



# SCIENTIFIC PROGRAM

of 14<sup>th</sup> International Conference  
named after A. F. Terpugov  
**«INFORMATION TECHNOLOGIES  
AND MATHEMATICAL MODELLING»**

November 18-22, 2015

Anzhero-Sudzhensk



# CONFERENCE ORGANIZING COMMITTEE

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8. **Dmitry Efrosinin**, Assist.-Prof., Institute for Stochastics Johannes Kepler University (JKU), Austria
9. **Alexander Gortsev**, Prof., Dean of the Department of Applied Mathematics and Cybernetics, Head of the Chair of Operation Research of Tomsk State University, Dr. of Technical Sciences, Tomsk, Russia
10. **Al-Begain Khalid**, PhD in Comms, PGD Management Professor of Mobile Computing and Networking, University of South Wales, United Kingdom
11. **Yuri Kharin**, Prof., Headmaster of Scientific Research Institute of Applied Mathematics and Informatics of Belarus State University, Head of the Chair of Mathematical Modeling and Data Analysis, Dr. of Physics and Mathematics, member of Belarus National Academy of Sciences, Minsk, Belarus
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18. **Rein Nobel**, Prof., Free University of Amsterdam, Netherlands
19. **Dmitry Novikov**, Corresponding member Russian Academy of Sciences, Deputy director on scientific research of Institute of Control Sciences RAS, Dr. of Technical Sciences, Russia
20. **Enzo Orsingher**, Prof., University La Sapienza, Roma, Italy
21. **Michele Pagano**, Prof., Pisa University, Italy
22. **Konstantin Samuylov**, Prof., Head of the Chair of Applied Informatics and Theory of Probability, The Peoples' Friendship University of Russia, Dr. of Technical Sciences, Moscow, Russia
23. **Yuri Shokin**, Prof., Headmaster of Computational Technologies Institute of SB RAS, Dr. of Physics and Mathematics, member of RAS, Novosibirsk, Russia
24. **Janos Sztrik**, Full Professor, Dr. of the Hungarian Academy of Sciences, Head of Department of Informatics Systems and Networks, Hungary
25. **Henk Tijms**, Prof. of Operations Research at the VU University Amsterdam, Netherlands
26. **Oleg Tikhonenko**, Prof., Jan Długosz University, Częstochowa, Poland
27. **Vladimir Vishnevsky**, Prof., Head of the Laboratory "Network System Management" of Institute of Control Sciences RAS, Academician of International Telecommunications Academy and of New York Academy of Sciences, Fellow of IEEE Communication Society, Dr. of Technical Sciences, Russia

## Organizing Committee

1. **Farkhadov Mais Pasha Ogly**, Head of the Laboratory of Automated systems of mass service of V. A. Trapeznikov Institute of Control Sciences of RAS, Dr. of Technical Sciences, Senior Researcher, Moscow, Russia
2. **Garayshina Irina Rashitovna**, Assist.-Prof., Head of Education Division of Moscow Institute of Physics and Technology (State University), Cand. of Physics and Mathematics, Moscow, Russia
3. **Gladkikh Boris Afanasyevich**, Prof., Chair of Applied Informatics of TSU, Cand. of Physics and Mathematics, full member of IAI, Honorary Figure of Russian Higher Education, Tomsk, Russia
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8. **Kostyuk Yuriy Leonidovich**, Prof., Chair of Theoretical Base of Informatics of TSU, Dr. of Technical Sciences, Associate Member of IAI, Tomsk, Russia
9. **Lubina Tatyana Viktorovna**, Assist.-Prof., Head of Organizing Division of ASB KemSU, Cand. of Physics and Mathematics, Anzhero-Sudzhensk, Russia
10. **Moiseev Alexander Nikolayevich**, Assist.-Prof., Chair of Program Engineering of TSU, Cand. of Technical Sciences, Tomsk, Russia
11. **Moiseeva Svetlana Petrovna**, Prof. of Chair of Queueing Theory and Mathematical Statistics of TSU, Cand. of Technical Sciences, Tomsk, Russia
12. **Poddubnyi Vasiliy Vasilyevich**, Prof., TSU, Dr. of Technical Sciences, full member of IAI, Laureate of RF Government Award in Science and Technology, Tomsk, Russia
13. **Rozhkova Svetlana Vladimirovna**, Prof. of Chair of Advanced Mathematics of Physics and Technology Institute of Tomsk Polytechnic University, Dr. of Physics and Mathematics, Tomsk, Russia
14. **Rykov Vladimir Vasilyevich**, Prof., Chair of Applied Mathematics and Computer Modeling, Gubkin RSU of Oil and Gas, Dr. of Physics and Mathematics, Moscow, Russia
15. **Senashov Sergei Ivanovich**, Prof., Pro-rector for Research, SibSAU, Dr. of Physics and Mathematics, Krasnoyarsk, Russia

