



HIGHER SCHOOL OF ECONOMICS  
NATIONAL RESEARCH UNIVERSITY

## **XII International Siberian Conference on Control and Communications**

(SIBCON-2016)

# S<sub>2016</sub> Sibcon



**May 12–14, 2016  
Moscow**

## International Siberian Conference on Control and Communications



May 12–14, 2016  
National Research University "Higher School of Economics"  
Moscow, 34 Tallinskaya Str.  
<http://sibcon.hse.ru>

Time	May 12, Thursday			
9:00 – 10:00	Registration of participants, lobby 1st floor			
10:00 – 10:50	<b>PLENARY OPEN SESSION</b> Room 506			
11:00 – 12:00	<b>Session S1</b> (room 506) Communications	<b>Session U1</b> (room 214) Control Systems	<b>Session M1</b> (room 408) The Computer Measurements	<b>Session N1</b> (room 413) National Instruments Academic program for technical Universities
12:10 – 13:10	<b>Session S2</b> (room 506) Communications	<b>Session U2</b> (room 214) Control Systems	<b>Session M2</b> (room 408) Methods of Measurement	
13:10 – 14:30	Lunch			
14:30 – 15:30	<b>Session S3</b> (room 506) Communications	<b>Session V1</b> (room 214) Process Control	<b>Session T1</b> (room 408) Internet of Things	<b>Session N2</b> (room 413) LabVIEW Hands-on
15:40 – 16:40	<b>Session S4</b> (room 506) Communications	<b>Session U3</b> (room 214) Theory of control	<b>Session T2</b> (room 408) Internet of Things	<b>Session N3</b> (room 314) Hands-on "VirtualBench - Basics of Automation in Measurements"
16:50 – 17:50	<b>Session S5</b> (room 506) Communications	<b>Session U4</b> (room 214) Theory of control	<b>Session T3</b> (room 408) Internet of Things	<b>Session N4</b> (room 314) Hands-on "Design Real Systems, Fast", NI myRIO
18:30 – 20:30	Welcome Party			
May 13, Friday				
9:00 – 10:10	<b>Session C1</b> (room 214) Networking Control	<b>Session U5</b> (room 404) Theory of control	<b>Session M3</b> (room 406) The Computer Measurements	<b>Session N5</b> (room 412) Hands-on "Rapid Wireless system prototyping with Software Defined Radio and NI USRP"
10:20 – 11:30	<b>Session C2</b> (room 214) Networking Control	<b>Session U6</b> (room 404) Theory of control	<b>Session M4</b> (room 406) Methods of Measurement	
11:40 – 12:50	<b>Session I3E</b> (room 214) Workshop on IEEE Benefits	<b>Session U7</b> (room 404) Theory of control	<b>Session R1</b> (room 406) NI Technique for Measurements	<b>Session N6</b> (room 412) Seminar and Training AWR Design Environment
12:50 – 14:00	Lunch			
14:10 – 15:20	<b>Session B1</b> (room 214) Communications	<b>Session U8</b> (room 404) Electromechanics	<b>Session T4</b> (room 406) Internet of Things	<b>Session N7</b> (room 412) Simulating Non-Linear Effects in Phased Array Antennas Performance
15:30 – 16:40	<b>Session B2</b> (room 214) Communications	<b>Session U9</b> (room 404) Control Systems	<b>Session T5</b> (room 406) Internet of Things	<b>Session N8</b> (room 412) Phased Array and Radar System Analysis
16:50 – 18:00	<b>Session S6</b> (room 214) Communications	<b>Session S7</b> (room 404) Communications	<b>Session R2</b> (room 406) NI Technique for Measurements	
May 14, Saturday				
Social Program				

May,12

May,12		
<b>11:00 – 12:00</b>		
<b>Session S1. Communications</b>		
021fu1c	Operator Approach To Nonlinear Compensator Synthesis For Communication Systems	Elena Solovyeva
350fu1c	Attitude Determination Of Spinning Objects	Alexander E. Goncharov, Igor N. Kartsan, Dmitry D. Dmitriev, Valery N. Tyapkin, Yuri L. Fateev
316fu1c	Triangulation method correction algorithms for precise AUV position determination	Burdinsky I.N., Otcheskii S. A.
032fu1c	On the Issue of IP Header Compression Application in High Voltage Digital Power Line Carrier Channels	Anton G. Merkulov, Viatcheslav P. Shuvalov
090fu1c	About One of the Methods for Solving Problems in QoS Routing	Olga A. Abramkina, Vyacheslav P. Shuvalov
389fu1c	Analysis of noisy signal restoration quality with exponential moving average filter	Belyaev Alexander, Tutov Ivan, Butuzov Denis
<b>11:00 – 12:00</b>		
<b>Session U1. Control Systems</b>		
246fu4t	Models and Algorithms of Non-Stationary Signal Identification in Conditions of Uncertainty	V. L. Sergeev, V.T. Kalayda, V.I. Polishchuk
400fu4t	Identification of the state of technical objects based on analyzing a limited set of parameters	Sergei I. Klevtsov
561fu4t	Consistent Measures of Dependence in System Identification: Some Summary	K.R. Chernyshov
288fu4t	Statistical Diagnostics of Irreversible Avionics As a Controlled Random Process	A.P. Samoilenko, A.I. Panychev, S.A. Panychev
300fu4t	Full-state Linearization of Systems via Feedback Using Similarity Transformation	Aleksey A. Kabanov
<b>11:00 – 12:00</b>		
<b>Session M1. The Computer Measurements</b>		
696ni8i	Integration of Vibration Electronic Equipment Models with Concentrated and Distributed Parameters	Kofanov Y.N., Sotnikova S.Y.
119ni8i	Information-Measuring and Operating Test for the Effects of Vibration	G.V. Tankov, N.K. Yurkov, S.A. Brostislov, A.V. Lysenko
101ni8i	Contactless Three-Component Measurement of Mirror Antenna Vibrations	A.V. Grigor'ev, N.V. Goryachev, A.K. Grishko, N.K. Yurkov
463ni8i	Application of computer technologies for investigation of thermal processes in converter of AC drive	N. N. Bespalov, M. V. Ilyin, S. S. Kapitonov, S. Y. Grigorovich
283ni8i	Optimizations frequency the electromechanical transformation of devices for measuring small physical values	N.N. Grachev, D.V. Lazarev
<b>12:10 – 13:10</b>		
<b>Session S2. Communications</b>		
303fu1c	The method for forming time intervals with crystal oscillator frequency instability compensation	Burdinsky I. N., Linnik M. A., Mironov A. S., Karabanov I. V.
365fu1c	Analysis of Noise Properties of Hybrid Frequency Synthesizer with Autocompensating Phase Noise of DDS and PLL	G.S. Vasilyev, O. R. Kuzichkin, I.A. Kurilov, D.I. Surzhik
479fu1c	Spectrally Efficient Radio Signal Types Software- Controlled Generator Module	Kirillov S.N., Slesarev A.S., Pokrovskij P.S., Semin D.S., Dmitriev V.T.
629fu1c	Analysis of the Crystal Oscillators Phase Noises and Methods of Their Reduction	Galina V. Nikonova, Aleksey O. Minin
485fu1c	Development of Testing and Diagnostic Tools as a Way to Improve the Reliability of Multifunctional Radio Receiving Center	A. Sintsov, A. Luppov, A. Fufachev
<b>12:10 – 13:10</b>		
<b>Session U2. Control Systems</b>		
384fu4t	Application of PID Controller Based on the Localization Method	Jaroslav Hlava, Nikita Zemtsov, Galina

