genetic Unitary
Matrices and Quantum-Algorithmic Genetics**

Zheng Bowen, Lu Jianqiang, Gao He **Study of Dynamic Reactive
Power Support of Synchronous Condenser on UHV AC / DC
Hybrid Power System**

Xiaolu Chen, Xiangxin Li, Zheng Ren, Tingting Zheng **Wide-area
Feedback Signal and Control Location Selection for
Low-frequency Oscillation**

Sergiy Gnatyuk, Vasyl Kinzeryavyy, Tetyana Sapozhnik, Iryna
Sopilko, Nurgul Seilova, Anatoliy Hrytsak **Modern Method and
Tool for Guaranteed Data Deletion in Advanced Big Data
Systems**

Roman Kaminskyj, Nataliya Shakhovska, Lidia Savkiv **The
Primary Geoelectromagnetic Data Preprocessing Received**

From a Modified Geophysical Automatic Station

Oksana Shkurat, Yevgeniya Sulema, Viktoriya Suschuk-Sliusarenko, Andrii Dychka **Image Segmentation Method Based on Statistical Parameters of Homogeneous Data Set**

Yevgen Radchenko, Ivan Dychka, Yevgeniya Sulema, Viktoriya Suschuk-Sliusarenko, Oksana Shkurat **Steganographic Protection Method Based on Huffman Tree**

Yuriy Syerov, Natalia Shakhovska, Solomiia Fedushko **Method of the Data Adequacy Determination of Personal Medical Profiles**

Deng Wei, Huang Ji Yuan, Zhu Liang, Yu Miaomiao, Liao Rongtao **Voltage Quality Evaluation of Distribution Network and Countermeasure**

Sergiy Gnatyuk, Vasyl Kinzeryavyy, Karina Kyrychenko, Khalicha Yubuzova, Marek Aleksander, Roman Odarchenko **Secure Hash Function Constructing for Future Communication Systems and Networks**

Chen Zhongming, Zhang Yaoyu, Qing Chuan, Liu Jierong, Tang Jiaqi, Pang Jingzhi **Anomaly Detection of Distribution Network Synchronous Measurement Data Based on Large Dimensional Random Matrix**

Monday, 8 October 2018

Time	Activity	Location
10:00-17:00	One-day Tour in Moscow	Moscow

Part II Keynote Speeches

Keynote Speech: PARALLEL ROBOTS IN MEDICAL AND TRAINING SYSTEMS

Speaker: Prof. Victor A. Glazunov

Time: 10:00-10:30, October 6, 2018

Location: “Emerald” conference hall of Moscow Salut Hotel

Конференц-зал «Изумруд» - Гостиница «Салют»



Abstract. The lecture is devoted to the structural synthesis of mechanisms of parallel structure, belonging to the class I coordinate mechanisms. Studies of the mechanisms of the parallel structure in connection with their wide application are conducted in many countries of the world. The proposed synthesized mechanisms structures open up prospects for their wider application, in particular, in technological installations, devices for measurement and testing, additive technologies and manipulators of medical purpose. The introduction of additional intermediate links in the synthesized structural circuits of mechanisms, as well as the removal of drives outside the working space, can significantly expand their functional capabilities. This circumstance serves to develop the theory of synthesis and analysis of mechanisms of parallel structure.

Biography

Victor A. Glazunov, Prof., Sc. D. (Engineering), Sc. D. (Philosophy), outstanding Russian mechanical engineer, well-known in international scientific community for his research in the field of machines and mechanisms theory and robotics, author of more than 350 scientific articles among which there are 9 monographs and about 80 patents and author's certificates.

Current Employments:

Director, A. Blagonravov Mechanical Engineering Research Institute of the Russian Academy of Sciences (IMASH RAN); Professor, N. Bauman Moscow State Technological University (N. Bauman MGTU); Member of Technical Committee on Robotics at International Federation for Promotion of Machines and Mechanisms Science (IFTToMM); he conducted research at National Applied Sciences Institute (Renn, France); 15 Ph.Ds. and 1 Sc. D. thesis have been successfully defended under his scientific supervision.

