

GLOBAL SMART INDUSTRY CONFERENCE (GloSIC'2018)

South Ural State University
November 13–15, 2018, Chelyabinsk

The conference is supported by:
Russian Foundation for Basic Research
South Ural State University, Chelyabinsk, Russia
Emerson Electric Company
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November 13, 2018

- 9:00-09:30 **OPENING OF THE “SUSU-Emerson” LABORATORY**
(Room 437, building 3b, SUSU)
- 9:00-10:30 **REGISTRATION OF PARTICIPANTS OF THE CONFERENCE**
(Passage - 2nd floor of the main building of SUSU)
- 09:45-10:30 **OPENING OF THE INDUSTRIAL EXHIBITION**
(Passage - 3rd floor of the main building of SUSU)
- PLENARY SESSION**
(Assembly Hall - 2nd floor of the main building of SUSU)
- 10:30-11:00 **OPENING CEREMONY**
- 11:00-11:45 **Top Quartile Performance – The Business Case for Digital Transformation**
Michael Train, president of Emerson Corporation, USA
- 11:45-12:30 **Digital Transformation – A Pragmatic Roadmap**
Peter Zornio, Emerson Corporation, USA
- 12:30-14:30 **LUNCH BREAK**
- PLENARY SESSION**
(Assembly Hall - 2nd floor of the main building of SUSU)
- 14:30-15:00 **From Digital Twin to Digital Twin Shop-Floor**
Tao Fei, Beihang University, China
- 15:00-15:30 **Computer-added manufacturing: multitude of applications and unlimited potential**
Igor Movchan, Higher Engineering School, Saint Etienne, France
- 15:30-16:00 **Collaborative robotized and socio-cyberphysical systems**
Andrei Ronzhin, SPIIRAN, Russia
- 16:00-16:25 **Reinforcement learning aided monitoring and control of industrial cyber physical system**
Shen Yin, Harbin Institute of Technology, China

November 14, 2018

9:00-10:00 **REGISTRATION OF PARTICIPANTS OF THE CONFERENCE**
(Passage - 2nd floor of the main building of SUSU)

INDUSTRIAL SESSION

(Assembly Hall - 2nd floor of the main building of SUSU)

10:00-10:25 **SMS group Digital Solutions: New Horizons for the Metallurgical Industry**
Markus Reifferscheid, SMS group, Germany

10:25-10:50 **Prospects of Industrial Internet to improve industrial efficiency**
Armen Badalov, Schneider Electric, Russia

10:50-11:15 **Implementation of innovation development projects under the “Industry 4.0” strategic initiative**
Danila Tselikanov, Magnitogorsk Iron and Steel Works, Russia

11:15-12:00 **INDUSTRIAL EXHIBITION**
(Passage - 3rd floor of the main building of SUSU)

11:15-12:00 **COFFEE BREAK** (Room 341, 346, 350 of the main building of SUSU)

INDUSTRIAL SESSION

(Assembly Hall - 2nd floor of the main building of SUSU)

12:00-12:25 **Introduction of equipment of the IIoT for the purpose of increasing the efficiency of the municipal and regional management**
Sergey Zaostrovnykh, PL PLANAR, Russia

12:25-12:50 **Projects of SUSU in the field of Digital Industry**
Alexander Shestakov, SUSU, Russia

12:50-13:15 **Virtual and augmented realities for industry 4.0, Augmented Worker – AR adoption challenges at industrial scale**
Konrad Swirski, Adam Gasiorek, Warsaw University of Technology, Poland

13:15-13:40 **Synergy of additive and subtractive production for the future of manufacturing**
Philippe Bertrand, Higher Engineering School, Saint Etienne, France

13:40-15:00 **LUNCH BREAK**

15:00-16:30 **ROUNDTABLE “Technologies of Industry 4.0”** (“Sigma”, conference hall)

SECTION A

(“Sigma”, room 308)

Condition monitoring and control for intelligent manufacturing

15:00-15:15 **Extension of the functions of microprocessor-based electric energy meters to detect the 10 kV overhead line phase wire breakage**
Ershov A.M., Khlopova A.V., Sidorov A.I.

15:15-15:30 **Experience in using combined diagnostic systems for assessing the state of metallurgical equipment**
Rednikov S.N., Akhmedyanova E.N., Zakirov D.M.

15:30-15:45 **Corrosion monitoring system for field pipeline**
Kuzyakov O.N., Andreeva M.A., Gluhih I.N.