	for Ancillary Service Provision	Frantsuzova
736fu1c	Exploiting an Intelligent Fuzzy-PID system in Nonlinear Aircraft Pitch Control	Ibrahim I. N., Al Akkad M. A.
689fu4t	Firewall application for Floodlight SDN controller	Sergey Morzhov, Igor Alekseev, Mikhail Nikitinskiy
649fu4t	Topography of z-plane Which is Discretized Due to Quantization of Coefficients of Digital Biquad Filters	V. Lesnikov, T. Naumovich, A. Chastikov
308fu4t	Set-Theoretic Model of Digital Systems Functioning	Alexander Ivannikov, Aleksandr Romanov, Alexander Stempkovsky
12:10 – 13:10	Session M2. Methods of Measurement	
187ni8i	Multifunction measuring system for monitoring of coverage area of mobile network operator	A.A. Sorokin, A.A. Gorunov
225ni8i	Ball Mill States Classification using Competitive Neural Networks	Poleshchenko D.A., Tsygankov Y.A.
355ni8i	Monitoring the Phase Progression of Linear Chirp by Applying Artificial Neural Networks	S.N. Danilin, S.A. Shchanikov
130ni8i	Modular wavelet filters for preprocessing signals in real time	En Un Chye, V. E. Ivanov, R. A. Antonov
069ni8i	Hardware-Software Complex for Studying the Characteristics of GNSS Receivers	D.D. Dmitriev, A.B. Gladishev, V.N. Tyapkin, Yu.L. Fateev
761ni8i	Standalone Device for Rapid Assessment of Critical Flicker Frequency (CFF)	K. Bogachyov, M. Pavlova
11:00 – 13:10	Session N1. National Instruments Academic program for technical Universities	
	<p>Technological collaboration with universities. Creating centers for research and education. NI's hardware platforms for scientific experiments and prototyping.</p> <p>LabVIEW graphical system design software. Rapid application development. Ready-to-run algorithms for digital signal processing. Graphical user interface and hardware integration.</p> <p>An overview of NI's platforms to build measurements, control and automated test systems. Small-sized data acquisition systems.</p> <p>Technologies of National Instruments for user's product and solution development.</p>	
13:10 – 14:30	Lunch	
14:30 – 15:30	Session S3. Communications	
329fu1c	Theoretical Estimate of Average Power of Narrowband Intersystem Interferences in a Free Space	Usharova Darya, Anikin Alexey
491fu1c	Through-the-Earth Communication in Underground Mines by Electromagnetic Waves	G. Y. Shaydurov, E. A. Kokhonkova, D. S. Kudinov, A. A. Shchitnikov
092fu1c	Numerical Model of Water Medium with Methane Inclusions: Application for Determining Optical Radiation Extinction	Olga V. Shefer, Vitaliy V. Loskutov
103fu1c	Dynamic Analysis and Optimization of Parameter Control of Radio Systems in Conditions of Interference	A.K. Grishko, I.I. Kochegarov, N.V. Goryachev, N.K. Yurkov
527fu1c	Parameter Analysis of Monte Carlo Simulation Model for Improvement of Its Performance with High Accuracy of Reliability Estimations of Radiocommunication Equipment	Alexander Lyubchenko, Stanislav Bartosh, Pedro A. Castillo, Maribel G. Arenas
609fu1c	Assessment of Effect of Influences on Pulse-Based UWB Radio Communication Systems	Vyacheslav O. Kalinin, Vladimir I. Nosov
14:30 – 15:30	Session V1. Process Control	
047fu6m	Procedure for Substantiated Development of Measures to Design Secure Software for Automated Process Control Systems	Alexander Barabanov, Alexey Markov, Valentin Tsirllov
269fu6m	Optimization of Transport Queuing Networks on the Basis of the Method of Directing Hyperbole	V. N. Zadorozhnyi, M.A. Kornach

