

S. Seifullin Kazakh Agrotechnical University  
Tomsk IEEE Chapter & Student Branch  
of the Institute of Electrical and Electronics Engineers  
Krasnoyarsk IEEE Chapter  
Russia Siberia Section of the IEEE



**IEEE-EUROASIAN CONFERENCE ON FUTURE ENERGY**

**INTERNATIONAL SIBERIAN CONFERENCE ON CONTROL AND COMMUNICATIONS (SIBCON-2017)**

**in conjunction of the International Exhibition ASTANA EXPO-2017**

**JUNE 29-30, 2017  
ASTANA, KAZAKHSTAN**



<http://ieee.tpu.ru/sibcon>



JUNE 29–30, 2017

S. Seifullin Kazakh Agrotechnical University  
KATU, Pobedy Ave., 62, Astana, 010000, Kazakhstan

Time	June 29, Thursday			
9:00 –9:30	Registration of participants, Main Building, Lobby			
9:30–10:50	<b>PLENARY OPEN SESSION</b> Conference Hall, Lobby			
11:00–12:30 Track 1	<b>Session C1</b> (room Tbd) Communications	<b>Session NI</b> (room Tbd) Measurements	<b>Session U1</b> (room Tbd) Control Systems	<b>Session E1</b> (room Tbd) Energetics
12:30–14:00	Lunch			
14:00–15:15 Track 2	<b>Session C2</b> (room Tbd) Communications	<b>Session P1</b> (room Tbd) Electron Devices	<b>Session U2</b> (room Tbd) Control Systems	<b>Session N1</b> (room Tbd) NI Hands-on
15:15–15:30	Break			
15:30–17:00 Track 3	<b>Session C3</b> (room Tbd) Communications	<b>Session P2</b> (room Tbd) Electron Devices	<b>Session E2</b> (room Tbd) Energetics	<b>Session N2</b> (room Tbd) NI Hands-on
17:00–17:15	Break			
17:15–18:45 Track 4	<b>Session C4</b> (room Tbd) Communications	<b>Session P3</b> (room Tbd) Electron Devices	<b>Session E3</b> (room Tbd) Energetics	<b>Session D1</b> (room Tbd) Information Processing
19:00–21:30	Welcome Party			



JUNE 29–30, 2017

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June 30, Friday				
9:00–10:30 Track 5	<b>Session IEEE</b> (room Tbd) Workshop	<b>Session U3</b> (room Tbd) Control Systems	<b>Session E4</b> (room Tbd) Energetics	<b>Session C5</b> (room Tbd) Communications
10:30–10:45	Break			
11:00–12:30 Track 6	<b>Session C6</b> (room Tbd) Communications	<b>Session U4</b> (room Tbd) Control Systems	<b>Session Y1</b> (room Tbd) Image Processing	<b>Session N3</b> (room Tbd) NI Hands-on
12:30–14:00	Lunch			
14:00–15:30 Track 7	<b>Session C7</b> (room Tbd) Communications	<b>Session K1</b> (room Tbd) Measurements	<b>Session P4</b> (room Tbd) Electron Devices	<b>Session N4</b> (room Tbd) NI Hands-on
15:30–15:45	Break			
15:45–17:30 Track 8	<b>Session B1</b> (room Tbd) Information Security	<b>Session K1</b> (room Tbd) Measurements	<b>Session U5</b> (room Tbd) Control Systems	<b>Session N5</b> (room Tbd) NI Hands-on
July 1, Saturday				
Social Program				

## FOREWORD

### Welcome Words from Conference Chair

As chairman of the International Euro-Asian Conference on Future Energy and International Siberian Conference on Control and Communications in conjunction of the International Exhibition Expo-2017, I would like to welcome you to Astana.

The SIBCON have a long tradition of high quality conferences with all aspects of devices and technologies for control and communications. Conference organized in an effort to stimulating deeper interaction among experts, energy system designers, device technologists in order to penetrate in more effectively the challenges of system integration.

Past conferences were organized in Tomsk, Krasnoyarsk, Omsk, Moscow (Russia), with increasing number of participants from the neighboring countries. Following their success and suggestions from the Technical Program Committee members, now for the first time, SIBCON is organized in Kazakhstan. This year SIBCON has arrived in Astana, the capital of Kazakhstan, the city with a unique legacy of history, science and culture.

Investments in R&D are a gradual increase. The level of research activities is enhancing continuously in power control devices with the expansion in production and marketing. Therefore, there is recognition of the necessity to hold high-level conferences on control and future energy in Asia.

Sure, I do not need to remind you of the social side of conference. Astana is one of most popular travel destinations and has much excitement to offer its visitors. We have planned several social events and interesting tour to venues in Astana. So I encourage you to explore the Kazakhstan capital and sample some of the rich history, culture and international cuisine. Astana is the ideal place to visit palaces, galleries, theatres, restaurants, and social recreations. I would like to join with all the SIBCON team in wishing you an enjoyable and productive stay in Astana this summer time.

As the opening ceremony of Expo-2017 will end before the beginning of the Conference, you may wish to arrive earlier to benefit from this occasion. However, please be reminded that you should plan such an arrangement well in advance as Astana will be busy with many tourists.

This Conference is sponsored by the IEEE Electron Device Society and Tomsk IEEE Chapter. I would like to express my deep appreciation to all the

contributors who help make SIBCON Conference successful and keep the event up to a premier international standard.

The excellent technical program is a result of outstanding efforts and hard toil of the Technical Program Committees under the leadership of Oleg Stukach. He has solicited and selected a set of strong and interesting papers, and has organized them into a program of attractive technical sessions. We express our sincere thanks to all the members for their highly-skilled efforts. We are sure that you will enjoy the paper presentations, and we invite you to participate in the lively discussions in and outside the sessions.

I would like to express my gratitude to the members of the Steering Committee. My thanks go to the members of the Local Organization Committee – Sergei Mogilny, Sultanbek Isenov, Arman Mirmanov for their excellent work in organizing the Conference. No doubt their experience and advice made to SIBCON will lead a success of the Conference. My gratitude is particularly given to the subcommittee chairs, members and their affiliations of the International Program Committee. It is through their efforts that SIBCON has received many submissions, and it is also with their contributions that the conference has succeeded in a selection of high-quality papers. I am grateful too to Nazarbaev University. Many faculty members and students have volunteered to help in organizing the conference. We take the opportunity of thanking the Technical Program Committee members, the invited speakers, session organizers, session chairmen, reviewers, authors and sponsors in organizing such an event. It is your participation that has ensured the success.

Finally, let me express the best wishes for the success of SIBCON, as well as for successes in future SIBCON conferences to be held in other regions and countries. I hope you will fully enjoy this international Conference and EXPO particularly at Kazakhstan and the friendships among top experts from the world, and hope you keep the Conference Proceedings in your library, which may be of use for you and your colleagues on future research.

Welcome to SIBCON 2017 and welcome to Astana!