15:45-16:00 **Mobile Universal Device for Monitoring the Frequency of an Electrical Signal**
Batalin A.V., Ershov A.V.

- 16:00-16:15 **Development of Algorithms of Rapid Charging for Batteries of Hybrid and Electric Drives of City Freight and Passenger Automobile Transportation Vehicles**
E.V. Solomin, I.M. Kirpichnikova, D.V. Korobatov, A.S. Martyanov, E.E. Solomin
- 16:15-16:30 **Three-dimensional real object modeling based on a modified closest-point algorithm for monitoring in intelligent manufacturing**
Anastasiya A. Mittseva, Mikhail S. Timchenko, Georgii Mishchenko
- 16:30-17:00 **COFFEE BREAK** (“Sigma”, Hall of the 2nd floor)

SECTION B

(“Sigma”, room 309)

Big data, machine learning and artificial intelligence for Industry 4.0 management

- 15:00-15:15 **The Use of Deep Learning for Sticker Detection During Continuous Casting**
Artur Faizullin, Mikhail Zymbler, Dirk Lieftucht, Felix Fanghänel
- 15:15-15:30 **Automatic Visible Defect Detection and Classification System Prototype Development for an Iron-and-Steel Works**
Rustem Alkapov, Artem Konyshev, Nikita Vetoshkin, Nikolay Valkevich, Pavel Kostenetskiy
- 15:30-15:45 **Prediction of the Titanium Module in Blast Furnace Based on Multilayer Perceptron and Elman Neural Network**
Barbasova T.A., Lapteva Y.V.
- 15:45-16:00 **Neural Networks in Monitoring and Forecast Reliability Cable Network**
Anton V. Korzhov, Konstantin E. Gorshkov, Mariya E. Korzhova
- 16:00-16:15 **Learning Mechanisms in Digital Control of Large-Scale Industrial Systems**
Tsyganov V.V.
- 16:15-16:30 **Intelligence information retrieval in corporate information systems**
Olenchikova T. U., Marchenko A. D., Maslennikov D. L.
- 16:30-17:00 **COFFEE BREAK** (“Sigma”, Hall of the 2nd floor)

SECTION C

(“Sigma”, room 311)

Basic research for Industry 4.0

- 15:00-15:15 **Method of the associative controller optimization by genetic algorithms**
Akhmerov Konstantin, Akhmerova Ekaterina, Munasyrov Rustem
- 15:15-15:30 **Associative Co-processor on The Basis of Programmable Logical Integrated Circuits for Special Purpose Computer Systems**
Martyshkin A.I., Salnikov I.I., Pashchenko D.V., Trokoz D.A.
- 15:30-15:45 **Math modeling of sequential coherent and linear assembly plans in CAD systems**
Arkady Bozhko
- 15:45-16:00 **Numerical simulation of the transverse and longitudinal shifts of reflected beam**
Chebykin I.P., Kundikova N.D., Korenchenko A.E., Bibikova E.A.

16:00-16:15 **Game Problem of Convergence of a Group of Objects with Different Types of Dynamics, and Target**
V.I. Ukhobotov, I.V. Izmet'shev

16:15-16:30 **Theoretical and experimental research on the possibility of deep processing slag of foundry manufacture**
Dildin A.N., Zaitseva O.V., Zherebtsov D.A.

16:30-17:00 **COFFEE BREAK** ("Sigma", Hall of the 2nd floor)

SECTION D
(“Sigma”, room 312)
Digital Twin technologies

15:00-15:15 **Discrete Solid Modeling as the Basis of Technological Systems Digital Doubles**
Shchurov I.A.

15:15-15:30 **Three-dimensional Workpiece Scanning for Technological Operation Parameters Determination in Turbine Rotor Restoration**
Shchurova A.V.

15:30-15:45 **Development and research of the model of ensuring the reliability of the operation of the network infrastructure objects of the cyber-physical system located in the cloud platform**
Bolodurina Irina P., Parfenov Denis I., Torchin Vadim A., Zabrodina Luba S., Parfenov Igor V., Shardakov Vladimir M.

15:45-16:00 **Digital Twins Technology For Internal Combustion Engines Development**
A. A. Malozemov, V. N. Bondar, V. V. Egorov, G. A. Malozemov

16:00-16:15 **Probabilistic estimations of increasing expected reliability and safety for intelligent manufacturing**
Andrey Kostogryzov, Leonid Grigoriev, Andrey Nistratov, Alexander Rybas, George Nistratov

16:15-16:30 **Development of a prototype of the visualization module for virtual reality using modern digital technologies**
Bolodurina I.P., Parfenov D.I., Parfenov I.V., Zaporozhko V.V., Shardakov V.M., Izvozchikova V.V.