370fu6m	Towards the Implementation of the Task of Calculating Technical and Economical Indexes for Nuclear Power Plants	E.Ph. Jharko
437fu6m	On Creating Safety Control Systems for High Operation Risk Plants	Elena Jharko, Ekaterina Sakrutina
767fu6m	Analysis of the failure rate assessment models of the radiofrequency cords	Mayakova O.Y., Aleynikov A.V., Vostrikov A.V., Polesky S.N.
780fu6m	Speech quality measurement automation for patients with cancer of the oral cavity and oropharynx	Roman Valerievich Meschryakov, Evgeny Yurievlch Kostyuchenko, Dariya Igorevna Ignatieva, Alexander Vladislavovich Pyatkov, Evgeny Lhamacirenovich Choynzonov, Lidiya Nikolaevna Balatskaya
14:30 – 15:30	Session T1. Internet of Things	
023iv0w	Spectral Analysis of Forest Fire Noise for Early Detection using Wireless Sensor Networks	Alexander A. Khamukhin, Silvano Bertoldo
104iv0w	On Physical Web models	Manfred Sneps-Sneppe, Dmitry Namiot
181iv0w	Implementation of the interface for sending messages in agent-oriented cloud/grid systems based on formalized specifications	Dmitry Pashchenko, Aleksey Dubravin, Sergey Zinkin, Nadezhda Karamysheva
335iv0w	Power Gating Multi-Modal Design Approach for Autonomous Low Power Circuits with Sensors	Andrey Korshunov, Pavel Volobuev
684iv0w	The development of sensor technology for light shows "Smart gallery"	A.V. Lataeva, A.A. Titova
766iv0w	Dynamic reconfiguration of the graphical interfaces for Internet of Things	Rolich A.Y.
14:30 – 15:30	Session N2. LabVIEW Hands-ons	
	An introductory course for LabVIEW graphical system design environment and Virtual instrumentation. Attendee will learn creating applications for data acquisition, instrument control, measurements and automation. The best way to quickly learn basics of the industry standard measurement and automation design tool.	
15:40 – 16:40	Session S4. Communications	
683fu1c	Increase Efficiency of Multilevel Multithreshold Decoder for Self-Orthogonal Codes	Cao V.T., Grinchenko N.N., Ovechkin G.V.
385fu1c	Fast Decoder of BCH Code with Cyclic Decoding Method	E. Mytsko, A. Malchukov, I. Novogilov, V. Kim
577fu1c	High Data Rate Link Modulation and Coding Scheme Modeling	Alexander Bakhtin, Anastasia Semenova, Alexey Solodkov
741fu1c	A Subtraction Based Method for the Construction of Quasi-Cyclic LDPC Codes of Girtheight	Ambar Bajpai, Abhishek Kalsi, Lunchakorn, Wuttisititulkij, Piya Kovintaewat
623fu1c	Detection of an Unauthorized Wired Connection to a Local Area Network by Solving Telegraph Equations System	Artyom O. Bakhtin, Vladislav S. Sherstnev, Inna L. Pichugova, Vadim V. Dudorov
785fu1c	Exploring sampling rate for discrete wavelet transform implementation	Vladimir Alekseev, Ivan Kaliakin
756fu1c	The Development of Signal Detection Algorithm for Multi-Rate HF Telecommunication System	Alexander Zhidyaev, Yuri Zagidullin, Andrey Kopysov, Vladimir Khvorenkov, Igor Klimov
15:40 – 16:40	Session U3. Theory of control	
439fu4t	Wavelet-based Identification and Control of Variable Structure Systems	Natalia Bakhtadze, Ekaterina Sakrutina
375fu4t	Analysis of Possibility of Application the Analytical Method for Solving Differential Equations Describing the Nonlinear System with Complex Dynamics	I.V. Semernik, A.V. Demyanenko
359fu4t	Hardware-targeted Semi-implicit Extrapolation ODE Solvers	D.N. Butusov, A.I. Karimov, A.V. Tutueva

628fu4t	Synthesis of control actions with aggregate model	Reshetnikova G.N., Kotcubinskiy V.P., Khabibulina N.Yu., Polonskaya M.S.
670fu4t	Using of ADAR Method for Synergetic Control of Rigid Body Three-Dimensional Motion	Alexey S. Mushenko
625fu4t	Experimental estimate of using the ant colony optimization algorithm to solve the routing problem in FANET	Vasily A. Maistrenko, Leonov V. Alexey
<b>15:40 – 16:40</b>		
<b>Session T2. Internet of Things</b>		
133iv3b	Spherical video panorama stitching from multiple cameras with intersecting fields of view and inertial measurement unit	Kholopov Ivan S., Pavlov Oleg V.
165iv3b	Estimation of Measurement of Distance to the Object by Analyzing the Blur of Its Image Series	Daniil A. Loktev, Alexey A. Loktev
345iv3b	Improving the Noise Immunity of Receiving Video Distorted White Gaussian Noise	E.V. Medvedeva, I.S. Trubin
516iv3b	Lossless Compressing Method in Image Processing Systems with Limited Power Resources	E. Petrov, N. Kharina, P. Sukhikh
573iv5e	The Method of the Errors Calculation from the Input Common-Mode Signal in the Analog Interfaces Based on the Differential Difference Operational Amplifiers and the Ways of their Decrease	N. N. Prokopenko, I. V. Pakhomov, A. V. Bugakova, A. A. Ignashin
340iv5e	Development of spherical sensor electric field strength measuring method	Eugenia V. Rumyantseva, Sergey V. Biryukov, Alexander G. Lyutarevich, Stanislav Y Dolinger
<b>15:40 – 16:40</b>		
<b>Session N3. Hands-on "VirtualBench - Basics of Automation in Measurements"</b>		
A practical session on NI VirtualBench – integrated all-in-one benchtop instrument. The session covers interactive measurements as well as automation to build a low-cost automated test system using LabVIEW graphical system design software graphical approach to building measurements and monitoring system.		
<b>16:50 – 17:50</b>		
<b>Session S5. Communications</b>		
575fu1c	Contemporary Video Compression Standards H.265/HEVC, VP9, VP10, Daala	M.P. Sharabayko, N.G. Markov
483fu1c	Comprehensive Method for Spacecraft Ranging Measurement	Artyom A.Silant'ev, Aydar I.Vildanov
476fu1c	SCMA Detection with Channel Estimation Error and Resource Block Diversity	Alexander B. Sergienko, Vyacheslav P. Klimentyev
r380fur	Исследование некоторых характеристик гидроакустических шумовых помех	Горовой Сергей Владимирович, Кирьянов Алексей Валерьевич, Желдак Евгений Михайлович
238fu1c	Estimation duration of ultra-wideband quasiradiosignal with known amplitude and initial phase	Yury E. Korchagin, Konstantine D. Titov
097fu1c	Space-Time Processing of Signals in Angle Measurement Navigation Receivers	TyapkinValery N., Dmitriy Dmitry D., Ratushnyak Vasily N., Konnov Valery G.
743fu1c	Quaternion Digital Signal Processing: a Hypercomplex Approach to Information Processing	Francesca Ortolani, Aurelio Uncini
241fu1c	Testing of hypothesis of random variables independence on the basis of nonparametric algorithm of pattern recognition	Alexandr V. Lapko, Vasily A. Lapko, Ekaterina A. Yuronen
764fu1c	Lossless Compression Algorithm For Use In Telecommunication Systems	Valery A. Kokovin, Saygid U. Uvaysov, Svetlana S. Uvaysova
170fu1c	Optimal Transmission of Gaussian Markov Signal through Noiseless Feedback Channels with Memory	S.V. Rozhkova, V.I. Rozhkova, V.V. Lasukov, E.V. Devyashina
171fu1c	Optimal Channel Transmission of Gaussian Markov Signal with Delay	S.V. Rozhkova, V.I. Rozhkova, V.V. Lasukov, E.V. Devyashina
173fu1c	Generalized Inverse-Based Recurrent Algorithm for TS Fuzzy System Identification	I. A. Hodashinsky, K. S. Sarin, A. A. Svetlakov
<b>16:50 – 17:50</b>		
<b>Session U4. Theory of control</b>		