16. ***Shkurkin Alexey Sergeevich***, Assist.-Prof., Head of the Chair of Mathematics and Informatics, ASB KemSU, Cand. of Technical Sciences, Anzhero-Sudzhensk, Russia

17. ***Suschenko Sergei Petrovich***, Prof., Dean of the Department of Informatics, Head of the Chair of Applied Informatics, TSU, Associate Member of IAI, Dr. of Technical Sciences, Tomsk, Russia

18. ***Vecher Elena Vyacheslavovna***, Assist.-Prof., Headmaster of Anzhero-Sudzhensk Branch of Kemerovo State University (ASB of KemSU), Cand. of Historical Sciences, Anzhero-Sudzhensk, Russia

19. ***Voytikov Konstantin Yuryevich***, Assist.-Prof., Dean of the Department of Informatics, Economics and Mathematics of ASB of KemSU, Cand. of Technical Sciences, Anzhero-Sudzhensk, Russia

20. ***Zmeev Oleg Alexeyevich***, Prof., Pro-rector in informatization, Head of the Chair of Program Engineering of TSU, Dr. of Physics and Mathematics, Tomsk, Russia

21. ***Azeva Viktoria Olegovna***, specialist of Organizing Division of ASB KemSU, Anzhero-Sudzhensk, Russia

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The Russian Foundation for Basic Research,  
project № 15-01-20933 z***

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Ministry of Education and Science of Russian Federation  
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## CONFERENCE SCHEDULE

**November 18, 2015**

Venue: Tomsk State University

**Scientific Workshop** at 16.30

### **Continued linear queueing systems and networks**

*Moiseev Alexander Nikolayevich*, Assist.-Prof., Chair of Program Engineering of TSU, Cand. of Technical Sciences, Tomsk, Russia

**November 19, 2015**

Venue: Main Building of ASB of KemSU

<b>Registration:</b>	10.00 – 14.00
<b>Parallel Sessions:</b>	14.00 – 18.30
1. Probability statistic applied analysis	Room № 1
2. Queueing theory and teletraffic theory	Room № 7
3. Mathematical models and numerical methods	Room № 1
4. Information technologies and telecommunication systems	Room № 2

**November 20, 2015**

Venue: Main Building of ASB of KemSU

<b>Registration:</b>	09.00 – 10.00
<b>Plenary meeting:</b>	10.00 – 11.00
<b>Parallel Sessions:</b>	11.30 – 17.00
1. Queueing theory and teletraffic theory	Room № 7
2. Information technologies and telecommunication systems	Room № 2
3. Mathematical modelling and its appliance in science and technology	Room № 1

**November 21, 2015**

Venue: Main Building of ASB of KemSU

<b>Parallel Sessions:</b>	10.00 – 15.00
1. Statistical problems of queueing theory	Room № 5
2. Queueing theory and teletraffic theory	Room № 7
3. Mathematical modelling and its appliance in science and technology	Room № 1

*Within the conference there will be held the contest of young scientists' papers*

The working languages of the conference are Russian and English

November 19, 2015

*Parallel Sessions*  
14.00 – 18.30

## QUEUEING THEORY AND TELETRAFFIC THEORY

*Venue: Room № 7 (the right wing, the 3<sup>rd</sup> floor)*

KEYNOTE SPEECHES:

14.00 – 15.20

### **A Mixed Discrete-time Delay/Retrial Queueing Model for Handover Calls and New Calls Competing for a Target Channel**

*Rein Nobel, Prof., Free University of Amsterdam, Netherlands*

### **Mathematical Modelling Issues in the Future Multiservice Networks**

*Konstantin Samuylov, Prof., Head of the Chair of Applied Informatics and Theory of Probability, The Peoples' Friendship University of Russia, Dr. of Technical Sciences, Moscow, Russia*

SESSION I

15.40 – 18.30

#### **Chairs:**

*Samuylov Konstantin Evgenyevich, Prof., Head of the Chair of Applied Informatics and Theory of Probability, The Peoples' Friendship University of Russia, Dr. of Technical Sciences*

*Nazarov Anatoly Andreyevich, Prof., Head of the Chair of Theory of Probability and Mathematical Statistics of Tomsk State University, Dr. of Technical Sciences, Honorary Worker of Russian Higher Education, Tomsk, Russia*

#### **Conference papers:**

1. **Bakholdina M., Gortsev A.** Joint probability density of interval sizes of a modulated generalized semisynchronous flow of events under incomplete observability. *National Research Tomsk State University, Tomsk, Russia*