Biography

1980 – graduated from Ivanovo Power Engineering Institute;

1985 – graduated from Post Graduate School of A. Blagonravov Mechanical Engineering Institute; in 1986 – obtained his Ph. D. (Engineering) degree for research conducted in the field of spatial mechanisms kinematic analysis; in 1992 – obtained his Sc. D.(Engineering) degree for

development of parallel structure spatial mechanisms; from 1992 – was employed as Senior Researcher, Leading Researcher, Principal Researcher, Head of Lab., Head of Department, Deputy Director at A. Blagonravov Mechanical Engineering Research Institute of the Russian Academy of Sciences (IMASH RAN); 2000 – defended his Ph.D. (Philosophy) thesis on Methodology Problems of Mechanisms Theory; 2003 – defended his Sc. D. (Philosophy) thesis dedicated to the robotics engineering methodological problems; 2015 – Director, IMASH RAN.

Main Research Field: robotics, parallel structure spatial mechanisms, machines and mechanisms theory and control.

Main Research Results:

Problems have been solved for synthesis and analysis methodology of multicomponent, manipulation, measuring, technological and test systems based on the parallel structure principles, at the same time the mathematical apparatus of screw calculus has been developed for the study of these objects.

There have been developed the schemes of mechanisms for:

- wind tunnel testing the aerospace systems models,
- ultra-precise vacuum manipulation,
- measuring robotic systems,
- automobile test rigs,
- laser treatment of objects,
- robotic technological installations,
- crystals fragments modeling,
- training systems of robotic surgical operations.

The methodological problems of the engineering sciences development have been investigated on the example of the theory of mechanisms and robots and the particular features of these sciences have been revealed in the context of the science general methodology.

Keynote Speech: FROM STANDARD GENETIC CODE TO UNIVERSAL HUMAN EMOTIONS

Speaker: Prof. Matthew He

Time: 10:30-11:00, October 6, 2018

Location: “Emerald” conference hall of Moscow Salut Hotel
Конференц-зал «Изумруд» - Гостиница «Салют»



Abstract. The genetic code is encoded in combinations of the four nucleotides (A, C, G, T) found in DNA and then RNA. DNA defines the structure and function of an organism and contains the complete genetic information. Using the genetic code of the DNA, according to central dogma of molecular biology proteins are formed. In recent years, it has been suggested that our emotions are molecules. The peptides connect to human emotions that influence every move, function and thought. The peptides as information substances bring the messages to all our body cells.

In this talk, we present recent advances in genetic code-based matrices generated by RNA bases (A, C, G, U) and then draw a parallel of matrices of emotions generated by primary emotions (Sadness, Happiness, Anger, Fear) = (S, H, A, F) along with facial expressions of markers. This parallel shows a similarity connection between universal genetic codes and the universality of facial expressions for emotions. We further show that the frequency of 64 compound emotions/facial expression markers follow a law of normal distribution.

Biography

Matthew He, Ph.D., Assistant Dean/Full Professor of the Halmos College of Natural Sciences and Oceanography of Nova Southeastern University in Florida. From 2004 to 2015, Prof. He served as the Director of the Division of Math, Science, and Technology of Farquhar College of Arts and Sciences of the university. He has been a full professor and grand Ph.D. of the World Information Distributed University since 2004, as well as an academician of the European Academy of Informatization. He was a research associate at the Department of Mathematics, Eidgenossische Technische Hochschule, Zurich, Switzerland, and the Department of Mathematics and Theoretical Physics, Cambridge University, Cambridge, England. He was also a visiting professor at the National Key Research Lab of Computational Mathematics of the Chinese Academy of Science and the University of Rome, Italy.

Dr. Matthew He has authored/edited 10 books and published over 100 research papers in the areas of bioinformatics, computational biology and mathematics, non-rigid motion analysis, and information theory. He is an invited series editor of Biomedical and Life Sciences of Henry Stewart Talk on “Using Bioinformatics in Exploration in Genetic Diversity.” He is an editor of International Journal of Biological Systems, an editor of International Journal of

Cognitive Informatics and Natural Intelligence, an editor of International Journal of Integrative Biology, and an editor of International Journal of Software Science and Computational Intelligence. He is the book editor of Advances in Bioinformatics and its Applications and a guest editor of a special issue of the Journal of Biological Systems of World Scientific Publishing in 2004. He is an Associate Editor of the Proceedings of the International Conference on Mathematics and Engineering Techniques in Medicine and Biological Sciences (2002, 2003, 2004, and 2010).