General Chair

Prof. A.K. Kurishbaev

Rector of KATU

## **Welcome message from the Technical Program Committee Chairs**

On behalf of the entire SIBCON-2017 Technical Program Committee and the City of Astana, we feel privileged and honored to invite you to be a part of this international multidisciplinary forum by sharing your academic and industrial work in the all areas of control and communications.

Three and a half years ago we discussed the initiative of participation in the IEEE activities. We are proud to have the premiere in Astana this year. We wish all attendees a fruitful and challenging SIBCON 2017 conference. Our conference is now in its 22 year. The uniqueness of the SIBCON is that it represents significant and achievements in allied control and communications design and application area. The Conference is held in a region with rapidly growing research, production, and sales. The Conference provides unique opportunities for experts as well as leaders in technology, application, and business areas to gather in Astana and to exchange ideas and information.

This year, we are pleased to offer a superb technical program including more than 10 technical papers. About 360 paper submissions allow us to bring you a conference of the highest technical caliber. This year papers are distributed over 20 sessions all scheduled for two days. The topics addressed by these high quality papers include Network management and services, WLAN and Mobile WIMAX, 3G and 4G systems, Multiple Access Technology, Wireless Multimedia Services, Networking and computing in challenged environment, Sensor networks, Control and Signal Processing, Computer Measurement Technologies, Sensors and Systems, Control Systems, Robotics and Mechatronics, Power Generation, Transmission and Distribution, Smart grid Technologies & Applications, Power Electronics Controllers for Power Systems, Electro-Mechanical Energy Conversion, Advanced Control methods for power systems. Highlights include invited and tutorial papers from leading experts from industry and academia.

All the traditional SIBCON topics are very well covered. It is Communications, Control Systems, Electromechanics, Internet of Things, Methods of Measurement, Networking Control, Process Control, The Computer Measurements, Theory of Control. Number of papers in all of those areas seems to be well balanced, which can be treated as a sign of maturity of the conference. A significant number of papers are planned as joint sessions by common topics (energy-control, control-measurements etc.) indicating the strong link between these conferences and allowing participants to get a flavor of the topics presented in SIBCON. A noticeable

feature of this year's submissions is the large number of both analogue and digital papers addressing communications and related high frequency applications, reflecting the enormous significance of this market sector.

You have the opportunity to attend and explore exhibition dedicated to the control and comms industry in conjunction with the excellent technical programs and abundant social activities. This exhibition will also feature university and academic laboratory booths. We will see a strong presence of National Instruments company. Therefore, we expect to have more business interactions and exchanges among our well established exhibitors, new exhibitors and attendees.

As a special note, we would like to encourage you to feedback. We do take you feedback very seriously and you will find that your suggestions, when practical and shared by other attendees, will find their way into next year's program.

Astana is one of the most modern, welcoming, artistic, innovative, and diversified cultural cities. The city offers everything to everyone with easy access to everywhere. Astana is a very beautiful place full of people of all ages. Most of the million local residents are multilingual with multiple cultural backgrounds. We have prepared a set of local tours and guest programs for all interested parties and family members during SIBCON to facilitate and enrich your stay in Astana. You will also find that your presence at SIBCON will add a special international flavor to Astana's beautiful summer decorated by EXPO.

We are looking forward to an exciting and high level scientific program, combined with many social activities that will give the opportunity to all delegates for networking and sharing experience while enjoying the beautiful city of Astana.

Sergei V. Mogilniy

Oleg V. Stukach

Program Co-Chairs

## **Invitation**

The Conference SIBCON-2017 in conjunction of the International Exhibition EXPO aims to offer opportunities to learn and to share information on the latest advances in communications, electron devices, energetics, and control systems. It will be held in Astana, Republic of Kazakhstan, on June 29–30, 2017 based on S. Seifullin Kazakh Agrotechnical University. The conference is organized by the IEEE on a regular basis in order to promote interdisciplinary discussion and interaction among scientists and engineers with an emphasis on the IEEE membership. While the scientific program is expected to create stimulating professional interaction, the magic of Astana, hot summer atmosphere and wealth of historic monuments promise a pleasant and memorable stay.

## **Topics**

1. The Fundamental Problems of Communication and Control Theory.
2. Energy Saving and Future Energy.
3. Computer Measurement Technologies, Sensors and Systems.

## **Organized By**

- S. Seifullin Kazakh Agrotechnical University;
- National Instruments R&D;
- Siberian Federal University (SFU);
- V.A. Trapeznikov Institute of Control Sciences of Russian Academy of Sciences;
- Russia Siberia Section of the Institute of Electrical and Electronics Engineers;
- The Tomsk Chapter & Student Branch of the IEEE;
- The Krasnoyarsk IEEE Chapter;
- YP (Young Professional) Affinity Group of the IEEE Russia Siberia Section;
- Radioelectronics SFU R&D.

## **Sponsor**

S. Seifullin Kazakh Agrotechnical University

### **Technical Sponsor**

The IEEE Electron Devices Society (IEEE ED-S)

### **Information Support**

Scientific and technical journal "Automatics & Software Engineering"

<http://www.jurnal.nips.ru>

The Tomsk Chapter & Student Branch of the IEEE

The Krasnoyarsk IEEE Chapter

### **International Program Committee**

Chair – Prof. A.K. Kurishbaev, Rector of KATU

Chairmen of the International Program Committee – S.S. Issenov, KATU; A.B. Mirmanov, KATU; O.V. Stukach, TPU; V.S. Panko, SFU

### **Detailed Information**

All registration information and hotel reservation forms, instructions for the preparation camera-ready paper etc. will be available in the second announcement at the Web <http://ieeetpu.ru/sibcon>, [sibcon.sfu-kras.ru](http://sibcon.sfu-kras.ru), [www.kazatu.kz](http://www.kazatu.kz), [ieeetpu.ru/sibconexpo](http://ieeetpu.ru/sibconexpo)

### **Contacts**

#### *Steering committee*

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#### *Proceedings and Special Sessions*

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### **Conference Language**

The working language is English. No simultaneous translation will be provided. All materials concerning the conference should be written in English.

### **Visas**

You may be required to apply for entry Kazakhstan visa in advance. Visa application can take up to three-four month to be processed. Please contact the conference organizers in time to get an official invitation.

### **Electronic Copyright Form (eCF)**

Each author whose paper has been accepted for publication will receive email from IEEE regarding eCF (from copyrights@ieee.org with subject "Copyright Pending Notice for Article: ...title of your paper..."). This email will provide the authors with a link to the online eCF wizard, as well as a unique login name and password to access their own copyright forms. When an author completes the online copyright transfer process and submits the form, he/she will receive an automated confirmation email letting him/her know that the transfer has been completed successfully.