191fu4t	Automatic derivation of kinematic equations of deployable solar panel arrays	Alexander Yakovlev, Alexander Malyschenko
382fu4t	The robustness of the stabilizing regulator for quasilinear discrete systems with state dependent coefficients	Danik Yu. E., Dmitriev M.G.
789fu4t	Detection of Unrevealed Non-linearities in the Layout of the Balancing Robot	Andrey Ivoilov, Vitaly Trubin, Vadim Zhmud, Lubomir Dimitrov
585fu4t	Analysis of Radiation Influence on the Reliability Indexes of Control Systems Components	Artyukhova Maya Aleksandrovna, Zhadnov Valeriy Vladimirovich, Poleskiy Sergey Nikolaevich
429fu4t	Improvement of the Efficiency of Voice Control Based on the Complementary Ensemble Empirical Mode Decomposition	Alimuradov Alan Kazanferovich, Churakov Pyotr Pavlovich, Artemov Igor Iosifovich, Kuzmin Andrey Victorovich
604fu4t	The suboptimality of stabilizing regulator in a quasilinear system with state-dependent coefficients	Dmitriev M.G., Makarov D.A.
r179fur	The Method Of Collective Guidance And Controlled Target Distribution Of Missiles Groups On Concentrated Air Target, Optimum On Criterion Of All Its Elements Destruction Maximum Probability	Lyutikov Igor Vitalievich, Zamaraev Valerii Vasilievich
655fu4t	Acoustic borehole depth-gauge with the dualfrequency sensing method	Shulgina Y.V., Soldatov A.A., Shulgin E.M., Kudryashova A.V.
247fu4t	Simulation Modeling of Adaptive Dumping Forced Oscillations Combined Control System	Eugenie L. Eremin, Evgeniy A. Shelenok
248fu4t	Adaptive-Periodic Control for Nonlinear Dynamic Object with Delays on State Set of Functioning	Eugenie L. Eremin, Evgeniy A. Shelenok
<b>16:50 – 17:50</b> <b>Session T3. Internet of Things</b>		
107iv5e	The Regularities of Radiation Defect Formation at the Interface Metal – n-InP	Soboleva E.G., Litvinenko V.V., Krit T.B.
542iv5e	Organic Light Emitting Diode Simulation Using Silvaco TCAD Tools	I. A. Lysenko, L. A. Patrashanu, D. D. Zykov
060iv5e	In-service Change in Radiant Power of Infrared LEDs	Alexander V. Gradoboev, Anastasiya V. Simonova, Ksenia N. Orlova
737iv5e	Influence of the Design of the Solid Mounted Resonator on its Electrical Equivalent Parameters	A.G. Kozlov, T.N. Tanskaya, V.N. Zima
545iv5e	Maximization of Duration of Ultrashort Pulse That is Completely Decomposed in Multiconductor Modal Filters	A.O. Belousov, T.R. Gazizov, A.M. Zabolotsky
552iv5e	Evaluation of Efficiency of Modal Filtration in Different Types of Redundant Electrical Connections	Pavel Orlov, Talgat Gazizov, Evgeniy Buichkin
100iv5e	Modal Distortions of Pulse Signal in Multiconductor PCB Structure	Pavel Orlov, Talgat Gazizov, Sergey Kuksenko
342fu4t	Approximation of an initial matrix by a Toeplitz one for acceleration of iterative solution of dense linear algebraic systems in scattering problems	Kuksenko S.P., Gazizov T.R., Kostarev I.S.
392fu3o	Simulation of asymmetrical modal filter with different segmentation	A.T. Gazizov, A.M. Zabolotsky, T.R. Gazizov
239iv5e	Surface and Leaky Acoustic Wave Properties in GdCa4O(BO3)3 Single Crystal	R.M. Taziev
584fu5u	Design of a Metal Vapor Laser Power Supply	Trigub M.V., Ogorodnikov D.N., Vasnev N.A.
<b>16:50 – 17:50</b> <b>Session N4. Hands-on "Design Real Systems, Fast", NI myRIO</b>		
	The hands-on session offers a quick way to get started with NI myRIO engineering prototyping system. After one session attendee gain knowledge and skills necessary to solve real engineering challenges and can apply them to their current problems.	
<b>18:30 – 20:30</b> <b>Welcome Party</b>		