In 2014, Dr. He was inducted to the hall of fame of 65 Outstanding Overseas Chinese Scientists and selected to be on a stamp and stamp book collection by China Post Office for worldwide distribution with limited edition. In 2012, he received the First Robert Stempel College of Public Health Award in Biostatistics from Florida International University. He received the World Academy of Sciences Achievement Award in recognition of his research contributions in the field of computing in 2003 and 2010. He received Professor of the Year Award in Excellence of Teaching and Research in 2002 at NSU. He is a member of International Advisory Board of "International Symmetry Association (ISA). He is a member of American Mathematical Society, Association of Computing Machinery, IEEE Computer Society, and World Association of Science Engineering. He also serves a member of International Advisory Board of Bioinformatics Group of International Federation for Information Processing (IFIP). He has chaired number of International Conferences in the areas of Bioinformatics Research and Applications. Alongside with scientific activity the academician Matthew He co-founded Chinese Association of Science, Economics, and Culture of South Florida in 1994 and served as the executive director of Chinese Contemporary Schools in South Florida from 1995 to 2005. Dr. Matthew He serves as a member of board directors of many international associations, keynote speakers of many international conferences in math, information sciences, bioinformatics, biomedical sciences and bioengineering, and is actively involved in promoting science, education, and technology.

Keynote Speech: THE HURST EXPONENT APPLICATION IN THE FRACTAL ANALYSIS OF THE RUSSIAN STOCK MARKET

Speaker: Prof. Alexander A. Potapov

Time: 9:00-9:30, October 7, 2018

Location: “Emerald” conference hall of Moscow Salut Hotel

Конференц-зал «Изумруд» - Гостиница «Салют»



Abstract. The main purpose of this report is to investigate dynamics and behaviour of the financial time series for the Russian market using the fractality conception which was initially introduced by Benoit Mandelbrot. The fractals have already been proved themselves as a model which describes experimental data better than previously used conventional theories in such fields of science like radiolocation, natural resources investigations, distant sounding, navigation, meteorology, information processing from unmanned aerial vehicles (UAV) and synthetic aperture radars (SAR), medicine and biology. At the same time there is no fractal unified theory of the financial data behaviour. There are just few separate works devoted this topic; however some worthy efforts were already done in this area for the last years. It was shown that price changes rather obeyed to the Levi flight rules than to the Gaussian distribution and also we could watch the evolution from the Effective Market Hypothesis to the Fractal Market Hypothesis which can better explain the market crashes especially during crises. Here we applied the fractal approach to the Russian young market (about 20 years of history, 2 significant crises) and calculated Hurst exponents for some stocks and indexes to prove the fractality.

Biography

Potapov Alexander Alekseevich (was born in 1951.05.04) finished Ryazan State Radio Engineering Institute (Department of Radio Engineering) in 1974 and M.V. Lomonosov Moscow State University (Department of Physics) in 1979, Dr. Sc. (Phys.-Math.) - (1994), Chief Research of Institute of Radio Engineering and Electronics, Russian Academy of Sciences (RAS).

Academician of Russian Academy of Natural Sciences (2007, Russia); Academician of the Academy of engineering science of A.M. Prokhorov (2008, Russia), President of the Sino-Russian Laboratory of Informational Technologies and Signals Fractal Processing (2011), Guangzhou, China. Professor of Kazan State Technical University of A.N. Tupolev. Full member of Nonprofit Non-Government Expert Society on Space Threat Defence – ESSTD (2015).

Editor-in-chief of the magazine “Nelineinyi mir (Non-linear world, Moscow)” (2003), Member of the editorial board of the international magazine “Electromagnetic Phenomena” (2005).