Please use the link in the email invitation sent earlier in order to access your eCF, and complete the entire form. If you have any difficulty accessing the eCF site, please contact the IPR Office at copyrights@ieee.org

### **Travel Information**

Astana is a big transport hub in which aviation, river, railway, motor and pipeline transport ways cross. Astana can be reached by a few international flights as well as by several everyday domestic flights. Besides, Astana can be reached by a number of trains and buses.

All information about interesting trains and planes you can receive via e-mail or telephones of the Organizing Committee. Also look at the Web.

### **Money**

Kazakh money unit is Tenge. 390 Tenge is equivalent to about 1 EUR and 370 Tenge is equivalent to about 1 US\$ (the currency rate changed slightly with time).

For more details, see <http://finance.yahoo.com/currency>

There are many currency exchange points in Astana open during day time. VISA, MASTERCARD are acceptable at some Astana banks, hotels, and shops.

### **Transportation**

The main types of public transport are buses and taxi. The cost of a bus trip is 90 Tenge. To buy a ticket one should pay cash inside. Public transport works from 6 a.m. to 11 p.m. There is a twenty-four-hour taxi service in Astana. The cost of the trip can be defined at the order by many taxi services when one gives them a route.

All information about interesting trains and planes you can receive via e-mail or telephones of the Organizing Committee. Also look at the Web <http://astana.2gis.ru>.

### **Internet**

In Astana there are many so called Internet-cafes where one can use a computer connected to the Internet (hourly pay). Some cafes and hotels operate Wi-Fi free of charge.

### **Food**

Nowadays Astana offers its citizen and visitors Kazakh and European cuisine in cafes and restaurants. One can try dishes of Japanese and Chinese cuisine in specialized places. Many cafes and restaurants offer business-lunch from 12 p.m. to 4 p.m. Please note that business-lunches are much cheaper than offers from the menu.

Tips are a commonplace in restaurants and bars. Tipping is optional, but it's always appreciated to leave some extra money to the waiter as a thanks for excellent service. The average amount of tip is 5 % of the bill.

### **Shopping**

Small shops usually work from 10 a.m. to 7-8 p.m. without lunch breaks and days off. Large trade centers and hypermarkets are open until 10-12 a.m.

### **Museums**

Museums work from 10 a.m. to 6 p.m. The most part of the museums is closed on Monday. It's allowed to take pictures and to shoot in museums for an extra fee.

### **Medical assistance**

Emergency medical assistance is provided free of charge.

Emergency numbers: when use a stationary telephone, one should dial 03; when use cell-phone, one should dial 112. The call is free of charge. While calling the emergency one needs to tell the reason of the call and the location. Scheduled medical assistance is provided on a fee paid basis.

There are plenty of pharmacies in Astana. The most part of them works round the clock.

### **Accommodation**

Around the conference site there are quite a few hotels of different categories for the delegates to choose from, ranging from expensive luxury ones to the low-cost but comfortable ones. These hotels are not far from the conference site, and with convenient transportation connections. And the costs of accommodation are relatively low.

There is no problem in hotel reservation in Astana. The Organizing Committee has reserved sufficient number of rooms for participants for the period of the conference.

The SIBCON Organizing Committee recommends to the conference participants accommodation in the hotels located near to the conference centre. You can compare prices for hotels and booking at [booking.com](http://booking.com).

In the City, in KATU region there is a wide range of hotel accommodations that will fit almost any budget. Hotel Aka is a decent hotel near to restaurants and an internet cafe. For visitors who want more luxurious boarding, hotel O'Azamat has more service.

We hope we will have the pleasure of seeing you in Astana!

### **Venue**

Kazakhstan Republic is a new place on the Institute IEEE map. This is multinational state where rich history harmoniously intertwines with a huge cultural heritage and modern technologies. Therefore this conference is the excellent occasion to visit Kazakhstan.

Astana is the capital of Kazakhstan, it is one of the youngest capital in the world (since 1997). Based in 1830, the city is located in the central part of Kazakhstan. It is the largest administrative, economic, cultural, and science center. The population of Astana is more than 800 thousand inhabitants.

Far outside of Kazakhstan the city is well-known by the brilliant architecture and sights, such as Baiterek, the symbol of Astana, water-green parkway, a recreational zone with the singing fountains, Palace of Independence, Palace of Peace and Accord, Palace of arts "Shabyt", the National museum etc. More detailed information of Astana please find at the Web [astana.gov.kz/ru/](http://astana.gov.kz/ru/).

From June till September 2017 the specialized International exhibition Astana EXPO-2017 devoted to the Future Energy ([www.expo2017astana.com](http://www.expo2017astana.com)) will be held. More 60 countries and 13 international organizations was already confirmed participation in the exhibition. Participants of SIBCON have an excellent opportunity to visit EXPO.

The venue of SIBCON is S. Seifullin Kazakh Agrotechnical University. KATU is the oldest high school in Astana, the modern,

dynamically developing university, one of leaders in system of high education of Kazakhstan. KATU is included into QS rating as 800 leading universities of the world. KATU is one of the five leading high schools of Kazakhstan accordingly national rating based on quality of educational programs.

There are nine faculties and 43 departments in KATU. Training is carried out by 82 programs. There are more than 10000 BS students, MS and Ph.D students. More detailed information about KATU please find at [kazatu.kz](http://kazatu.kz).

### **Guidelines for Oral Presentations**

Please note that the overall time available for your presentation is limited to 15 minutes of which 10 minutes are allowed for the actual presentation and 5 minutes for discussion. You should plan your presentation carefully. You should select your vocabulary to address as wide an audience as possible and avoid unfamiliar abbreviations or expressions. Your oral presentation should be performed to answer the following questions:

- Why was the project undertaken?
- What was done?
- What was learned?
- What does it mean?

Remember, the three rules for an effective presentation are:

- Tell them what you are going to say (spend a few moments introducing your topic and what you intend to speak about).
- Tell them (deliver your talk, including the methods, results and conclusions)
- Tell them what you said (summarize the most important points of your lecture).

Please remember that the responsibility of having your paper ready for Presentation at the scheduled time is primarily in your hands as the presenter. Check the readability, completeness and order of your slides before your presentation. Arrive well in advance of the session, and acquaint yourself with the operation of the podium and location of the equipment. Conference staff will be present to assist you. There are no scheduled breaks in the agenda

so it is mandatory that the presentations be loaded before the beginning of each session.

Be careful to speak in accordance with the sequence of your slides. Avoid making major modifications to your transparencies during your presentation. Do not use more than 1 slide per minute. Please stay within the time limit allocated for your presentation.

Technical equipment provided in the Conference room are:

- Multimedia video projector;
- Projection screen;
- Standard multimedia PC with CD-ROM drive.

The operating system for session computers is Microsoft Windows 8. The available software is Microsoft Office 8 (or newer) that includes Word, Excel, PowerPoint, Adobe Acrobat Reader, and Windows Media Player. Therefore, all presentations must be compatible with these packages. We suggest you to upload your presentation on a USB memory stick or CD-ROM better than connecting your laptop. Slide projector will not be available.