16:30-17:00 **COFFEE BREAK** ("Sigma", Hall of the 2nd floor)

SECTION A
(“Sigma”, room 311)
Condition monitoring and control for intelligent manufacturing

17:00-17:15 **Monitoring the condition and reservation of the air-exchange system in the telephone exchange switch room**
O.G. Brylina, N.N. Kuzmina

17:15-17:30 **An estimate method of residual life of power plant equipment**
Kazarinov Lev Sergeevich, Kolesnikova Olga Valerevna, Prosoedov Roman Aleksandrovich, Khasanov Aleksey Romanovich, Shnaider Dmitry Aleksandrovich

17:30-17:45 **Error estimation and methods for improving accuracy in measuring the parameters of analog signals in digital electric power control systems**
Turygin Igor Gennad'evich, Sergina Irina Gennad'evna

- 17:45-18:00 **Diagnostics of external defects of the railway infrastructure by analysis of its images**
Daniil A. Loktev, Alexey A. Loktev
- 18:00-18:15 **Diagnostics of engine oil of internal combustion engine by electrophysical method of control**
A.G. Vozmilov, R.Yu. Ilimbetov, D.V. Astafev, L.N. Andreev, D.S. Korobkov, N.L. Faizulloev
- 18:15-18:30 **Criteria and method for assessing the functional state of a human operator in a complex organizational and technical system**
S.I. Suyatinov

SECTION B

("Sigma", room 308)

Security and privacy protection in industrial networks

- 17:00-17:15 **Information Security of IoT Wireless Segment**
Nikolay Y. Parotkin, Vyacheslav V. Zolotarev
- 17:15-17:30 **The research of classical machine learning methods and deep learning models effectiveness in detecting anomalies of industrial control system**
Alexander N. Sokolov, Ilya A. Pyatnitsky, Sergei K. Alabugin
- 17:30-17:45 **A Hardware-Based Memory Acquisition Procedure for Digital Investigations of Security Incidents in the Industrial Control Systems**
Alexander N. Sokolov, Andrey E. Barinov, Ivan S. Antyasov, Sergey V. Skurlaev, Maxim S. Ufimtcev, Vasiliy S. Luzhnov
- 17:45-18:00 **The method for risk assesment of industrial networks' information security of a gas producing enterprise**
A. Rimsha, I. Zulkarneev, A. Zakharov
- 18:00-18:15 **Development of System for Protecting the IT Environment of Enterprise Based on Demilitarized Zone Concept Using Virtualization Technology**
Sukhovilov B. M., Grigorova E. A.
- 18:15-18:30 **Development of the prototype of an autonomous self-organizing system for ensuring network security in the enterprise based on the technology of virtualization network functions**
Bolodurina Irina P., Parfenov Denis I., Torchin Vadim A., Legashev Leonid V., Shardakov Vladimir M.

SECTION C

("Sigma", room 309)

Industrial robotics

- 17:00-17:15 **Control Algorithm for the Robot Manipulator Under Conditions of Incomplete Information**
Vladimir Shiryaev, Vasily Shcherbakov, Asia Bragina
- 17:15-17:30 **X3D robots modeling and generating the controlling program for FAULHABER drives**
Voinov I.V., Telegin A.I., Timofeev D.N.
- 17:30-17:45 **Automatic and manual control algorithms of radiation-proof manipulators**
I.V. Voinov, M.V. Nosikov

- 17:45-18:00 **Fuzzy Logic in the Tasks of Control of Handling Robots**
Natalia Plotnikova
- 18:00-18:15 **The architecture of human-controlled arm manipulator operator training system**
M.V. Nosikov
- 18:15-18:30 **Fuzzy Logic Control Design for a 2-Link Robot Manipulator in MATLAB/Simulink via Robotics Toolbox**
Manafaddin Namazov