2. **Burkatovskaya Yu., Kabanova T., Vorobeychikov S.** CUSUM algorithms for parameter estimation in queueing systems with jump intensity of the arrival process. *National Research Tomsk Polytechnic University, National Research Tomsk State University, Tomsk, Russia*

3. **Czachorski T.<sup>1</sup>, Domanska J.<sup>1</sup>, Pagano M.<sup>2</sup>** On stochastic models of internet traffic. <sup>1</sup>*Polish Academy of Sciences, Gliwice, Poland,* <sup>2</sup>*University of Pisa, Pisa, Italy*

4. **Dragieva V.** Number of lost calls during the busy period in an M/G/1//N queue with inactive orbit. *Sofia University of Forestry, Bulgaria*
5. **Gaidamaka Yu., Zaripova E.** Comparative analysis of service disciplines for polling systems with two queues. *The Peoples' Friendship University of Russia, Moscow, Russia*
6. **Gortsev A., Sirotina M.** Joint probability density of interval sizes of a modulated synchronous flow of events under incomplete observability в условиях неполной наблюдаемости. *National Research Tomsk State University, Tomsk, Russia*
7. **Nazarov A., Baymeeva G.** The  $M/GI/\infty$  subject to semi-Markovian random environment. *National Research Tomsk State University, Tomsk, Russia*
8. **Vashkevich N., Zinkin S., Pashchenko D.** Discrete-event simulation of closed queuing systems based on logical-algebraic approach (on the example of resource using in infocommunication system). *Penza State University, Penza, Russia*

## MATHEMATICAL MODELS AND NUMERICAL METHODS

*Venue: Room № 1 (the left wing, the 1<sup>st</sup> floor)*

14.00 – 16.00

### **Chairs:**

*Kostyuk Yuri Leonidovich, Prof., Chair of Theoretical Base of Informatics of TSU, Dr. of Technical Sciences*

*Yakupov Rafael Timirovich, Prof., Chair of Informatics and Mathematics of Anzhero-Sudzhensk Branch of KemSU, Dr. of Physics and Mathematics*

### **Conference papers:**

1. **Dyagel A.** Research of efficiency of the unconditional optimization genetic algorithm. *Siberian Federal University, Krasnoyarsk, Russia*
2. **Kostyuk Yu.** Table generation method of the reverse Polish line for LL(1)-grammar. *National Research Tomsk State University, Tomsk, Russia*
3. **Kostyuk Yu.** Travelling salesman problem: suboptimal branch-and-bound algorithm. *National Research Tomsk State University, Tomsk, Russia*
4. **Krutikov V., Samoylenko N.** A multistage method of minimization of non-smooth functions with a known minimum value. *Kemerovo State University, Kemerovo, Russia*
5. **Krutikov V., Vershinin Ya.** Applications of multistage sub-gradient algorithms. *Kemerovo State University, Kemerovo, Russia*
6. **Mukhina O., Smagin V.** Dynamic locally optimal control of discrete state delay systems with random parameters. *National Research Tomsk State University, Tomsk, Russia*



7. **Shilov V.** Solution of the problem of orthographic cutting based on a grouped decoder and genetic algorithm. *Perm National Research Polytechnic University, Perm, Russia*

## **PROBABILITY STATISTIC APPLIED ANALYSIS**

*Venue: Room № 1 (the right wing, the 2<sup>nd</sup> floor)*

16.20 – 18.30

### **Chairs:**

*Livshits Klimentiy Isaakovich*, Prof., Chair of Applied Mathematics of TSU, Dr. of Technical Sciences

*Kapustin Evgenii Viktorovich*, Assist.-Prof., Chair of Informatics and Mathematics, ASB KemSU, Cand. of Technical Sciences

### **Conference papers:**

1. **Alekseenko M.** Regression analysis of a cloud deck atmosphere model of Monte Carlo method. *National Research Tomsk State University, Tomsk, Russia*

2. **Daniluk E.** Probabilistic analysis for researching of European exotic option on a stock index. *National Research Tomsk State University, Tomsk, Russia*

3. **Koshevaya T., Dmitriev Yu.** Combined estimate of fraction. *National Research Tomsk State University, Tomsk, Russia*

4. **Livshits K., Ulyanova E.** Relay- hysteretic control of the flow of perishable product sale moments. *National Research Tomsk State University, Tomsk, Russia*

5. **Moiseeva Yu.** Statistic analysis of climate characteristic changes in the northern part of West Siberia. *National Research Tomsk Polytechnic University, Tomsk, Russia*

6. **Poddubnyy V.** A linguistic sign polysemy development mathematic model based on the theory of nonstationary Poisson flows. *National Research Tomsk State University, Tomsk, Russia*