Potapov A.A. - Honorary Professor of the Eurasian National University (Kazakhstan, Astana, 2010), Honorary Professor of the University of Jinan (China, Guangzhou, 2011). Honorable radio

operator of the Russian Federation (2006). He was awarded 15 medals.

Author of the basic researches in the field of fractal approaches to radio physics problems, radio engineering, radar and broad spectrum of adjacent scientific and technology path. Work at this field from 1979. Initiator of the pioneer researches and developments of fractal theory application in radio physics, scaling effects and fractal operators in radio systems in Russia. He was twice (1997 and 2000) awarded with Government scientific grant. Several international projects have been also conducted (the USA and China).

The results of A.A. Potapov's scientific efforts on the fractal processing of information in the presence of high-intensity noise, and also on fractal radio systems and fractal radio elements are published in summary reports of Presidium of Russian academy of science (RAS) (Scientific achievements of RAS.-M: Nauka, 2008, 2010, 2012 and 2013) and of the Report to the Government of the Russian Federation (2012). All these world priority results allow to move on the new level of information structure of the real non-Markov signals and fields.

Author of more that 960 scientific publications, includes 35 monographs.

The biography of Potapov Alexander Alekseyevich is published in the encyclopaedia "Who is who in Russia" (Verlag für Personencyklopadien AG -Switzerland) on personal request of publishing house. A.A. Potapov is the author of the first in Russia monograph "Fractals in radio physics and radar" (M: Logos, 2002, 664 pp, number of copies 1000), which was edited and added in 2005 (A.A. Potapov Fractals in radio physics and radar: sampling topology. – M: University book, 2005, 848 pp., number of copies 2000). These two monographs became the reference books for the scientists from many fields. A.A. Potapov is also the author and co-author of series of monographs about radar and fractal application in science and engineering. He developed lectures on fractal application in radar which he reads in the Centre of specialists training Concern REI Systems (academic A.L. Mints REI and public corporation NPK NIIDAR). A.A. Potapov is the member of organizing committees of many international and Russia conferences.

Lecturing on the technologies which he developed in IREE RAS and reports on project MNTC in USA (Washington, New-York, Huntsvill, Atlanta, Franklin) in 2000 and 2005, in China (2011) and on many international conferences (England, USA, France, Canada, Netherlands, Austria, Germany, Hungary, Greece, Turkey, Scotland, Switzerland, China, Kazakhstan, Belarus) brought him good repute in circle of international scientific community. In December 2005 American specialists noticed in the official letter addressed to academic and IREE RAS director Y.V. Gulyaev that "...Seminars were very interesting and confirmed high scientific qualification of doctor A.Potapov. Radar technologies which were presented by doctor Potapov are based on the fractal theory and are the new ones. The significance of these investigations for international community of specialists and scientists is evident". In the same time the scientific meeting of A.A.Potapov and the founder of fractal geometry B.Mandelbrotte happened.

Scientific Interest: radio physics, dispersion and diffraction of electromagnetic waves, radio location, image and signal processing and recognition, deterministic chaos, modern topology, fractal analysis, fractal operators, scaling effects, fractal antennas.

Keynote Speech: ON A GRAMMAR OF BIOLOGY AND QUANTUM-ALGORITHMIC

GENETICS

Speaker: Prof. Sergey V. Petoukhov

Time: 9:30-10:00, October 7, 2018

Location: “Emerald” conference hall of Moscow Salut Hotel

Конференц-зал «Изумруд» - Гостиница «Салют»



Abstract. The lecture is devoted to parallelisms between the structural organization of the molecular-genetic system and mathematics of quantum computers. This mathematics is perspective for developing systems of artificial intelligence and it uses the tensor product of matrices, unitary matrices and the logical operation of modulo-2 addition. Using this mathematics to study the genetic system can reveal bio-informational patents of the living nature for scientific and technologic progress. Representations of alphabets of n-plets of DNA in the form of the tensor family of square matrices, decompositions of which are based on sparse unitary matrices, are described. New author’s results are presented about unknown regularities of frequencies (or probabilities) of hydrogen bonds (numbers 2 and 3) in long DNA sequences and in complete sets of nuclear chromosomes. For these regularities, the quantum-algorithmic model on the basis of the new notion of a “genetic” qubit of hydrogen bonds is proposed. The term of “a grammar of biology” was introduced by E.Chargaff’s in 1971 in his article devoted to regularities in long DNA texts. The lecture continues this theme of hidden regularities in DNA texts and shows some possibilities of development of quantum-algorithmic genetics. From the standpoint of the proposed model approach, living organisms are considered as quantum-information essences.

