

Monday (June 22, 2015)

09.00-10.00 Registration

10.00-10.40 Opening Session

10.40-13.00 Plenary Session

10.40-11.20 **Keynote 1: Transformation Electromagnetics and Metamaterials**
Atsushi Sanada (Yamaguchi University, Japan)

11.20-11.40 **Coffee Break**

11.40-12.20 **Keynote 2: Enhancing Superconductive Sensors and Detectors with Superconductive Digital Electronic Components – A Step Towards System Integration**
Hannes Töpfer (Ilmenau University of Technology, Germany)

12.20-12.40 Microwave Signal Detection Using Four-Port Spectrum Sensor for Cognitive Radio
D. Chatterjee, K. Blau, M.A. Hein
(Ilmenau University of Technology, Germany)

12.40-13.00 Hybrid Recursive Active Filters for High Selectivity in RF Transmitter Front-ends
G. Gottardo*, G. Donati*, C. Musolff*, G. Fischer*, T. Felgentreff**
(*- Friedrich-Alexander University, Erlangen-Nuremberg, Germany; **- Nokia Networks, RF BTS Technology, Ulm, Germany)

13.00-14.00 Lunch

14.00-17.00 **Session MoPM-1: Novel Materials and Technologies for RF, Microwave, and Optical Sensors and Devices**

14.00-14.20 Multilayer Structures for Tuneable and Switchable TFBARS
W. Liu, Y.S. Kelly, H. Hill, M. Adabi, A.P. Mihai, N.M. Alford, P.K. Petrov (Imperial College London, UK)

14.20-14.40 Multi-technology Design of a MEMS-based Integrated RF Oscillator Using a Novel Silicon-ceramic Compound Substrate
D. Podoskin, K. Brückner, M. Fischer, S. Gropp, D. Krauß, J. Nowak, M. Hoffmann, J. Müller, R. Sommer, M.A. Hein (Ilmenau University of Technology, Germany)

14.40-15.00 Simultaneous DC and Microwave Measurements of Large-area Graphene FET Structures: Towards High Q-factor Filters with Variable Attenuation
M. Adabi, O. Shaforost, W. Liu, S. Hanham, P. Petrov, N. Klein (Imperial College London, UK)

15.00-15.20 Investigation of Magnetic Materials Properties at Low and High Frequencies
S.V. Dubrovskiy, K.G. Gareev (St. Petersburg Electrotechnical University "LETI", Russia)

15.20-15.40 **Coffee Break**

15.40-16.00 Preparation and Properties of Modified Porous Silicon
E. Soboleva**/, P. Geydt*, E. Lahderanta*, Yu. Spivak**, V. Moshnikov**
(*- Lappeenranta University of Technology, Finland; **- St. Petersburg Electrotechnical University "LETI", Russia)

16.00-16.20 Investigation of the Effect of Laser Micromachining of Zinc Oxide on the Performance of the Thin Film Solar Module
D.N. Redka*, A.S. Grishkanich*/**
(*- St. Petersburg Electrotechnical University "LETI", Russia; **- National Research University of Information Technologies, Mechanics and Optics (ITMO), St. Petersburg, Russia)

16.20-16.40 Prospects of Creation of Coordinate Measuring Systems Based on Solid Microlasers
D.N. Redka*, A.S. Grishkanich*/**
(*- St. Petersburg Electrotechnical University "LETI", Russia; **- National Research University of Information Technologies, Mechanics and Optics (ITMO), St. Petersburg, Russia)

16.40-17.00 Technology of Diagnostic for Non-Destructive Control of the Bipolar Integrated Circuits
R.O. Mishanov, M.N. Piganov (Samara State Aerospace University, Russia)

18.00-20.00 Welcome Reception

Tuesday (June 23, 2015)

09.30-10.00 Registration

10.00-10.40 Keynote 3: Data expansion and gravity distorts and impacts every component of IT - from intelligent sensors to new business creation based on data insights.
An IBM research based view of most significant technology trends for next 10 years
Michael Wirth (IBM Russia/CIS)