7. **Shilin A., Bukreev V.** Synthesis and realization of relay control of heat consumption systems. *National Research Tomsk Polytechnic University, Tomsk, Russia*

**INFORMATION TECHNOLOGIES  
AND TELECOMMUNICATION SYSTEMS**

*Venue: Room № 2 (the right wing, the 1<sup>st</sup> floor)*

14.00 – 19.00

***Chairs:***

*Zmeev Oleg Alexeyevich*, Prof., Pro-rector for Informatization, Head of the Chair of Program Engineering of TSU, Tomsk, Dr. of Physics and Mathematics,

*Shkurkin Alexey Sergeyeovich*, Assist.-Prof., Head of the Chair of Mathematics and Informatics of ASB KemSU, Cand. of Technical Sciences

***Conference papers:***

1. ***Kolpakov A., Filimonova N.*** Experimental research of the primary stage of data flow formation in the Internet. *Siberian State University of Telecommunications and Information Sciences, Novosibirsk, Russia*

2. ***Matrosova A., Ostanin S., Andreeva V., Tomkov V.*** Fully delay and multiple stuck-at fault testable sequential circuit design from STG. *National Research Tomsk State University, Tomsk, Russia*

3. ***Sapozhnikov V., Sapozhnikov Vl., Efanov D., Dmitriev V.*** Optimal codes with summation which effectively detect mini multiplicity errors in functional check systems. *Petersburg State Transport University, St. Petersburg, Russia*

4. ***Shamina A.*** Information and reference system as a means of managing scientific and innovation activity in a higher school. *Far Eastern Federal University, Vladivostok, Russia*

5. ***Ubar R., Jasnetski A., Tsertov A.*** Decision diagrams driven test generation for microprocessors. *Tallinn University of Technology, Tallinn, Estonia*

**November 20, 2015**

**OPENING PLENARY**

10.00 – 11.00

**Welcome Speeches:**

*Vecher Elena Vyacheslavovna*, Headmaster of Anzhero-Sudzhensk Branch of Kemerovo State University, Cand. of Historical Sciences, Assist.-Prof.

*Chernov Vladimir Nikolayevich*, Mayor of Anzhero-Sudzhensk

*Volchek Vladimir Alekseyevich*, Prof., Rector of KemSU, Honorary Worker of Higher Education RF, Dr. of Historical Sciences

*Rein Nobel*, Prof., Free University of Amsterdam, Netherlands

**Parallel Sessions**  
**11.30 – 17.00**

**QUEUEING THEORY AND TELETRAFFIC THEORY**

*Venue: Room № 7 (the right wing, the 3<sup>rd</sup> floor)*

**KEYNOTE SPEECHES:**

11.30 – 13.00

**Methods for Analysis of Queueing Models with Instantaneous and Delayed Feedbacks**

*Agassi Melikov*, Prof., Head of the Laboratory of Teletraffic Theory in Institute of Control Systems of Azerbaijan National Academy of Sciences, associate member of Azerbaijan National Academy of Sciences, Dr. of Technical Sciences, Azerbaijan

**Synergetic Effects for Number of Busy Servers in Multiserver Queueing Systems**

*Gurami Tsitsiashvili*, Prof., Head of the Laboratory of probabilistic methods and system analysis. Institute for Applied Mathematics Far Eastern branch of RAS, Dr. of Physics and Mathematics

**SESSION I**

13.20 – 15.00

***Chairs:***

*Malinkovskiy Yuri Vladimirovich*, Head of Economic Cybernetics and Probability Theory, F. Skorina Gomel State University, Dr. of Physics and Mathematics

*Gaidamaka Yuliya Vasilievna*, Assoc. Prof., the Chair of Applied Informatics and Theory of Probability, The Peoples' Friendship University of Russia, Cand. of Physics and Mathematics

***Conference papers:***

1. *Callegari C., Giordano S., Pagano M.* Statistical approaches to intrusion detection: an overview of selected methods. *Dept. of Information Engineering, University of Pisa, CNIT Research Unit - University of Pisa, Pisa, Italy*

2. *Farkhadov M., Abramnikov A., Petukhova N., Eliseev A.* Software and hardware platform for gesture language recognition based on depth maps and neural cortex. *V. A. Trapeznikov Institute of Control Sciences of Russian Academy of Sciences, Moscow, Russia*

3. **Farkhadov M.<sup>1</sup>, Paul S.<sup>2</sup>, Stepanova N.<sup>3</sup>** Mathematical model of a type M/M/1/∞ queueing system with request rejection: a retail facility case study. <sup>1</sup>V. A. Trapeznikov Institute of Control Sciences of Russian Academy of Sciences Moscow, Russia, <sup>2</sup>National Research Tomsk State University, Tomsk, Russia, <sup>3</sup>Altai Institute of Economics and Law, Barnaul, Russia