### **Banquet**

Join us for the "Welcome Party" from 19:00 p.m. on the 29th of June. The dinner menu includes rissole, smokehouse fish, fry bread, dessert, frozen margaritas, beer, wine and non-alcoholic beverages. There is no charge for the conference attendees.

### **SPECIAL SESSIONS by National Instruments Rus R&D**

1) Basic of LabVIEW - 2 hrs. (June, 29)

<http://russia.ni.com/training/workshops#campus1>

2) myRIO Platform for quick support of the engineering projects - 2 hrs. (June, 29)

<http://russia.ni.com/training/workshops#campus8>

3) New generation of the graph design of applications on LabVIEW Software Technology Preview - 40 min. (June, 30)

4) Prototyping of the software-basic radio systems SDR with LabVIEW FPGA - 2 hrs. (June, 30)

<http://russia.ni.com/training/workshops#campus4>

5) Hands-on “VirtualBench: basic for measurements in LabVIEW” - 1 hrs. (June, 30)

<http://russia.ni.com/training/workshops#campus7>

### Technical Program

The technical program will cover all aspects of control and communications: theory, fundamental studies, and applied studies. It will include plenary session and thematic sessions composed of oral presentations. Contributed papers will be 10 minutes in length, with 5 minutes for discussion. Invited papers will be 25 minutes, with 5 minutes for discussion. Multimedia projector will be available.

June 29

#### Session C1

- 1-c1 Full Duplex Wireless Communication System, Analog and Digital Cancellation, Experimental Research  
*E. V. Rogozhnikov, A. S. Koldomov, D. A. Pokamestov, Ya. V. Kryukov*
- 2-c1 Improving Pedestrian Navigation System Performance through the Use of Non-orthogonal Redundant Inertial Measurement Units  
*Pavel Marinushkin, Alexey Levitskiy, Fedor Zograf*
- 3-c1 A System for Measurement of Electromagnetic Wave Scattered by Small UAVs  
*A.V. Khristenko, V.A. Khlusov, M.O. Konovalenko, A.V. Marchenko, N.D. Malyutin, M.E. Rovkin, A.A. Sutulin*
- 4-c1 Service-oriented architecture and its application to smart capabilities of sensors  
*Vasil'ev V.A., Chernov P.S., Gromkov N.V., Shcherbakov M. A.*
- 5-c1 Universal Coefficients for Precise Interpolation of GNSS Orbits from Final IGS SP3 Data  
*Alexander S. Pustoshilov, Sergey P. Tsarev*
- 6-c1 Mutual Interference Suppression Methods In Ultra-Wideband Navigation Systems With Combined Data Channel  
*Valery N. Bondarenko, Timur V. Krasnov, Vadim F. Garifullin*

## Session NI

- 1-ni Measurement System for Test Memory Cells Based on Keysight B1500A Semiconductor Device Analyzer Running Labview Software  
*I.I. Shvetsov-Shilovskiy, A.B. Boruzdina, A.V. Ulanova, A.A. Orlov, K.M. Amburkin, A.Y. Nikiforov*
- 2-ni Automated Pediatric Cardiovascular Simulator for Left Ventricular Assist Device Evaluation  
*A.A. Pugovkin, D.V. Telyshev*
- 3-ni Peculiarities of Measuring the Semiconductor Diodes Current-voltage Characteristics using NI MYDAQ  
*Alexander Suranov, Vadim Oshlakov*
- 4-ni Automated measurement system for optoelectronic devices based on National Instruments PXI-platform  
*Maksim E. Cherniak, Alexander.A.Pechenkin, Roman K. Mozhaev, Anastasia V. Ulanova, Alexander Y. Nikiforov*
- 5-ni Automated Measuring System for MIL-STD-1553 Integrated Circuits Functional and Parametric Control  
*A.E. Rudenkov, A.O. Akhmetov, D.V. Bobrovsky, A. I. Chumakov, A.N.Schepanov*
- 6-ni A LabVIEW Implementation of Digital Waveform Quadrature Oscillator by Virtual Instrumentation  
*Branislav Dobrucky, Mariana Marcokova, Libor Hargas, Roman Konarik, Dusan Koniar*
- 7-ni Test Stand for Prospective Mobile Power-Supply Sources  
*A.S. Alimbaev, A.B. Mirmanov, V.S. Uss, P.P. Shumakov*

## Session U1

- 1-u1 Structural and Parametric Identification of Linear Dynamic Systems of Fractional Order with Noise on Input and Output  
*V.V. Engelgardt, D.V. Ivanov, O.A. Katsyuba*
- 2-u1 A Block LMS-type Algorithm for Sparse System Identification with Analysis  
*Cemil Turan, Mohammad Shukri Salman*

- 3-u1 The Process State Identification Methodology Based on the Associative Search  
*Ekaterina Sakrutina*
- 4-u1 Identification of Fuzzy Classifiers Based on the Mountain Clustering and Cuckoo Search Algorithms  
*K.S. Sarin, I.A. Hodashinsky*
- 5-u1 Analytical synthesis of state observer for timevarying dynamic system in the presence of signal perturbations  
*Dem'yanov D. N.*
- 6-u1 Adaptive Systems with an Identifier: an Application of Control Randomization for Linear Plants with Large Signal-to-Noise Ratio  
*Alexander Bunich*

### Session E1

- 1-e1 Optimization of the Parameters of Magnetic System for Linear Magnetolectric Drive  
*Andrey A. Tatevosyan*
- 2-e1 Double Inverter-fed Induction Motor Energy Performances Research at Analytical Model  
*Tutaev G.M., Bobrov M.A.*
- 3-e1 Comparison of Power Consumption of Synchronous Reluctance and Induction Motor Drives in a 0.75 kW Pump Unit  
*Vadim Kazakbaev, Vladimir Prakht, Vladimir Dmitrievskii, Sergei Sarapulov, Dmitri Askerov*
- 4-e1 Pulse-vector control of induction and synchronous motors  
*A.A. Imanova, A.N. Gorozhankin, S.P. Gladyshev*
- 5-e1 Determination of the Multicircuit Equivalent Parameters for the Linear Electromagnetic Motor with a Massive Anchor by the Non-Stationary Magnetic Field Analysis in Elcut Software  
*Aleksandr S. Tatevosyan, Natalya V. Zaharova*
- 6-e1 Calculation and Experimental Study on Iron Loss of Converter-Fed Synchronous Reluctance Motor for Indirect Efficiency Determination  
*Vadim Kazakbaev, Vladimir Prakht, Vladimir Dmitrievskii,*

*Dmitri Askerov*

- 7-e1 Sensorless Determination of Initial Position of the Rotor of Permanent-Magnet Synchronous Motor of the Gearless Elevator Hoist  
*I. Yu. Krasnov, S.V. Langraf, I.G. Odnokopylov, Y.V. Krokhta, N.M. Natalinova, O.V. Galtseva, A.A. Rogachev*