May, 13

May, 13		
9:00 – 10:10	Session C1. Networking Control	
274fu1c	Modeling of Ray Refraction of WLAN Signals on the Structural Elements of the Building	A.I. Panychev, A.A. Vaganova
285fu1c	Proactive backup scheme of routes in distributed computer networks	Perepelkin Dmitry Alexandrovich, Tsyganov Ilya Yurievich
286fu1c	Improved multipath adaptive routing model in computer networks with load balancing	Koryachko Vyacheslav Petrovich, Perepelkin Dmitry Alexandrovich, Byshov Vladimir Sergeevich
338fu1c	Peer Selection Algorithm In Flying Ad hoc Networks	Danil S. Vasiliev, Albert Abilov, Vladimir V. Khvorenkov
596fu1c	Hydrodynamic Model of Adaptive Routing for Large-Scale Unstable Sensor Networks	Ekaterina V. Aleksandrova and Vladimir A. Bashkin
216fu1c	Detection Algorithm of Activity of Cognitive Networks Primary Users	Dmitry E. Prozorov, Anton V. Chistyakov
659fu1c	A Role-Based Approach to Secure Routing in Wireless Ad-Hoc Networks	E.V. Shcherba, V.I. Nikonov
9:00 – 10:10	Session U5. Theory of control	
734fu4t	Adaptive predictive voltage control of three-phase PWM-VSCs in UPS applications	Hosein Gholami-Khesht, and Mohammad Monfared
733fu4t	Robust CDM and Pole Placement PID Based Thrust Controllers for Multirotor Motor-Rotor Simplified Model	Wojciech Giernacki, Dariusz Horla, Talar Sadalla, João Paulo Coelho
481fu4t	The Use of Bypass Channel for Feedback Control of Oscillatory Object Well-Known as Difficult One for Control	Vadim Zhmud, Lubomir Dimitrov, Galina Sablina, Vitaly Trubin
056fu4t	The Application of Numerical Probabilistic Analysis for the Reliable Estimate of the Characteristics Equipment Responsible Appointment	Popova O.A.
019fu4t	Executing Discrete Orthogonal Transformations Based on Computations on the Galois Field in the FPGA Architecture	V.M. Zakharov, S.V. Shalagin
192fu4t	Solution Set of Time-Optimal Control Problem for Four Series Connected Integrators	Vladimir I. Lovchakov, Sergey A. Shopin
366fu4t	Digital Noncoherent Demodulation of “Integrally” Coded Phase-Shift Keyed Signals	Alexey N. Glushkov, Vladimir P. Litvinenko, Boris V. Matveev, Oleg V. Chernoyarov
9:00 – 10:10	Session M3. The Computer Measurements	
322ni8i	Temperature Distributions Comparison by the Clustering of Their Proximity Measure	V.B. Nemirovskiy, A.K. Stoyanov, A.K.Gofman, V.A. Tartakovskiy
183ni8i	Increasing the reliability of the stress state’s measurement of alloys by Barkhausen Noise method	Bashkov O.V., Egorov V.A., Bashkov I.O., Egorov D.E.
265ni8i	Development of multistage algorithm for text objects recognition in images	Cherneta D.S., Druki A.A., Spitsyn V.G.
453ni8i	Multivariate Statistical Analysis of Handwritten Images via Higher Order Correlation Coefficients	B.B. Akhmetov, P.S. Lozhnikov, A.I. Ivanov
168ni8i	An Analog Front-End ASIC with Programmable Gain and Timing for Silicon Photomultiplier Arrays	Yury Bocharov and Vladimir Butuzov
9:00 – 11:30	Session N5. Hands-on "Rapid Wireless system prototyping with Software Defined Radio and NI USRP"	
	A practical session to try Software Defined Radio hardware and integrated software to quickly prototype wireless, radar and sigint systems with modern software-defined approach. Presentation and system demonstrations show benefits of integrated design flow for applications ranging from basic radio algorithms verification to prototyping complex radar systems.	
10:20 – 11:30	Session C2. Networking Control	



436fu4t	Petri nets behavioral equivalence checking in SMV	Dmitrii Drozdov, Victor Dubinin, Vladimir Kulagin
546fu4t	Network Vulnerability in Two-Phase Evolution	N.A. Kinash, A.I. Trufanov, O.G. Berestneva, A.A. Tikhomirov, O.N. Fisochenko
386fu4t	Design of control systems for parallel computing structures based on net models	Vladimir Kulagin
543fu4t	Research of Neural Networks Application Efficiency in Automatic Scientific Articles Classification According to UDC	A.Yu. Romanov, K.E. Lomotin, E.S. Kozlova, A.L. Kolesnichenko
267fu1c	Calculation Methods of Transient Processes in Growing Networks with Non-Linear Preferential Attachment Rule	V. N. Zadorozhnyi, V. A. Badryzlov
045fu4t	E-Network Modelling of Process Industrial Control Systems in Building Computer Simulators	M.Ya.Braginsky, D.V.Tarakanov, S.G.Tsapko
10:20 – 11:30	Session U6. Theory of control	
445fu5u	Reviewing the Mathematical Models and Electrical Circuits of Deterministic Chaos Transistor Oscillators	Andriy Semenov
616fu5u	Quasi – 3D Electro-Thermal Simulation of Integrated Transistor Structures, IC Chips and Packages	Konstantin O. Petrosyants, Nikita I. Ryabov
620fu5u	Hardware and Software System of the Guided Wave Pipe Testing Using Electromagnetic-Acoustic Transformation	S.V. Lenkov, N.N. Zverev, O.V. Muravieva, Yu.V. Myshkin
635fu5u	An Instrumentation Amplifier with Low Offset-Error Drift for Radiometric Applications	S. I. Ivanov, A. P. Lavrov, Y. A. Matveev
237fu5u	Static Accuracy of the Lithium-Ion Battery Automated Test Bench	Aleksandr S. Fedchenko, Evgeny A. Kopylov, Dmitry K. Lobanov, Enis A. Mizrah
349fu5u	A behavioral model of integer-N PLL frequency synthesizer for reference spur level simulation	Denis I. Sotskov, Vadim V. Elesin
10:20 – 11:30	Session M4. Methods of Measurement	
494ni8i	Automatized Complex for Measuring the Electrical Properties of MIM Structures	A.O. Gryaznov, I.B. Dorosheva, A.S. Vokhmintsev, R.V. Kamalov, I.A. Weinstein
521ni8i	Test and Measurement Complex for Investigation of GaN Based High-Brightness Light-Emitting Diodes	Sergey Ekhanin, Alexander Tomashevich, Alexander Ermolaev, Anton Loschilov
637ni8i	Hardware-Software Subsystem for Multilevel Thermal Fault Detection and Analysis of Electronic Components	Konstantin O. Petrosyants, Igor A. Kharitonov, Nikita I. Ryabov, Petr A. Kozyanko, Boris G. Lvov
643ni8i	Control of boundary layer on rotation axisymmetric diffuser wall	Kurkin E.I., Shakhov V.G.
795ni8i	A Novel System for Automatic Aluminium Billets Geometry Measurement and Inspection	Denis Zinchenko, Vyacheslav Prokopiev, Pavel Kochkin, Sergey Kolchanov, Arkadiy Zelyutkov, Vasilii Panko
407ni8i	Vibration Measurement by Means of Digital Speckle Correlation	Lin Li, F.A. Gubarev, M.S. Klenovskii, A.I. Bloshkina
11:40 – 12:50	Session N6 Seminar and Training AWR Design Environment 2016. Introduction to NI AWR Design Environment, AWR Innovations in 2016 and Beyond	
	This presentation begins with a brief introduction to the NI AWR Design Environment RF/microwave design software showing an overview of the powerful, innovative technologies contained within the latest V12 release. It will also highlight some advanced synthesis tools for amplifiers. NI AWR Design Environment software is an advanced suite of tools developed especially for designers of MMICs, RF PCBs, RFICs, microwave modules, communication systems, radar systems, antennas, and more. The capabilities offered include full 3D EM simulation, 3D PCells, circuit envelope simulation, co-simulation with National Instruments' LabVIEW, FPGA hardware-in-the-loop simulation, antenna synthesis, RF frequency planning, and direct links to PCB design tools, to name just a few.	
11:40 – 12:50	Session I3E. Special Session and Workshop on the IEEE Advantages for Industry and Academia	