10.40-12.00 Session TuAM-1: Data Fusion and Data Mining

10.40-11.00 Biometric Methods in Criminalistics
G.A. Kukharev^{*}/^{**}, N.L. Shehegoleva^{*}
^{*}- St. Petersburg Electrotechnical University "LETI", Russia;
^{**}- Westpomeranian University of Technology, Szczecin, Poland)

11.00-11.20 Creation of Data Mining Algorithms as Functional Expression
for Parallel and Distributed Execution
I. Kholod, I. Petukhov
(St. Petersburg Electrotechnical University "LETI", Russia)

11.20-11.40 Mobile Money Fraud Detection Using Heat Maps
E. Novikova, E. Fedotov
(St. Petersburg Electrotechnical University "LETI", Russia)

11.40-12.00 Ellipsoidal Approximation Tool for Electrical Substations
Measurement Data Fusion
V. Shikhin^{*}, A. Shikhina^{**}
^{*}- National Research University "Moscow Power Engineering Institute", Russia;
^{**}- RT-Soft LLC, Moscow, Russia)

10.40-12.00 Session TuAM-2: Biomedical Signals Processing

10.40-11.00 The Analysis of Bioelectric Signals with Nonlinear Properties Using
the Approximate Entropy Parameters
L.A. Manilo, A.P. Nemirko, A.N. Kalinichenko
(St. Petersburg Electrotechnical University "LETI", Russia)

11.00-11.20 Development of the Filtration Method of Artifacts in Medical
Measurement Technique
A.D. Dugin, V.A. Fedorov (National Research University "Moscow Power
Engineering Institute", Russia)

11.20-11.40 Review Algorithm for Detection the QRS-complex Based
on Machine Learning
G.V. Van, K.V. Podmasteriyev (Oryol State University, Russia)

11.40-12.00 Application of the Wavelet Spectrum of the Oscillations of Basal
Blood Flow During Cold Pressor Tests on the Fingers
I.N. Novikova, V.V. Dremyn, A.V. Dunaev (Oryol State University, Russia)

12.00-13.00 Lunch

13.00-19.00 Guided tour to Peterhof

Wednesday (June 24, 2015)

09.30-10.00 Registration

10.00-10.40 **Invited 1: Microwave Transmission Networks for Integrated Sensor Networks**
Werner Dietzsch (DEN GmbH, Greifswald, Germany)

10.40-11.20 **Invited 2: Localisation Principles at RFID Applications - Overview**
Olaf Friedewald (Magdeburg University of Applied Sciences, Germany)

11.20-11.40 Coffee Break

11.40-13.00 **Session WeAM-1: Antennas and Propagation**

11.40-12.00 Wave-Field Synthesis from Theory to Practice – an Analysis of Implementation Deficiencies
C. Schirmer*, Mario Lorenz*, Robert Damm*, W.A.Th. Kotterman*, M.H. Landmann**, G. Del Galdo*/**, A. Heuberger**
(*- Ilmenau University of Technology, Germany; **- Fraunhofer Institut for Integrated Circuits (IIS), Erlangen, Germany)

12.00-12.20 Flexible High-impedance Surfaces and Miniature Antennas for On-body System Applications
I. Vendik (St. Petersburg Electrotechnical University "LETI", Russia)

12.20-12.40 Ultra-Wideband Planar Antenna with Dual-Band Notched Characteristics Based on Electric Ring Resonators
A. Rusakov, I. Vendik (St. Petersburg Electrotechnical University "LETI", Russia)

12.40-13.00 Broadband Antenna Matching Using Non-Foster Negative Reactances
N.V. Ivanov, V.M. Turgaliev, D.V. Kholodnyak (St. Petersburg Electrotechnical University "LETI", Russia)

13.00-14.00 Lunch

14.00-14.40 **Invited 3: Advancement in Magnetorelaxometry Tomography of Magnetic Nanoparticles by Optimized Activation Sequences and Excitation Setups**
Daniel Baumgarten (Ilmenau University of Technology, Germany)