Biography

Sergey V. Petoukhov, Prof., Dr. Sci. Current employments: Head of Laboratory of biomechanical systems research in Mechanical Engineering Research Institute of the Russian Academy of Sciences; Chief researcher of the “Center of interdisciplinary researches of musical creativity” of the Moscow State Conservatory by P.I. Tchaikovsky; Editor-in-Chief of “International Journal of Mathematical Sciences and Computing” (Hong Kong).

Selected honors and awards: Laureate of the State prize of the USSR; Academician of the Academy of Quality Problems (Russia, from 2000); Grand Doctor of Philosophy, Full Professor (The European Academy of Informatization, Belgium, 2004); the Chinese government has included S.V. Petoukhov in the «List of Outstanding Scientists in the World» in 2012; Chairman of Advisory Board of «International Symmetry Association», Budapest, Hungary, from 2003 till now; Honorary chairman of Board Directors of «International Society of Symmetry in Bioinformatics», USA, 2005; co-leader of long-term scientific cooperation between Russian and Hungarian Academies of Sciences in the theme «Non-linear models and symmetrological analysis in biomechanics, bioinformatics and theory of self-organizing systems»; Scientific supervisor and main contractor for competitive state contracts on bioinformatics in 2009-2011; Vice-Chair of the

International Advisory Board Directors of the Research Association of Modern Education and Computer Science (Hong Kong) from 2016; Vice-President of the International Society of Natural Medicine (Slovakia); scholarship for scientific internship in Germany from the German Academic Exchange Service (DAAD, 2017).

See additional information at <http://petoukhov.com>

Part III Instructions for Presentations

Oral Presentation

Devices Provided by the Conference Organizer:

Laptops (with MS-Office & Adobe Reader)

Projectors & Screen

Laser Sticks

Materials Provided by the Presenters:

PowerPoint or PDF files

Durations of each Presentation (Tentatively):

Regular Oral Session: about 15-20 Minutes of Presentation, 5
Minutes of Q&A

Keynote Speech: 20-30 Minutes of Presentation, 10 Minutes of
Q&A

Part V Hotel Information

*Conference Hotel - Moscow Salut Hotel 4**

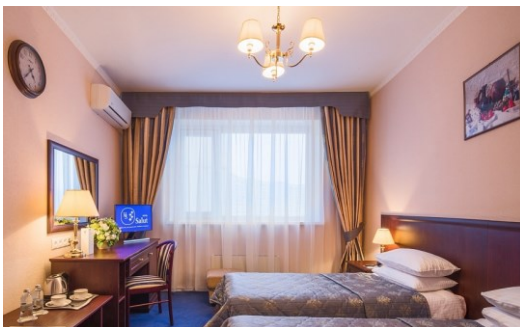
Russia, Moscow, Leninskiy prospect, 158



<http://www.hotelsalut.ru>



Moscow Salut Hotel 4* is the choice of many tourists, who visit Moscow. It can welcome and accommodate tourist group and individual guests. Hotel is located in the South-West of Moscow in 15 min. from Vnukovo Airport and connected with Sheremetyevo and Domodedovo airports by the Moscow Ring Road. Next to the hotel is situated Troparevo Leisure Park and Yugo-Zapadnaya metro station, where located one of the biggest shopping centre AVENUE is and many other shops. In just 20 min. by metro, you can reach the Red Square and Kremlin Museums. Salut Hotel offers 1090 rooms, equipped with all necessary for comfortable accommodation. There are 8 restaurants and cafes, 7 conference halls, fitness-club with swimming pool and SPA&Beauty salon.



Part VI Contact Us

Contact Information

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