	Welcome to Workshop on the IEEE Advantages for Industry and Academia! This presentation begins with a brief introduction to the IEEE, showing an overview of it benefits and features for your scientific life. After presentation we answer questions concern networking in professional societies, IEEE operation, future of professional activity.	
11:40 – 12:50	Session U7. Theory of control	
229fu5u	Formal modeling and verification of IEC 61499 function blocks on the basis of transition systems	Victor Dubinin, Valeriy Vyatkin, Anatoly Shalyto
r466fur	Моделирование маршрута движения судна на основе алгоритмов кластеризации	Клюева Светлана Федоровна, Акмайкин Денис Александрович, Салюк Павел Анатольевич
r331fur	Компьютерная диагностика нарушений способности производственного процесса	Александрова Т.В., Громаков Е.И.
r768fur	Оптимизация Параметров Математической Модели Объекта Регулирования На Основе Градиентного Подхода	Алексеенко Алексей Владимирович
11:40 – 12:50	Session R1. NI Technique for Measurements	
233ni7n	Automated Test Complex for Parametric and Functional Control of Voltage-to-Frequency Converter	A.Y. Borisov, L.N. Kessarinskiy
105ni7n	The Measurement Of Ferromagnets Magnetic Characteristics Using Labview Software	Andrey A. Tatevosyan, Aleksandr S. Tatevosyan, Natalya N. Zaharova
207ni7n	Analysis of Energy and Spectral Characteristics of Acoustic Emission Signals from the Hsu-Nielsen Source	Yuriy Purisev, V. N. Ovcharuk, Maskim Kutsenko
512ni7n	Certain new approaches in development of acoustic emission systems	Yuriy Purisev
528ni7n	Hardware-software complex for parametric study of wireless energy transfer	A.A. Danilov, E.A. Mindubaev
617fu4t	A new method of power system diagnostics for mobile equipment	S.N. Olshevskiy, I.P. Dobrolyubov, D.N. Klimenko, A.K. Orehov, A.A. Borisov
	Lunch	
14:10 – 15:20	Session B1. Communications	
257fu1c	Quantum Random Number Generator for Secure Communications	Anna Epishkina, Konstantin Kogos
043fu3o	The simulation of current-voltage characteristics and the dynamic conductivity of the ballistic contacts based on superconductors with weak oscillation order parameter	Daulet Sergeyev, Kuanyshbek Shunkeyev
041fu3o	Reliable Recognition of Masked Cartographic Scenes During Transmission over the Network	V. A. Raikhlin, I. S. Vershinin, R. F. Gibadullin, S. V. Pystogov
081fu3o	Pseudo-Random Number Generator Based on Fuzzy Logic	Igor V. Anikin, Khaled Alnajjar
110fu3o	A Complete Statistical Model of a Handwritten Signature as an Object of Biometric Identification	A.I. Ivanov, P.S. Lozhnikov, E.I. Kachajkin
14:10 – 15:20	Session U8. Electromechanics	
128fu5u	Synergetic Approach To The Quadrotor Helicopter Control In An Environment With External Disturbances	Gennady Veselov, Andrey Sklyarov, Sergey Sklyarov, Valeriy Semenov
219fu5u	The problem of target pursuit by a group of unmanned flight vehicles	Khachumov M.V.
061fu5u	Development of Torque Vector Control System of Permanent Magnet Motor	Alexander G. Lyutarevich, Vladimir N. Goryunov, Evgeniy A. Lokhman, Stanislav Y. Dolinger, Dmitry S. Osipov
457fu5u	Identification of hybrid wind power unit control parametrs for the purpose of loses optimization	Aleksey A. Belsky, Danniil I. Ivanchenko
763fu5u	The Algorithm for Battery Charge Control of Renewable Energy Sources - Wind Turbine and Solar Panel	Oleg A.Ivanov, Ilya A.Ivanov, Saygid U.Uvaysov, Svetlana S.Uvaysova