4. **Kvach A., Nazarov A.** Sojourn Time Analysis of Closed Markov Retrial Queueing System with Collision. *National Research Tomsk State University, Tomsk, Russia*

5. **Moiseev A.** Asymptotic Analysis of the Queueing Network SM – (GI/∞)K. *National Research Tomsk State University, Tomsk, Russia*

6. **Nazarov A., Chernikova Ya.** A  $M^{(2)} | M^{(2)} | 1$  retrial queueing system with r-persistent exclusion of alternative customers. *National Research Tomsk State University, Tomsk, Russia*

7. **Samouylov K., Sopin E., Vikhrova O.** Analyzing blocking probability in LTE wireless Network via queueing system with finite amount of resources. *Peoples` Friendship University of Russia, Moscow, Russia*

## SESSION II

15.20 – 17.00

### **Chairs:**

*Melikov Agassi Zarbali Ogly*, Prof., Head of the Laboratory of Telecommunication Modeling in Cybernetics Institute of Azerbaijan National Academy of Sciences, associate member of Azerbaijan National Academy of Sciences, Dr. of Technical Sciences

*Moiseeva Svetlana Petrovna*, Prof. of Chair of Queueing Theory and Mathematical Statistics of TSU, Cand. of Technical Sciences

### **Conference papers:**

1. **Malinkovskii Yu.** Stationary functioning of queueing networks with negative customers' grouped arrival. *F. Skorina Gomel State University, Gomel, Belarus, National Research Tomsk State University, Tomsk, Russia*

2. **Nezhel'skaya L.** Probability density of an interval size of modulated MAP event flows with unextendable dead time. *National Research Tomsk State University, Tomsk, Russia*

3. **Paul S.** Outcoming flow of requests in a system with walking. *National Research Tomsk State University, Tomsk, Russia*

4. **Nazarov A., Broner V.** Analysis of stochastic models of inventory control by R-approximation *National Research Tomsk State University, Tomsk, Russia*

5. **Lisovskaya E., Moiseeva S.** Analysis of clients servicing delay in a call-centre. *National Research Tomsk State University, Tomsk, Russia*

6. **Mikheev P., Sushchenko S.** Productivity of a distributed access mode in wireless networks 802.11. *National Research Tomsk State University, Tomsk, Russia*

7. **Ubonova E.** Analysis of queuing system MR/M/ $\infty$  with different-type servicing. *National Research Tomsk State University, Tomsk, Russia*

## **INFORMATION TECHNOLOGIES AND TELECOMMUNICATION SYSTEMS**

*Venue: Room № 2 (the right wing, the 1<sup>st</sup> floor)*

### **SESSION I**

11.30 – 14.30

#### **Chairs:**

*Gudov Alexandr Mikhaylovich*, Prof., Dean of the Department of Mathematics of KemSU, Dr. of Technical Sciences

*Voytikov Konstantin Yuryevich*, Assist.-Prof., Dean of the Department of Informatics, Economics and Mathematics of ASB of KemSU, Cand. of Technical Sciences

#### **Conference papers:**

1. **Ashurov M., Poddubnyi V.** Modification of text classification method based on R-measure with use of substrings repetition frequency. *National Research Tomsk State University, Tomsk, Russia*

2. **Efanov D., Cherepanova M.** Application of polynomial codes for organizing functional control systems for combinational circuits. *Petersburg State Transport University, St. Petersburg, Russia*

3. **Gudov A., Zavozkin S., Grigoryeva I., Bondareva L., Perminov V.** Science-based software web-tools for solving ecology problems of a coal-mining region. *Kemerovo State University, Kemerovo, Russia*

4. **Gudov A., Zavozkin S., Popov A.** Informational system of city passenger transport monitoring. *Kemerovo State University, Kemerovo, Russia*

5. **Gudov A., Zavozkin S., Shevnin V.** Algorithm of meta-data auto extract out of semi-structured documents. *Kemerovo State University, Kemerovo, Russia*

6. **Zmeev O., Ivanova L.** Search of design anti-patterns in UML diagrams. *National Research Tomsk State University, Tomsk, Russia*

## SESSION II

15.00 – 17.00

### **Chairs:**

*Zmeev Oleg Alexeyevich*, Prof., Pro-rector for Informatization, Head of the Chair of Program Engineering of TSU, Tomsk, Dr. of Physics and Mathematics,

*Shkurkin Alexey Sergeevich*, Assist.-Prof., Head of the Chair of Mathematics and Informatics of ASB KemSU, Cand. of Technical Sciences