SECTION D
(“Sigma”, room 312)
Sensors and their components

- 17:00-17:15 **Intelligent algorithm of the measuring complex for aircrafts**
A.V. Proletarsky, M.S. Selezneva, Hu Qiaochu
- 17:15-17:30 **Dynamic measurement error evaluation and minimization based on FIR-filter**
A.S. Volosnikov, E.V. Yurasova
- 17:30-17:45 **Sensor validation via ultrasonic signal processing analysis**
Manus Henry, Oleg Yu. Bushuev, Danil Salov
- 17:45-18:00 **Intelligent Sensor for Combustion Process Using Flame Conductivity Analysis**
A.Yu. Budko, M.Yu. Medvedev, P.V. Ivashin, A.Ya. Tverdokhlebov
- 18:00-18:15 **Method for Diagnosing Random Zero Shift in a Coriolis Flowmeter caused by its Mechanical Support**
Manus Henry, Yaushev Aleksander, Taranenko Pavel
- 18:15-18:30 **The use of ionization sensors to study the combustion characteristics in a variable volume chamber**
Shaikin A. P., Bobrovskij I.N., Deryachev A.D., Ivashin P. V., Galiev I.R., Tverdokhlebov A.Y.

November 15, 2018

9:00-10:00 **OPENING OF THE SAMSUNG IOT ACADEMY** (Room 804, building 3b of SUSU)

PLENARY SESSION ("Sigma", conference hall)

10:00-10:25 **Security Everywhere: Security Ecosystem in the Digital Transformation Age**
Andrey Chernykh, CICESE Research Center, Mexico

10:25-10:50 **Education 3.0 and Social Network-based Education for Effective Learning and Integration with Industry**
Goran Putnik, University of Minho, Portugal

10:50-11:15 **PRISM: checking the correctness of measurements for the Internet of things**
Manus Henry, Oxford University, Great Britain

11:15-11:45 **COFFEE BREAK** ("Sigma", Hall of the 2nd floor)

PLENARY SESSION ("Sigma", conference hall)

11:45-12:10 **Training of IoT specialists in the context of engineering education: features and problems**
Tatyana Volkova, Samsung, Russia

12:10-12:35 **Industrial IoT and manufacturing SMEs: Opportunities and threats**
Alessandro Beghi, University of Padova, Italy

12:35-13:00 **Resource Efficiency for Resource intensive industries**
Jonathan Cullen, Cambridge University, Great Britain. Chris Hamlin, Ana Gonzalez-Hernandez, Emerson Corporation, Great Britain

13:00-15:00 **LUNCH BREAK**

SECTION A ("Sigma", conference hall) **New educational technologies for Industry 4.0**

15:00-15:15 **Forecast of success of differential training of managers based on modeling resources and barriers of innovative leadership**
G. Gryuazeva-Dobshinskaya, Y.A. Dmitrieva, S.Y. Korobova, V.A. Glukhova

15:15-15:30 **Education at university and industry 4.0**
Kazimirov A.N.

15:30-15:45 **Use of Open-Source Internet of Things Platform in Education Projects**
Alexandr A. Zaharov, Olga V. Nissenbaum, Kirill Y. Ponomarov, Andrey V. Shirokih

15:45-16:00 **Integration of the IIoT and AR technologies to the educational process through the laboratory complex**
P.A. Vanin, A.S. Nesterov, I.Y. Kholodilin

16:00-16:15 **Intellectual Catalog of Digital Rail Transport Services**
Tsyganov V.V., Savushkin S.A.

16:15-16:30 **Application of digital twins technology for the analysis of brushless electric machines with axial magnetic flux**
Sergey Gandzha, Aminov Dilshod, Kiessh Irina, Kosimov Bahtior

16:30-17:00 **COFFEE BREAK** ("Sigma", Hall of the 2nd floor)

SECTION B

("Sigma", room 308)

Security and privacy protection in industrial networks management

- 15:00-15:15 **Mathematical model of an algorithm of symmetric enciphering of information on the basis of a task onrepresentation of number in the form of the sum of a special code**
Andrey Averin, Natalya Zyulyarkina
- 15:15-15:30 **Fingerprint minutiae selection for fast identification**
Gudkov Vladimir, Lepikhova Daria
- 15:30-15:45 **Optimization of Processes of Modernization and Operating Conditions of Infocommunication Networks**
Zvereva D.D., Menshikh V.V., Seifer A.V.
- 15:45-16:00 **Modeling Attacks in Computer Networks Using Boolean Constraint Propagation**
Dmitriy Gorbatenko, Alexander Semenov
- 16:00-16:15 **Continuous authentication system to increase the security level of user workstations**
A.A. Kudinov, S.M. Elsakov
- 16:15-16:30 **Fuzzing process modelling for web applications robustness testing via dynamic Bayesian networks**
T.V. Azarnova, P.V. Polukhin, S.A. Barkalov
- 16:30-17:00 **COFFEE BREAK** ("Sigma", Hall of the 2nd floor)