320fu5u	Start Synchronous Motor Vector Control Algorithm with Encoder without Hall-Sensors	Stanislav V. Borisov, Pavel V. Bykovskikh, Nikolay V. Gusev, Konstantin V. Obraztsov
r291fur	Система автоматического управлением натяжения бумажного полотна на основе асинхронного двигателя с короткозамкнутым ротором	Артъяков Э.С., Герценштейн И.Ш., Кодиров С.А.
222fu5u	Calculation and Analysis of Electromagnetic Forces in a Self-Braking Electric Motors	Lev K. Burulko, Vyacheslav E. Korolev
462fu5u	High-precision Former of Velocity and Motor Shaft Position Angle Codes	Bolgov I.S., Dementiev Y.N.
14:10 – 15:20		
Session T4. Internet of Things		
458iv5e	Decrease the influence of process variation on the temperature stability of integrated voltage references	Rodion R. Fakhruddinov, Konstantin V. Murasov, Ruslan A. Wolf, Sergey A. Zavyalov, Aleksandr N. Lepetaev
234iv5e	Efficiency Improvement of the Random Search Algorithm for Parametric Identification of Electronic Components Models	Alexandr M. Pilipenko, Vadim N. Biryukov
309iv5e	Methods of Slew Rate Verification of Operational Amplifier Macro Model	Alexander Ivannikov, Anatolij Kozevnikov, Sergej Tumkovskiy
574iv5e	The Radiation-Hardened Microcircuits of the Multichannel Op Amps with Current Feedback and the Analog Interfaces Based on the Structured Array MH2XA010	O.V. Dvornikov, N.N. Prokopenko, A.V. Bugakova, A.A. Ignashin
576iv5e	The Differential and Differential Difference operational amplifiers of sensor systems based on bipolar- field technological process AGAMC	O.V. Dvornikov, N.V. Butyrlagin, I.V. Pakhomov
613iv5e	The Main Modifications of Analog Interface of Sensor Systems Based on two Differential Difference Operational Amplifiers	A. E. Titov, A. I. Serebryakov, I. V. Pakhomov
553iv5e	New active filter synthesis tool for Qucs open-source circuit simulator	Leonid Kechiev, Nicolay Kruchkov, Vadim Kuznetsov
14:10 – 15:20		
Session N7. Simulating Non-Linear Effects in Phased Array Antennas Performance		
<p>The most recent addition to NI AWR software portfolio is Analyst™, a full 3D FEM-based EM solver. It has been integrated into Microwave Office much like our 3D planar analysis tool AXIEM, allowing engineers to couple full 3D antennas with linear and non-linear components. This presentation will start with an introduction to Analyst, the unique Pcells (Parametrised Cells) approach for components such as connectors, waveguides, chip packages to name a few. The introduction would be followed by details of one of the major new enhancements in V12 release – In-situ antenna measurements. This unique capability allows engineers to simulate driving circuits with non-linear amplifiers as well as feed networks with antennas in a single simulation. We will also look at recently launched new and unique capabilities for antenna synthesis with NI AWR Design Environment.</p>		
15:30 – 16:40		
Session B2. Communications		
263fu3o	Peculiarities and Methods of Fractal Queues Simulation	V. N. Zadorozhnyi
647fu3o	Mobile Corporate Networks Security Control	Alla G. Kravets, Mohammed Al-Ashval
787fu3o	Assessing the impact of the echo signals in single frequency networks for digital terrestrial television broadcasting	Viacheslav Kapustin Alexander Popov
r565fur	О некоторых предварительных преобразованиях открытого текста типа «All-Or-Nothing» для усиления стойкости шифра к методу полного опробования	Варфоломеев А.А.
r597fur	Автоматизированное выявление причинно-следственных отношений между событиями на основе анализа системных журналов	Овчинников Александр Алексеевич
r169fur	Механизм доверия для контроллера в сети	Носков А.Н.
15:30 – 16:40		
Session U9. Control Systems		
497fu5u	Frequency Discriminator based on Equalizer for 100-512 MHz	Dmitrii Kondakov, Alexander Lavrov and Sergey Ivanov, Alexey Kosmyinin

694fu5u	Forecasting Conflicts in Multi-Robot Systems Based on Intelligent Feedback	Sekou Diane, Sergey Manko, Valery Lokhin
653fu5u	Model of "Chain of Coupled Resonators"-Type Slow-Wave Structure's Cell Based on Equivalent Systems Method	Presnyakov S.A., Kravchenko N.P., Mukhin S.V.
r549fur	Автоматизированная система контроля параметров и функционирования логических ИС	A.C. Колосова, А.Р Шарипова, Г.Г. Давыдов
650fu5u	Parameters Adaptation for Target Oriented Control of the Buck Converter	A. I. Andriyanov
783fu5u	Algorithmic Methods to Improve the Semiconductor Converter Performance Effectiveness	Bogdan U. Vasilev, Viacheslav O. Zyrin
r469fur	Дискретная имитационная модель системы синхронизации активного выпрямителя с напряжением питающей сети	Муликов Дмитрий Сергеевич, Михальченко Геннадий Яковлевич
15:30 – 16:40		
Session T5. Internet of Things		
256iv5e	Voltage-to-Frequency Converters Based On Current Instabilities In Semiconductors	Alexander I. Cheredov, Andrey V. Shchelkanov
705iv5e	Quasi-distributed resistive sensor for steady-state field measurements	E. Denisov, N. Adiutantov, Yu.K. Evdokimov, A. Salakhova, G. Timergalina, T. Nikishin, S. Martemianov, A. Thomas, N. Adiutantov
714iv5e	Compact HSPICE Model of Magnetic Tunnel Junction Based on Voltage-Driven Spin-Transfer Torque	G.D. Demin, E.E. Gusev, A.F. Popkov, P.A. Stepanov, N.A. Djuzhev
765iv5e	Complex for Automated Measurement and Processing of BJTs and MOSFETs Characteristics for Extremal Applications	Konstantin O. Petrosyants, Igor A. Kharitonov, Lev M. Sambursky, Mamed R. Ismail-zade
063iv5e	The multiport CMOS memory cell based on the DICE trigger with two spaced transistor groups for hardened 65-nm CMOS SRAM	Yu. V. Katunin, V. Ya. Stenina
074iv5e	Single Event Transients in 28-nm CMOS Decoders	V. Ya. Stenin, K. E. Levin
15:30 – 18:00		
Session N8 Phased Array and Radar System Analysis		
	This presentation consists of a basic overview of Visual System Simulator™(VSS). VSS is a unique system level simulation software for radar and communication systems, new V12 features and various real world examples of system level simulations with VSS. An illustrative transceiver example showing VSS' new bi-directional simulation capability will be presented. This bi-directional simulation highlights several new enhancements in VSS V12 for complex system simulations of radars and T/R modules. We will also learn about how a non-linear model can be created from manufacturer's datasheet for system level simulation in VSS. This presentation will also discuss in detail, new and improved phased array system level simulation capability. The new capability allows fast and accurate characterization of RF links for individual array elements (Gain, P1dB, temperature etc.), includes enhanced modelling capability for element patterns (including mutual coupling of elements), support for 3D arrays and many other advanced features.	
16:50 – 18:00		
Session S6. Communications		
489fu2h	The Regression Model of Power Spectral Density of Phase Noise of Direct Digital Synthesizers	Romashov V.V., Romashova L.V., Khramov K.K.
522fu2h	Full Duplex Wireless Communication System. Analog Cancellation: Review of Methods and Experimental Research	Eugeniy V. Rogozhnikov, Alexandr S. Koldomov, Valentin A. Vorobov
762fu2h	Estimation of Durability Indices of Integrated Microcircuit Communication Network	Ivanov Ilya Aleksandrovich, Poleskiy Sergey Nikolaevich, Korolev Pavel Sergeevich, Zhadnov Valeriy Vladimirovich
086fu2h	Interference Fiber Optic Device for RoF Antenna Radiators Control	A.Kh. Sultanov, I.L. Vinogradova, I.K. Meshkov, A.V. Andrianova, G.I. Abdrakhmanova, A.A. Ishmiyarov, L.Z. Yantilina
790fu2h	System of Equations for Antenna Array Beam Pattern Nulling	A. A. Erokhin, Yu. P. Salomatov, V. S. Panko, M.I. Sugak
791fu2h	Determination of the Radio Transmitter Coordinates In Satellite Communication Systems	A. S. Kamyshnikova, V. V. Sukhotin