### **Conference papers:**

1. **Kostyuk Yu., Fuks A.** Combined diagnostic testing: the tasks of hierarchy design and the tasks of classification. *National Research Tomsk State University, Tomsk, Russia*

2. **Ovchinnikova T.** The teaching system «Cartesian tree». *National Research Tomsk State University, Tomsk, Russia*

3. **Sokovets M.** Development of knowledge base hull for a fuzzy inference. *National Research Tomsk State University, Tomsk, Russia*

4. **Tretyakov D.** Design and realization of a recommendation system based on collaborative filtration with the possibility of using user transformers by the example of extension for Yii Framework. *National Research Tomsk State University, Tomsk, Russia*

5. **Farkhadov M., Blinova O., Abramenkov A.** The model of the network with mobile communication centres for emergency rescue services. *V. A. Trapeznikov Institute of Control Sciences of Russian Academy of Sciences, Moscow, Russia*

6. **Sergeeva O.** GUI-application development in Python for symmetric cryptosystems. *Kemerovo State University, Kemerovo, Russia*

**MATHEMATICAL MODELLING  
AND ITS APPLIANCE IN SCIENCE AND TECHNOLOGY**

*Venue: Room № 1 (the left wing, the 1<sup>st</sup> floor)*

**SESSION I**

11.30 – 14.30

***Chairs:***

*Poddubnyi Vasily Vasilyevich*, Prof., the Chair of Applied Informatics of TSU, Dr. of Technical Sciences

*Yakupov Rafael Timirovich*, Prof., Chair of Informatics and Mathematics of Anzhero-Sudzhensk Branch of KemSU, Dr. of Physics and Mathematics

***Conference papers:***

1. ***Andrianov I.*** Mathematical modeling of a reverse boundary problem of heat exchange for turbo-machine jacket elements. *Komsomolsk-on-Amur State Technical University, Komsomolsk-on-Amur, Russia*

2. ***Berestneva O., Marukhina O., Fisochenko O., Mokina E., Zharkova O.*** Modeling of adaptation strategies for different entities. *National Research Tomsk Polytechnic University, Tomsk, Russia*

3. ***Bogdanov A.*** Analysis of influence of information about a real estate unit geographical location on evaluation precision of its market value. *National Research Tomsk State University, Tomsk, Russia*

4. ***Delcov A., Hodenkov A., Zamyatina E.*** Using OpenModelica environment for simulation of liquid cooling system. *Siberian State Aerospace University, Krasnoyarsk, Russia*

5. ***Gay V.*** The model of sound signal identification through the operational sense theory. *Nizhny Novgorod State Technical University n. a. R.E. Alekseev, Nizhny Novgorod, Russia*

6. ***Pavelchuk A., Maslovskaya A.*** Implicit alternating direction scheme for simulation of nonlinear charging diffusion dynamics in polar dielectrics. *Amur State University, Blagoveshchensk, Russia*



## SESSION II

15.00 – 17.00

### **Chairs:**

*Kostyuk Yurii Leonidovich*, Prof., Chair of Theoretical Base of Informatics of TSU, Dr. of Technical Sciences

*Orlov Alexey Borisovich*, Assist.-Prof., Chair of Mathematics and Informatics, ASB KemSU, Cand. of Technical Sciences

### **Conference papers:**

1. **Gurskikh M.** Mathematical modeling of the process of contaminants expansion in a flooded mine. *Kemerovo State University, Kemerovo, Russia*

2. **Kovalskiy I., Maslovskaya A.** A system of simulation modeling of ferroelectric domain configuration SEM-images forming. *Amur State University, Blagoveshchensk, Russia*

3. **Meshechkin V.** Analysis of economic sizes of payments for pollutant emission based on mathematical modeling. *Kemerovo State University, Kemerovo, Russia*

4. **Meshechkin V., Kosenkova M.** Development of a simulation model of regional education system functioning. *Kemerovo State University, Kemerovo, Russia*

5. **Osokin A., Sidorov D.** Color space influence on quality evaluation of digital images. *National Research Tomsk Polytechnic University, OAO «Tomsk Pivo», Tomsk, Russia*

6. **Pristupa A., Ryumkin A.** Comparative analysis of descriptive pattern recognition techniques used for petroglyphic drawing classification. *National Research Tomsk State University, Tomsk, Russia*

November 21, 2015

*Parallel Sessions*

10.00 – 15.00

**STATISTICAL PROBLEMS OF QUEUEING THEORY**

*Venue: Room № 5 (the right wing, the 2<sup>nd</sup> floor)*

**SESSION I**

10.00 – 13.00

**Chairs:**

*Livshits Klimentiy Isaakovich*, Prof., Chair of Applied Mathematics of TSU, Dr. of Technical Sciences