SECTION C

("Sigma", room 309)

Basic research for Industry 4.0

- 15:00-15:15 **High-Performance Computing Using the Application of the Q-determinant of Numerical Algorithms**
Valentina N. Aleeva, Rifkhat Zh. Aleev
- 15:15-15:30 **On an approximate solution of an inverse problem for a nonlinear equation with a discontinuous coefficient**
Tabarintseva E.V.
- 15:30-15:45 **Influence of an environment on Raman spectra of glycine and the prospect of their use for functional diagnostics of the human beings**
Kseniya A. Khnykina, Victor V. Kireev, Nataliya V. Krupina, Nataliya D. Kundikova, Ekaterina V. Verina
- 15:45-16:00 **Development of user interface for the OpenFOAM software environment used in design and technological subdivisions of machine-building enterprises**
Chitalov Dmitri Ivanovich, Kalashnikov Sergey Timofeyevich
- 16:00-16:15 **Designing the optimal enterprise architecture for the digital industry: the state and prospects**
Martinov Vitaliy Vladimirovich, Shavaleeva Diana Nikolaevna, Salimova Alina Ildusovna

16:15-16:30 **Fingerprint Model Based on Fingerprint Image Topology and Ridge Count Values**
Vladimir Gudkov, Daria Lepikhova

16:30-17:00 **COFFEE BREAK** (“Sigma”, Hall of the 2nd floor)

SECTION D
(“Sigma”, room 311)
Digital Twin technologies

15:00-15:15 **Numerical simulation of the effect of temperature gradients on the flow of a liquid film in heat and mass transfer devices**
L.A. Prokudina

15:15-15:30 **The method for finding the phase difference by numerical simulation of the vibrations of tube elements**
L.A.Prokudina, D.D.Yaparov

15:30-15:45 **Digital models for describing the working processes and characteristics of the valve drive**
Voronin S.G., Sogrin A.I., Kurnosov D.A., Klinachev N.V., Kuleva N.I.

15:45-16:00 **Possibility of Digital Twins Technology for Improving Efficiency of the Branded Service System**
Ksenia Shubenkova, Airat Valiev, Eduard Mukhametdinov, Vladimir Shepelev, Sergey Tsiulin, Kristian Hegner Reinau

16:00-16:15 **Elastic-Hydrodynamic Models of Journal Bearings as an Element of the Digital Model of an Internal Combustion Engine**
Khozeniuk N., Rozhdestvensky Y.

16:15-16:30 **Development of a digital twin of the mechanical part of Coriolis flowmeters based on frequency response functions**
Taranenko Pavel, Telegin Dmitry, Yaushev Alexander

16:30-17:00 **COFFEE BREAK** (“Sigma”, Hall of the 2nd floor)

SECTION E
(“Sigma”, room 312)
Cloud and high-performance computing for smart factory

15:00-15:15 **Scalability Evaluation of Iterative Algorithms Used for Supercomputer Simulation of Physical processes**
Nadezhda A. Ezhova, Leonid B. Sokolinsky

15:15-15:30 **High performance computing for aircraft assembly optimization**
N. Zaitseva, S. Lupuleac, M. Petukhova, M. Churilova, T. Pogarskaia, M. Stefanova

15:30-15:45 **SUSU Supercomputer Resources for Industry and Fundamental Science**
Pavel Kostenetskiy, Polina Semenikhina

15:45-16:00 **Multiagent Management of Smart Internet Production**
Igor A. Kalyaev, Alexander A. Dyachenko, Leonid Zh. Usachev, Sergey G. Kapustyan

16:00-16:15 **Automation of a Project Publishing Process in a Corporate Information System**
Plaksina I.G., Kirsanova A. A., Topolsky D.V., Topolskiy N.D., Yumagulov N.I., Zvereva E.A.