793fu2h	Meander-Line Polarizer for Omnidirectional Antenna	A. V. Stankovsky, S. V. Polenga, A. D. Nemshon, Y. A. Litinskaya, E. R. Gafarov, Yu. P. Salomatov
796fu2h	Numerical optimization of the discrete Mikaelian lens	A. M. Alexandrin, R. O. Ryazantsev, Y. P. Salomatov
797fu2h	A GNSS Quadrupole Antenna With a Spatial Polarizer for the Suppression of Low-Angle Multipath	E. R. Gafarov, A. V. Stankovsky, Y. P. Salomatov
798fu2h	SIW Unequal Y-type Power Divider	O. A. Nazarov, V. S. Panko, Y. P. Salomatov
799fu2h	Experimental Research of the Antenna Array with Electronic and Combine Electronic and Mechanical Beam Steering	Ye.A. Litinskaya, A.D. Nemshon, A.V. Stankovsky, S.V. Polenga, Y.P. Salomatov
800fu2h	Flat-layered spherical lens antenna system in conditions of slant polarized feeder radiation	Ryazantsev R. O., Salomatov Y. P., Panko V.S., M.I. Sugak
801fu2h	ESA uplink modeling of satellite earth systems	T. A. Zubov, V. V. Sukhotin
16:50 – 18:00	Session S7. Communications	
779fu2h	Temperature Controller for External Surface of Waveguide	Artem Osintsev, Alexander Sobko, Maxim Komnatov
749fu2h	PDCFET models for high-temperature detectors	Andrey Krasnyuk, Elen Marina, Emil Imametdinov
529fu2h	Review the Space Radiation CVD Diamond Multi-layer Detector	Nedosekin P., Zakharchenko K., Gladchenkov E., Kolyubin V.
213fu2h	Qucs-0.0.19S: a new open-source circuit simulator and its application for hardware design	Mike Brinson, Vadim Kuznetsov
026fu2h	Hydroacoustic Modem for Autonomous Underwater Vehicle	Vershinin Alexander
203fu2h	Researching of features of the Brillouin Backscattering Spectrum in Dispersion-Shifted Optical Fibers	Igor V. Bogachkov
16:50 – 18:00	Session R2. NI Technique for Measurements	
774ni7n	Electronic thermometer with the data transfer by radiochannel	Shtern Yu.I.I, Kozhevnikov Ya.S.2, Karavaev I.S.3, Shtern M.Yu.4, Rogachev M.S.5
748ni8i	Measurement of Multi-phase Clarke-Transformed Waveforms using LabVIEW Virtual Instrumentation	Branislav Dobrucký, Roman Kořarik, Libor Hargaš, Dušan Koniar
271ni7n	The Automated System For Parametric Characterization Of The Input And Output Blocks In Digital Ics	G.G. Davydov, A.S. Kolosova, A.V. Sogoyan, A.S. Artamonov, D.V. Boychenko
166ni7n	Virtual Instrument for Non-Conventional Total Harmonic Distortion Factors Evaluation	N.N. Lopatkin, Yu.A. Chernov
293ni7n	Control and Test Bench of Goniometric Satellite Navigation Receiver	Sushkin I. N., Thudonogov D. Yu
332ni7n	Hardware and Software Equipment for the Complex Investigation of the Wireless Smart Transducers	Shtern M.Yu., Gureev A.V., Karavaev I.S., Shtern Yu.I., Rykov V.M., Rogachev M.S.
474ni7n	Hardware/software solution for optocouplers with output MOSFET transistors based on National Instruments PXI-platform	Ekaterina V. Petrova, Natalia A. Komarova, Maksim E. Cherniak, Anastasia V. Ulanova, Alexander Y. Nikiforov
533ni7n	Developing methods and software for research the effects of phase dispersion depending of the state of ionospher based on LabVIEW	Ivanov V.A., Ivanov D.V., Ryabova N.V., Ryabova M.I., Chernov A.A., Ovchinnikov V.V.
612ni7n	Automated Test Setup for Functional and Parametrical Control of Microcontrollers with Internal ADC	I.O. Loskutov, A.B. Karakozov, P.V. Nekrasov
662ni7n	Advanced System for CMOS SOI Test Structures Measurements	I.I. Shvetsov-Shilovskiy, P.V. Nekrasov, A.V. Ulanova, A.Yu. Nikiforov