Lunch

Session C2

- 1-c2 Zadoff-Chu Sequence Based Initial Synchronization for Multipurpose MANET Devices  
*Aleksandr Timoshenko, Belousov Egor, Ksenia Molenkamp, Niek B. Molenkamp*
- 2-c2 Model of Closed Loop Control of Wireless Resource in Cellular Networks  
*Kirill N. Zotov, Ruslan R. Zdanov, Igor V. Kuznetsov*
- 3-c2 Comparative analysis of UFMC technology in 5G networks  
*Grigory Bochechka, Valery Tikhvinskiy, Ivan Vorozhishchev, Altay Aitmagambetov, Bolat Nurgozhin*
- 4-c2 Simulating Multi-Criteria Handover Algorithms in OMNeT++  
*Radion Bikmukhamedov, Adel Nadeev, Yevgeniy Yeryomin, Jochen Seitz*
- 5-c2 Statistical evaluation of the influence of irregularities of reflecting surfaces at the planning of WLAN indoors  
*Panychev A.I., Vaganova A.A.*

Session P1

- 1-p1 Modeling of current-voltage and  $dI/dV$ -characteristics of nanocontact "Niobium - Carbon nanotube (5,5) - Niobium"  
*Daulet Sergeev, Nurgul Zhanturina, Kuanyshbek Shunkeyev*
- 2-p1 The Method of the Bandwidth Extension of the Transimpedance Amplifiers with the Paraphase Output for the Sensor Signal Processing Tasks

*I.V. Pakhomov, P.S. Budyakov, A.V. Bugakova, A.I. Gavlitisky*

- 3-p1 The Accounting of the Simultaneous Exposure of the Low Temperatures and the Penetrating Radiation at the Circuit Simulation of the BiJFET Analog Interfaces of the Sensors  
*O.V. Dvornikov, V.L. Dziatlau, N.N. Prokopenko, K.O. Petrosiants, N.V. Kozhukhov, V.A. Tchekhovski*
- 4-p1 Temperature dependences of the excess current and pseudogap in high-temperature superconductor Bi<sub>2</sub>Sr<sub>2</sub>CaCu<sub>2</sub>O<sub>9</sub>  
*Daulet Sergeev, Kuanyshbek Shunkeyev, Andrey Solovjov, Nurgul Zhanturina*
- 5-p1 Field-Plate Design Optimization for high-power GaN High Electron Mobility Transistors  
*N.E. Kurbanova, O.I. Demchenko, L.E. Velikovskiy, P.E. Sim*

## Session U2

- 1-u2 Application of a continuous oil product quality analysis using neural networks  
*A.A. Ibatullin, A.A. Ogudov, R.A. Khakimov, E.V. Sheina*
- 2-u2 Determination of Slag Outflow Moment during Steel Teeming using Competitive Neural Network  
*Eremenko Y.I., Poleshchenko D.A., Tsygankov Yu.A., Kovriznich Yu.A.*
- 3-u2 Non-linear Filtration Of Impulse Noise By Means Of Cellular Neural Networks  
*Elena Solovyeva*
- 4-u2 On Neural Tuner Application to Adjust Speed Pcontroller of Rolling Mill Main DC Drive  
*Glushchenko A.I., Petrov V.A.*
- 5-u2 Servo systems with incomplete information  
*Reshetnikova G.N., Khabibulina N.Yu., Kotcubinskiy V.P., Polonskaya M.S.*

## Session N1

## Basic of LabVIEW

### Break

### Session C3

- 1-c3 A Method of Equalizing Frequency Responses of Adaptive Antenna Array Channels  
*Alexey A. Erokhin, Evgeniy R. Gafarov, Pavel V. Shtro*
- 2-c3 Algorithms for adaptive processing of signals in a flat phased antenna array  
*V.N. Tyapkin, D.D. Dmitriev, I.N. Kartsan, S.V. Efremova*
- 3-c3 Estimation algorithm for determining angular position of the radiation sources for antenna array with errors  
*Y.K. Viboldin, S.V. Borisov*
- 4-c3 Broadband Four-Fed Circularly Polarized Quadrupole Antenna  
*Evgeniy R. Gafarov, Alexey A. Erokhin, Yuri P. Salomatov*
- 5-c3 Microstrip antenna with switchable polarization  
*Letavin Denis A., Sychugov Sergei G.*
- 6-c3 Quasi-likelihood detection of rectangle ultra-wideband quasi-radiosignal  
*Andrey P. Trifonov, Yury E. Korchagin, Konstantin D. Titov*

### Session P2

- 1-p2 Influence of Ultrashort Pulse Duration on Localization of Crosstalk Peak Values in PCB of Spacecraft Autonomous Navigation System  
*R.R. Gazizov, A.O. Belousov, T.R. Gazizov*
- 2-p2 The Investigation of Microstrip Filters with Wide Stopband  
*S.A. Khodenkov, V.A. Shokirov*
- 3-p2 Method of Lay-Out of a Multilayer PCB for Circuits with Triple Reservation  
*P.E Orlov, E.N Buichkin, A.O. Belousov, T.R. Gazizov*

- 4-p2 TMR vs. DICE schematic analysis  
*Andrey Krasnyuk, Anna Kiseleva*
- 5-p2 Optimization of Three-conductor Microstrip Line Modal Filter by Heuristic Search and Genetic Algorithms  
*A.O. Belousov, T.T. Gazizov, T.R. Gazizov*

## Session E2

- 1-e2 The use of integral adaptation principle to increase the reliability of "DFIG - Wind Turbine" power system  
*A.A. Kuz'menko, A.S. Sinitsyn, A.S. Mushenko*
- 2-e2 Feasibility Study on Wind Energy Harvesting System Implementation in Moving Trains  
*Venera Nurmanova, Mehdi Bagheri, Adilet Sultanbek, Arsalan Hekmati, Hassan Bevrani*
- 3-e2 Control Device of Residual Damping Channel of Transmission Information  
*Ermuhamed Aynakulov, Daniyar Uskenbaev, Adolf Nogay, Zhanibek Aynakulov, Alibek Aynakulov*
- 4-e2 The Features of Using Two-Way Sensitivity Solar Modules FSM 280-30D in the Central Kazakhstan  
*A.D. Mekhtiyev, A.D. Alkina, A.V. Yurchenko, Y.G. Neshina, N.B. Davletbaeva*
- 5-e2 Improving of Operating Efficiency of Hybrid Hoppers of Electric Power  
*Adolf Nogay, Otkir Kabylbekova, Daniyar Uskenbaev, Ermuchamed Aynakulov, Artur Nogay, Dana Zhaksybayeva*
- 6-e2 Разработка конструкций мини ГЭС для предотвращения эвтрофикации равнинных рек и водоемов  
*Баубекова А.К., Баубеков К.Т.*