*Kapustin Evgenii Viktorovich*, Assist.-Prof., Chair of Informatics and Mathematics, ASB KemSU, Cand. of Technical Sciences

**Conference papers:**

1. **Dmitriev Yu., Tarasenko P.** About  $k$ -adaptive probability combined estimation. *National Research Tomsk State University, Tomsk, Russia*

2. **Fuks I., Koshkin G.** Smooth kernel estimation of the hazard rate function and its derivatives. *National Research Tomsk State University, Tomsk, Russia*

3. **Gulev S.<sup>1,2</sup>, Korolev V.<sup>2,3</sup>, Gorshenin A.<sup>3,4</sup>, Belyaev K.<sup>1,2</sup>** The analysis of heat fluxes variability by moving separation of finite normal mixtures. <sup>1</sup>*P.P. Shirshov Institute of Oceanology, Moscow*, <sup>2</sup>*Lomonosov Moscow State University*, <sup>3</sup>*Institute of Informatics Problems, Moscow, Federal Research Center «Computer Science and Control» of the Russian Academy of Sciences, Moscow*, <sup>4</sup>*Moscow State University of Information Technologies, Radioengineering and Electronics, Moscow, Russia*

4. **Kiseleva A.** Application of statistic analysis methods for studying the influence of some factors on farm production costs in agricultural enterprises of Kemerovo region. *Kemerovo State University, Kemerovo, Russia*

5. **Kitaeva A.<sup>1</sup>, Subbotina V.<sup>1</sup>, Zhukovskiy O.<sup>2</sup>** Compound Poisson demand inventory models with exponential bunch size's distribution: exact solution vs diffusion approximation. <sup>1</sup>*National Research Tomsk State University, Tomsk, Russia*, <sup>2</sup>*Tomsk State University of Control Systems and Radioelectronics, Tomsk, Russia*

6. **Korolev V.<sup>1,2</sup>, Gorshenin A.<sup>2,3</sup>, Gulev S.<sup>1,4</sup>, Belyaev K.<sup>1,4</sup>** Statistical modeling of air-sea turbulent heat fluxes by finite mixtures of Gaussian distributions. <sup>1</sup>*Lomonosov Moscow State University, Moscow, Russia*; <sup>2</sup>*Institute of Informatics Problems, Federal Research Center «Computer Science and Control» of the Russian Academy of Sciences, Moscow, Russia*; <sup>3</sup>*Moscow State University of Information Technologies, Radioengineering and Electronics, Russia*; <sup>4</sup>*P. P. Shirshov Institute of Oceanology, Moscow, Russia*

7. **Simakhin V., Cherepanov O.** Image adaptive filtration based on the weighed method of maximum likelihood. *Kurgan State University, Kurgan, Russia*

## QUEUEING THEORY AND TELETRAFFIC THEORY

*Venue: Room № 7 (the right wing, the 3<sup>rd</sup> floor)*

### KEYNOTE SPEECH:

10.00 – 10.40

#### **Performance Analysis of Unreliable Queue with Back-Up Server**

*Alexander Dudin, Prof., Head of the Laboratory of Applied Probability Analysis of Belarus State University, Dr. of Physics and Mathematics, Minsk, Belarus*

### SESSION I

11.00 – 13.00

#### **Chairs:**

*Sushchenko Sergei Petrovich, Prof., Dean of the Faculty of Informatics, Chair of Applied Informatics, Dr. of Technical Sciences*

*Moiseev Alexander Nikolayevich, Assist.-Prof., Chair of Program Engineering of TSU, Cand. of Technical Sciences*

#### **Conference papers:**

1. **Chakravarthy S.** A multi-server queueing model with Markovian arrivals and phase type cooperative services – Simulation approach. *Kettering University, USA*

2. **Dammer D.** Analysis of an insurance company mathematical model in via queueing system with an unbounded number of servers with regard of implicit adverts. *National Research Tomsk State University, Tomsk, Russia*

3. **Efrosinin D.<sup>1</sup>, Sztrik J.<sup>2</sup>** Performance analysis and statistical modeling of the single-server non-reliable retrial queueing system with a threshold-based recovery. <sup>1</sup>*Johannes Kepler University, Linz, Austria,* <sup>2</sup>*Debrecen University, Debrecen, Hungary*

4. **Fattakhova M., Velidzhanova G.** Hybrid scheme of channel allocation in integrated cellular networks. *Institute of Control Systems, National Academy of Sciences of Azerbaijan, Baku, Azerbaijan*

5. **Ivnitskiy V.** Moments and correlation function of residual interval time to the next arrival time for semi-Markov flow. *Moscow State University of Railway Engineering, Moscow, Russia*