- 16:15-16:30 **Voxel Micro-modeling of Composite Structures Based on Scanning of Material Real Objects**
Shchurova E.I.
- 16:30-17:00 **COFFEE BREAK** (“Sigma”, Hall of the 2nd floor)

SECTION A

(“Sigma”, conference hall)

Condition monitoring and control for intelligent manufacturing

- 17:00-17:15 **Invariant Approach in Monitoring the Condition of On-board Radio Electronic Equipment**
Samoylenko A.P., Panychev A.I., Maksimov A.V., Baibuz A.G.
- 17:15-17:30 **Automatic control system with sensors having discontinuous measuring characteristics**
Y.A.Gelozhe, P.P.Klimenko, A.V.Maksimov
- 17:30-17:45 **3D area monitoring using group control technique and dynamic repellers**
Medvedev Mikhail, Lazarev Vladimir, Kulchenko Artem
- 17:45-18:00 **Mesophase materials as smart media for emerging pressure sensors: Capacitive method of measurement of DC conductivity**
Fedor V. Podgornov, Maxim Gavriyak, Ahmed Karaawi, Alina Ishmurzina, Wolfgang Haase
- 18:00-18:15 **The Monitoring of intellectual manufacturing as a main factor of the cyber-physical building systems development**
Andrey Volkov, Liubov Shilova, Sergey Kachanov
- 18:15-18:30 **Information Security Ensuring in Industrial Networks on Digital Substations**
Plaksina Y.G., Topolskiy D.V., Topolskaya I.G., Topolskiy N.D., Gonenko T.V., Khatsevskiy V.F.

SECTION B

(“Sigma”, room 308)

Big data, machine learning and artificial intelligence for Industry 4.0

- 17:00-17:15 **Strong Separation of Two Convex polytopes in Machine Learning**
Irina Sokolinskaya, Galina Yadryshnikova
- 17:15-17:30 **Driving Quality Assessment System when Improving an Intelligent On-Board System**
Irina Makarova, Vadim Mavrin, Zlata Almetova, Nikita Tiurin, Nikolai Abramov, Sergey Shepelev
- 17:30-17:45 **Using convolutional neural networks to classify audio signal in noisy sound scenes**
M.V. Gubin
- 17:45-18:00 **Recognition and classification of plasma clots of bioelectograms**
A.A. Shulginov, O.S. Stadnik
- 18:00-18:15 **Machine Learning Techniques to Perform Predictive Analytics of Task Queues Guided by Slurm**
Mahdi Rezaei, Alexey Salnikov

SECTION C
("Sigma", room 309)
Industrial robotics

- 17:00-17:15 **Prospects for the use of AC drives in industrial robots. Identification of the quality of asynchronous electric drives from the spectra of rotor currents**
Vladimir L. Kodkin, Alexandr S. Anikin, Alexandr A. Baldenkov
- 17:15-17:30 **Comparative evaluation of the actuating motors for the traction electric drive of transport robots**
Voronin S.G., Sogrin A.I., Shaburov P.O., Kuleva N.I.
- 17:30-17:45 **The Software for a Selective Laser Melting System**
Eugeny Romanov, Vadim Tokarev, Yuliya Novitskaya, Vladimir Filimonenko
- 17:45-18:00 **Tracking of Moving Objects with Regeneration of Object Feature Points**
Igor I. Lychkov, Alexander N. Alfimtsev, Sergey A. Sakulin
- 18:00-18:15 **Gathering and Analysis of Experimental Data for Selective Laser Melting**
Alina T. Latipova, Rustam M. Baitimerov
- 18:15-18:30 **Investigation of human cargo handling in industrial exoskeleton**
Andrey Yatsun, Sergey Jatsun

SECTION D
("Sigma", room 312)
Wireless sensor and actuator networks

- 17:00-17:15 **Heating management system based on wireless sensor networks**
Aleksandr A. Basalaev, Lev S. Kazarinov, Dmitry A. Shnayder
- 17:15-17:30 **Technological Platform for Innovative Social Infrastructure Development on the Basis of Smart Machines and the Principles of the Internet of Things**
Andrey I. Vlasov, Oksana N. Berdyugina, Sergey S. Filin
- 17:30-17:45 **Method of fractal analysis of the structure of the wireless sensor network**
Kazimirov A.N.
- 17:45-18:00 **Method of WSN simulation**
Sergey. P. Prisyazhnuk, Konstantin A. Muraviev, Anna S. Zakharova
- 18:00-18:15 **Simulation of wireless networks based on artificial intelligence approaches**
I.Ya. Lvovich, A.P. Preobrazhenskiy, O.N. Choporov
- 18:15-18:30 **Performance Evaluations of Multi-hop WirelessHART Network and 6LoWPAN using Different Topologies**
Joshua Benoit, Aiping Yao, Luke Saladis, Yi Zheng