## Session N2

MyRIO Platform for quick support of the engineering projects

## Break

#### Session C4

- 1-c4 Method of Digital Power Line Carrier Channels Throughput Increase in SCADA Traffic Transmission Based on Capturing and Compression of Data Packets  
*Anton G. Merkulov, Viatcheslav P. Shuvalov*
- 2-c4 Simulation and Parameters Optimization of Hybrid Frequency Synthesizers for Wireless Communication Systems  
*Alexandr M. Pilipenko*
- 3-c4 Interference Immunity Analysis of an Optimal Demodulator Under Peak Multiplexing of N-OFDM Spectrum  
*Vasilii A. Maystrenko, Vladimir V. Maystrenko, Alexander Lyubchenko*
- 4-c4 Computer-Aided Analysis of Reliability and Preventive Maintenance Optimization of Radio Communication Equipment Based on Multivariate Monte Carlo Simulation  
*Alexander Lyubchenko, Alexander Shiler, Evgeny Y. Kopytov, Vasilii A. Maystrenko*
- 5-c4 The method of differential identification inertial objects in random fields  
*V.S. Potylitsyn, D.S. Kudinov, K.A. Artemev*
- 6-c4 About application of radar technology in rail transport for the diagnostics of the condition of the rail track and rolling stock components  
*V.S. Potylitsyn, G.Y. Shaydurov, E.A. Kokhonkova*
- 7-c4 Analysis of influence impulse noise on parameter of induced polarization for method based on natural electromagnetic field of Earth  
*V. S. Potylitsyn, G. Y. Shaydurov, D. S. Kudinov*

#### Session P3

- 1-p3 Automated Synthesis and Measurement of Broadband CMOS Buffer Amplifier 1-5 GHz  
*I.M. Dobush, A.A. Kalentyev, D.A. Zhabin, A.E. Goryainov, A.S. Salnikov, F.I. Sheyerman, D.V. Garays*

- 2-p3 The New Architectures of the Class AB Differential Stages for the High-Speed CMOS-BiJFET of the Operational and Differential Difference Amplifiers of the Sensor Analog Interfaces  
*I.V. Pakhomov, D.V. Medvedev, A.V. Bugakova, V.P. Dimitrov*
- 3-p3 X-Ray Grading Procedure for Conventional 65-nm CMOS Technology  
*L.N. Kessarinskiy, G.G. Davydov, D.V. Boychenko, A.S. Artamonov, A.Y. Nikiforov, I.B. Yashanin*
- 4-p3 Design of Logical Elements for the 65-nm CMOS Translation Lookaside Buffer with Compensation of Single Events Effects  
*Vladimir Ya. Stenin, Artem V. Antonyuk, Pavel V. Stepanov, Yuri V. Katunin*
- 5-p3 Broadband Differential 1.5-5 GHz LO Buffer Amplifier Based On SiGe BiCMOS Technology  
*A.A. Kokolov, F.I. Sheyerman, L.I. Babak*
- 6-p3 The Element Base of the Multivalued Threshold Logic for the Automation and Control Digital Devices  
*N.N. Prokopenko, N.I. Chernov, V. Yugai, N.V. Butyrlagin*

### Session E3

- 1-e3 Intelligent Wireless Charging Station for Electric Vehicles  
*Adilet Sultanbek, Auyez Khassenov, Yerassyl Kanapyanov, Madina Kenzhegaliyeva, and Mehdi Bagheri*
- 2-e3 Energy Saving in Electric Drive of Boiler Blow Fan  
*Ivan Georgievich Slepnev, Alexander Yurievich Chernyshyov, Igor Aleksandrovich Chernyshev*
- 3-e3 Energy Saving in Electric Drives and Control of These Processes in the Sphere of Housing and Communal Services  
*K.A. Ibraev, E.K. Sarsembieva*
- 4-e3 The reactive power control of the power system load node at the voltage instability of the power supply  
*V.I. Kotenev, V.V. Kochetkov, D.A. Elkin*
- 5-e3 Development of UHF prototype installation - force-drying of dielectric objects reparation  
*Nabi K. Nabiyeu, Dmitriy V. Ritter, Mars S. Akishev, Aigerim*

*K. Imanbayeva*

- 6-e3 Automated Dry-type Transformer Aging Evaluation: A Simulation Study  
*Ilyas Soltanbayev, Radkhan Sarmukhanov, Sanzhar Kazymov, Talgat Otelgen, Mehdi Bagheri*
- 7-e3 Development of Algorithm Flow Graph, Mealy Automaton Graph and Mathematical Models of Microprogram Control Mealy Automaton for Microprocessor Control Device  
*Issenov S.S., Issenov Zh.S., Nurzhan N.N., Mendybayev S.A.*
- 8-e3 Volt/var control method considering limited switching operations based on the cluster approach  
*Artem Vanin*

#### Session D1

- 1-d1 Privacy Preserving DBSCAN Clustering Algorithm for Vertically Partitioned Data in Distributed Systems  
*Igor V. Anikin, Rinat M. Gazimov*
- 2-d1 Can GPU-accelerator significantly increase the effectiveness of conservative DBMS considerable volumes on cluster platforms?  
*Vadim A. Raikhlin, Roman K. Klassen*
- 3-d1 Methods and algorithms optimization of adaptive traffic control in the virtual data center  
*Irina Bolodurina, Denis Parfenov*
- 4-d1 Towards Reliable Low Cost Distributed Storage in Multi-clouds  
*N. Chervyakov, M. Babenko, A. Tchernykh, I. Dvoryaninova, N. Kucherov*
- 5-d1 Modeling and Analysis of Computational Resources of Information System  
*Arai Tolegenova, Botagoz Khamzina, Assemgul Zhantlessova*

30 июня

Session IEEE

специальное заседание IEEE

## Session U5

- 1-d1 Using modification of visibility-graph in solving the problem of finding shortest path for robot  
*Tran Quoc Toan, A.A. Sorokin, Vo Thi Huyen Trang*
- 2-d1 Developing the structure of the quality control system of power supply units in mobile robots  
*Mikheev M.Yu., Roganov V.R., Andreev P.G., Goryachev N.V., Trusov V.A.*
- 3-d1 Footstep Planning for a Six-Legged in-Pipe Robot Moving in Spatially Curved Pipes  
*Sergei Savin, Ludmila Vorochaeva*
- 4-d1 Penicilliform Anthropomorphic Manipulator  
*D.V. Shadrin, S.N. Torgaev, A.S. Kireev, O.A. Kozhemyak*
- 5-d1 Small scale personal navigation system based on micromechanical gyroscopes  
*Lo Van Hao, T.G. Nesterenko, P.F. Baranov, E.V. Zorina*
- 6-d1 Control movement of mobile robots inside building based on pattern recognition algorithm  
*I.A. Shcherbatov, Nguyen Tuan Dung, V.P. Glazkov, O.M Protalinskiy*
- 7-d1 Attitude and Altitude Stabilization of a Microcopter Equipped with a Robotic Arm  
*I.N. Ibrahim, M.A. Al Akkad, I.V. Abramov*
- 8-d1 Simulation Modeling of the Control System for Robotic Manipulator With Input Saturation  
*Eugenie L. Eremin, Evgeniy A. Shelenok*