6. **Kruk Yu., Dudovskaya Yu.** Invariance of stationary distribution of state probability of a closed network with inactive arrivals and multimode servicing. *Belarusian National Technical University, Minsk, F. Skorina Gomel State University, Gomel, Belarus*

7. **Li Q.-L., Yang F.** Mean-field Analysis for Heterogeneous Work Stealing Models. *Tsinghua University Department of Industrial Engineering, China*
8. **Naumenko V., Matalytskiy M.** Analysis of G-networks with multi-server systems and profits. *Yanka Kupala State University of Grodno, Grodno, Belarus*
9. **Zorin A., Zorin V.** About retrial flow in cyclic queue tandem in a steady mode. *Lobachevsky State University of Nizhny Novgorod, Nizhny Novgorod, Russia*

## SESSION II

13.30 – 15.00

### **Chairs:**

*Nazarov Anatoly Andreevich*, Prof., Head of the Chair of Theory of Probability and Mathematical Statistics of Tomsk State University, Dr. of Technical Sciences  
*Paul Svetlana Vladimirovna*, Assist.-Prof, the Chair of Theory of Probability and Mathematical Statistics of Tomsk State University, Cand. of Physics and Mathematics

### **Conference papers:**

1. **Krishnamoorthy A.<sup>1</sup>, Jaya S.<sup>2</sup>, Lakshmy B.<sup>1</sup>** On an M/G/1 queue with vacation in random environment. <sup>1</sup>*Cochin University of Science and Technology, Cochin, India*, <sup>2</sup>*Maharaja's College, Ernakulam, India*
2. **Tikhonenko O.** Determination of loss characteristics in queueing systems with demands of random space requirement. *Institute of Computer Sciences, Cardinal Stefan Wyszynski University in Warsaw, Warsaw, Poland*
3. **Bagirova S.** A model of queueing – storage system with constrained queue of impatient arrivals. *Baku State University, Baku, Azerbaijan*
4. **Zadiranova L., Moiseeva S.** Analysis of total requests flow in MMPP|M| $\infty$  system with request retrial. *National Research Tomsk State University, Tomsk, Russia*
5. **Zadorozhnyi V.** Special aspects of simulation modeling of fractal systems with queues. *Omsk State Technical University, Omsk, Russia*
6. **Lubina T., Azeva V.** Research of a dynamic RQ-system with the incoming MAP-flow of requests. *Anzhero-Sudzhensk Branch of Kemerovo State University, Anzhero-Sudzhensk, Russia*
7. **Pankratova E.** Analysis of a queueing system GI/GI/ $\infty$  with two types of arrivals. *National Research Tomsk State University, Tomsk, Russia*
8. **Rusilko T.** Asymptotic analysis of a closed queueing structure with two types of arrivals. *Yanka Kupala State University of Grodno, Grodno, Belarus*
9. **Fedorova E.** Asymptotic analysis of the second order of RQ-system MMPP|M|1 under conditions of great demand. *National Research Tomsk State University, Tomsk, Russia*

**MATHEMATICAL MODELLING  
AND ITS APPLIANCE IN SCIENCE AND TECHNOLOGY**

*Venue: Room № 1 (the left wing, the 1<sup>st</sup> floor)*

**SESSION I**

10.00 – 13.00

***Chairs:***

*Poddubnyi Vasiliy Vasilyevich*, Prof., the Chair of Applied Informatics of TSU, Dr. of Technical Sciences

*Yakupov Rafael Timirovich*, Prof., Chair of Informatics and Mathematics of Anzhero-Sudzhensk Branch of KemSU, Dr. of Physics and Mathematics

***Conference papers:***

1. ***Kapustin M., Pavlova A., Rubtsov S., Telyatnikov I.*** Modeling of mutual interaction of foundation with deformed soil ground. *Kuban State University, Krasnodar, Russia*

2. ***Larkin E.<sup>1</sup>, Privalov A.<sup>2</sup>*** Modeling of computation processes in a training system using Petri-Markov net. <sup>1</sup>*Tula State University*, <sup>2</sup>*L. Tolstoy Tula State Pedagogical University, Tula, Russia*

3. ***Malinina M., Malinin K.*** Application of linear regression method to the problem of personal names identification in a collection of Russian-language news. *Petersburg State University, St. Petersburg, Russia*

4. ***Reshetnikova G.*** Defining order volume and time while managing delivery. *National Research Tomsk State University, Tomsk, Russia*

5. ***Statnikov I., Firsov G.*** Planning of simulation experiment for the problem of a dynamic model mean parameter detecting. *Institute of Machine Science named after A. A. Blagonravov of RAS, Moscow, Russia*

Compiled by: T. Lyubina, S. Moiseeva, A. Nazarov, A. Shkurkin, R. Yakupov

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