## Session E4

- 1-e4 Analysis energy efficiency of automated control system of LED lighting  
*S. Grigoryeva, A. Baklanov, D. Titov, V. Sayun, E. Grigoryev*
- 2-e4 Technical and Economic Feasibility of Thermal Accumulation of Energy at Autonomous Photovoltaic Power Stations

*Boris V. Lukutin, Asem K. Orazbekova*

- 3-e4 2D Model of Axial-Flux Eddy Current Brakes with Slotted Conductive Disk Rotor  
*Sattarov Robert R.*
- 4-e4 Analysis of Electric Power Losses in Electric Networks Kazakhstan  
*Miras Baimoldin, Aigul Uakhitova, Bahtybek Bayniyazov*
- 5-e4 Обеспечение надежности действующих воздушных линий электропередачи для энергетики будущего  
*Утеулиев Б.А.*
- 6-e4 Application of a Three-Phase Sinusoidal Current to Produce a Rotating Magnetic Field  
*E.A. Alpeisov, A.U. Adzhanov, E.K. Sarsembieva*

#### Session C5

- 1-c5 Method and tool of satellite communications systems noise immunity evaluation  
*Artyom A. Silantyev, Evgeny Y. Mikhlin, Evgeny V. Kuzmin, Aidar I. Vildanov*
- 2-c5 Selection of Parameters for CubeSat Nano-Satellite Stabilization Magnetic System  
*Arai Tolegenova, Assemgul Zhantlessova, Botagoz Khamzina, Lyudmila Soboleva*
- 3-c5 Надёжность космических аппаратов с учётом стойкости лётных партий электрорадиоизделий к различным видам воздействий космической радиации  
*Ю.В. Максимов, В. Е. Патраев, Е.А. Шангина, С.А. Авдюшкин*
- 4-c5 Preferential Attachment Random Graphs with Vertices Losses  
*Vladimir N. Zadorozhnyi*
- 5-c5 Analytical and Numerical Methods of Calibration for Preferential Attachment Random Graphs  
*Vladimir N. Zadorozhnyi, Evgeniy B. Yudin, Maria N. Yudina*

## Break

### Session C6

- 1-c6 Simulating Model of Back-Scattered Radiation of Ground Based on Electronic Equipment from Low Orbit Space Devices  
*Akhmedov Daulet, Yeryomin Denis, Kemesheva Dinara*
- 2-c6 Evaluation of Telecommunication System Reliability Via Stress Testing  
*Samoylenko A.P., Panychev A.I., Panychev S.A.*
- 3-c6 Radar method of monitoring geodetic section of high-altitude hydroelectric dams  
*G.Y. Shaydurov, D.S. Kudinov, E.A. Kokhonkova*
- 4-c6 Vision Area Parameters Analysis for Active-Pulse Television-Computing Systems  
*Viacheslav Kapustin, Andrey Movchan, Mikhail Kuryachiy*

### Session U3

- 1-u3 Application PI2D controller in automatic control systems  
*C.P.Kotova, G.A. Frantsuzova*
- 1-u3 Two-cascaded gradient extremum closed loop with seeking self-oscillations  
*D.A. Suvorov, G.A. Frantsuzova*
- 2-u3 On Comparison of PI-Controller Neural Tuner and Siemens Simatic Adjustment System for Heating Furnaces Control Problem  
*Eremenko Y.I., Glushchenko A.I., Fomin A.V.*
- 3-u3 Economic MPC based on LPV model for thermostatically controlled loads  
*Nikita Zemtsov, Jaroslav Hlava, Galina Frantsuzova, Henrik Madsen, Rune Gronborg Junker, John Bagterp Jorgensen*
- 4-u3 Sensor/Channel Redundancy for Sensor-to-Actuator Networked Control Systems  
*Medhat M. Toubar, Hassan H. Halawa, Ramez M. Daoud and*

*Hassanein H. Amer*

- 5-u3 Automotive and Telematics Transportation Systems  
*Tomasz Neumann*

Session Y1

- 1-y1 Ways to Improve Performance of Anisotropic Texture Filtering  
*A.N. Romanyuk, O.O. Dudnyk*
- 2-y1 An Algorithm for Generating Convex Obstacle-free Regions Based on Stereographic Projection  
*Sergei Savin*
- 3-y1 Text detection algorithm on real scenes images and videos on the base of Discrete Cosine Transform and Convolutional Neural Network  
*Polina M. Osina, Yuliya A. Bolotova, Vladimir G. Spitsyn*
- 4-y1 Method for the Restoration of Multicomponent Images Distorted by Applicative Disturbances  
*E.V. Medvedeva and E.E. Kurbatova*
- 5-y1 Telemetry Data Compression Algorithms Based On Operation of Displaying onto Geometric Surfaces  
*A.V. Levenets, I.V. Bogachev, En Un Chye*
- 6-y1 Two-level algorithm of facial expressions classification on complex background  
*Sannikov K.A., Bashlikov A.A., Druki A.A.*

Session N3

New generation of the graph design of applications on LabVIEW

Lunch

Session C7

- 1-c7 Evaluation of energy saving in Passive Optical Network  
*Aleksandr Roslyakov*

- 2-c7 Detection of sections with slightly changed optical characteristics in fiber optical communication lines  
*I.V. Bogachkov, A.I. Trukhina*
- 3-c7 Designing Fibonacci quasi-periodic superstructure Fiber Bragg Grating for multi-parameter sensing purposes  
*Abdollah Alizadeh, Somayeh Esmaeilpour*
- 4-c7 Corrective Chirp Adding for Minimizing Distortion in Radio-over-Fiber System Fiber Optic Line  
*Anna V. Andrianova, Grigory S. Voronkov, Albert Kh. Sultanov, Irina L. Vinogradova*
- 5-c7 Method for Improving Measurement Accuracy of Multilayer Environment Levels Using Time Domain Reflectometry  
*E.I. Trenkal, A.G. Loshchilov*

#### Session K1

- 1-k1 Universal multichannel system for low frequency noise measurement  
*V. E. Ivanov En Un Chye*
- 2-k1 Distance Determination Based on Dual Frequency Method with Phase Correction  
*Yu.V. Shulgina, P.V. Sorokin, M.A. Kostina, E.M. Shulgin, Ya.V. Rozanova*
- 3-k1 Comparative Analysis of Step and Pulse Signals as a Test-Signals for Nonlinear Sensing of the Semiconductor Objects  
*Edward V. Semyonov, Valeriy Kosteletskiy*
- 4-k1 Программно-аппаратный комплекс для исследования в режиме скоростной видеосъёмки импульсного нагружения грунтов ударной нагрузкой  
*Грузин В.В., Грузин А.В., Шалай В.В.*
- 5-k1 Software-Hardware System for Measurement of the Pallet Dimensions  
*Pavel V. Sorokin, Maria A. Kostina, Svetlana I. Bortalevich, Olesya A. Kozhemyak, Evgeniy L. Loginov, Yuriy A. Shinyakov, Maxim P. Sukhorukov*
- 6-k1 Emission of Electromagnetic Disturbances from Coupling Paths of Avionics Unmanned Aerial Vehicles

*Rustam R. Gaynutdinov, Sergey F. Chermoshentsev*

- 7-k1 Controlling the motion of a group of unmanned flight vehicles in a perturbed environment based on the rules  
*Khachumov M.V.*

#### Session P4

- 1-p4 The optimal EOS amplitude increment at electric strength tests of electronics  
*N.S. Diatlov, P.K. Skorobogatov, K.A. Epifantsev*
- 2-p4 Controllable influence of the photodielectric effect to process of the submillimeter waves spread in quantum dots structures in an external magnetic field  
*V.D. Krevchik, A.V. Razumov, P.S. Budyansky, V.A. Vasilyev, N.V. Gromkov, D.V. Artamonov, M.B. Semenov, Yu-Hua Wang, Tian-Rong Li*
- 3-p4 The Static RAM on DICE Cells Spaced onto Two Groups  
*Vladimir Ya. Stenin, Pavel V. Stepanov*
- 4-p4 Effect of impedance of reference source on successive approximation ADC dynamic performance  
*Yury Bocharov and Vladimir Butuzov*
- 5-p4 The Design Features of the Differential and Differential Difference Current Amplifiers for the Sensor Signal Conversion with High Intrinsic Resistance  
*I.V. Pakhomov, A.E. Popov, A.I. Serebryakov, A.A. Ignashyn*
- 6-p4 Application features of MOSFET Spice models in design of radio-electronic equipment  
*Anton Sidaras, Elena Noskova, Denis Kapulin*
- 7-p4 About the Influence of Parameters Values Technological Fluctuation on the Power MOSFET Thermal Mode  
*Bespalov N. N., Lysenkov A. E., Ilyin M. V., Kapitonov S. S.*
- 8-p4 On nonstationary regimes in electric circuits with ferroelectric negative capacitance  
*Olga Kostromina, Alexander Potapov, Igor Rakut, Alexander Rassadin, Anton Tronov*
- 9-p4 Selection Method of Power Semiconductor Devices for Serial

Group Circuits of Power Converters  
*N. N. Bespalov, S. S. Kapitonov, M. V. Ilyin, A. E. Lysenkov*

Session N4

Prototyping of the software-basic radio systems SDR with  
LabVIEW FPGA

Break

Session B1

- 1-b1 Dynamically changing SCMA codebooks  
*D.A. Pokamestov, A.Ya. Demidov, Ya.V. Kryukov, E.V. Rogozhnikov*
- 2-b1 Some Functions of the "Safety management system" in the  
Transportation Area Safety Assurance  
*Ekaterina Sakrutina*
- 3-b1 Comparable Estimation of Network Power for Chisquared  
Pearson Functional Networks and Bayes Hyperbolic  
Functional Networks while Processing Biometric Data  
*A.I. Ivanov, P.S. Lozhnikov, S.E. Vyatchanin*
- 4-b1 The Theory of Emergency Management in Terms of an  
Inhomogeneous Structure and Parameters in Electrical and  
Electric Power Complexes  
*Ismagilov Flur Rashitovich, Shahmaev Ildar Zufarovich, Gaisin  
Bulat Maratovich*
- 5-b1 Modernization of Formant Method of Estimation of Voice  
Information Protection From Leakage Through Technical  
Channels  
*Trushin V. A., Reva I. L., Ivanov A. V.*
- 6-b1 A New Error Correction Scheme based on Concatenation of  
Self-Orthogonal Codes and Accumulate Codes  
*Ovechkin G.V., Demidov D.S., Satybaldina D.Zh., Omirbayev  
E.D.*

## Session K2

- 1-k2 Study of Crosstalks in the Cables of Unmanned Aerial Vehicle  
*Rustam R. Gaynutdinov, Sergey F. Chermoshentsev*
- 2-k2 Measurement of S-parameters of Random Carbon Antennas in the Near-field Zone under Pulsed Excitation  
*V.N. Fedorov, N.B. Drobotun, N.D. Malyutin*
- 3-k2 Ultrasonic Level Gauge Of Light Oil  
*Alexey I. Soldatov, Andrey A. Soldatov, Svetlana I. Bortalevich, Olesya A. Kozhemyak, Pavel V. Sorokin, Evgeniy L. Loginov, Yuriy A. Shinyakov, Maxim P. Sukhorukov*
- 4-k2 An Experimental Setup for Studying Electric Characteristics of Thermocouples  
*A.I. Soldatov, A.A. Soldatov, P.V. Sorokin, A.A. Abouellail, I.I. Obach, V.Y.Bortalevich, Y.A. Shinyakov, M.P. Sukhorukov*
- 5-k2 Poincare-Steklov filter in hardware-in-the-loop modeling  
*Mikhail Maksimov, Vladimir Llyashev, Nikolay Merezhin, Sergey Sinyutin*
- 6-k2 Filter synthesis for PMU  
*Alexey V. Mokeev*
- 7-k2 Effectiveness comparison of sampling methods of a range of values of a two-dimensional random value at probability density estimation  
*Alexandr V. Lapko, Vasily A. Lapko, Ekaterina A. Yuronen*

## Session U4

- 1-u4 Development of Sigma-T ADC with Analogue Compensation of Error Caused by Edge Effects  
*Vasily Nikolaevich Ashanin, Aleksey Aleksandrovich Korotkov*
- 2-u4 Applying a Model Based Testing Approach for Testing the Communication Protocol between the Cash Register Software and the Loymax Service  
*Maria S. Forostyanova, Natalia V. Shabaldina, Nina V. Yevtushenko*
- 3-u4 Optimization Approach to Design of Linear Voltage Regulators for System on Chip

*M.M. Gourary, S.G. Rusakov, S.L. Ulyanov, M.M. Zharov*

- 4-u4 Research Indoor Robot Navigation Based on Short-Baseline Stereo Visual Odometry  
*Alexander Abdulov, Alexander Abramenkov*
- 5-u4 Visual Odometry System Simulator  
*Alexander Abdulov, Alexander Abramenkov*
- 6-u4 Information Operator Support Systems and Providing Normal Operation of Nuclear Power Plants  
*Elena Jharko*
- 7-u4 Information Operator Support Systems of Nuclear Power Plants and a Flexible Modeling Complex  
*Elena Jharko*
- 8-u4 The software reliability problem in a control system and quantum circuit  
*Vitaly G. Promyslov*

#### Session N5

Hands-on “VirtualBench: basic for measurements in LabVIEW”