14.40-15.00 Coffee Break

15.00-17.00 **Session WePM-1: Passive and Active Microwave Devices**

15.00-15.20 Lumped-element Tunable Bandpass Filters with Constant Bandwidth
A.E. Baskakova, V.M. Turgaliev, D.V. Kholodnyak
(St. Petersburg Electrotechnical University "LETI", Russia)

15.20-15.40 Tunability Analysis of Dual-frequency Imittance Inverters on D-CRLH TL
E.Yu. Zameshaeva, E.N. Vorobev, V.M. Turgaliev, D.V. Kholodnyak
(St. Petersburg Electrotechnical University "LETI", Russia)

15.40-16.00 Passive Reciprocal Transistor-based Tuneable Inductances for Metamaterial Transmission Lines
S. Kühn*, R. Stephan*, K. Blau*, E. Vorobev**, D. Kholodnyak**, M.A. Hein*
(*- Ilmenau University of Technology, Germany; **- St. Petersburg Electrotechnical University "LETI", Russia)

16.00-16.20 A Dual-band Wilkinson Power Divider Based on Meatalamerial Transmission Lines
E.N. Vorobev, V.M. Turgaliev, D.V. Kholodnyak
(St. Petersburg Electrotechnical University "LETI", Russia)

16.20-16.40 Broadband Lumped-element Three-way Wilkinson Power Divider
Y. Okada, T. Kawai, A. Enokihara (University of Hyogo, Japan)

16.40-17.00 Low Loss Triplexer for High Power Applications
I. Munina*, P. Turalchuk*, O. Drak**, A. Zadorozhnyj**
(*- St. Petersburg Electrotechnical University "LETI", Russia; **- JSC Resonance, St. Petersburg, Russia)

15.00-17.00 **Session WePM-2: Biomedical Diagnostics, Technologies and Applications**

15.00-15.20 Multimodal Imaging under Uncertainties in Ophthalmic Engineering
D. Baumgarten*, A. Dietzel*, S. Rieger*, W. Vilsner**, P. Schikowski**, E. Lerm*, K. Kunert****, A. Kaeding***, S. Schramm*
(*- Ilmenau University of Technology, Germany; **- IMEDOS Systems UG, Jena, Germany; ***- GMC-Systems mbH, Ilmenau, Germany; ****- Helios Clinical Center, Erfurt, Germany)

15.20-15.40 Effects of Anodal Transcranial Direct Current Stimulation at the Eye on the Electroretinogram
O. Titova*/**, S. Freitag*, A. Hunold*, M. Klemm*, J. Hauelsen*
(*- Ilmenau University of Technology, Germany; **- National Research University "Moscow Power Engineering Institute", Russia)

15.40-16.00 Spatial-temporal Signal Processing Losses Evaluation in Medical Diagnostic Ultrasonography
D.V. Leonov (National Research University "Moscow Power Engineering Institute", Russia)

16.00-16.20 The Analysis of Processing Algorithms of Laser Doppler Signal in LabVIEW Software
I.O. Kozlov, E.A. Zherebtsov, A.I. Zherebtsova, A.V. Dunaev
(Oryol State University, Russia)

16.20-16.40 Study of the Relationship between the Recording Parameters of the Laser Doppler Flowmetry and Fluorescence Spectroscopy during Occlusion Test
E.V. Zharkikh, M.A. Karavaev, D.S. Semin, V.V. Dremin, I.N. Novikova, A.I. Zherebtsova, E.A. Zherebtsov, A.V. Dunaev (Oryol State University, Russia)

16.40-17.00 Zero-valent Iron Particles as Contrast Agent for MR Diagnostics of CNS Malignancies
M. Parr*, E. Zemtsova*, B. Nikolaev**, A. Dobrodumov***, M. Shevtsov****
(*- St. Petersburg State University, Russia; **- Research Institute of Highly Pure Biopreparations, St. Petersburg, Russia; ***- Institute of Macromolecular Compounds, RAS, St. Petersburg, Russia; ****- Institute of Cytology, RAS, St. Petersburg, Russia)

18:00-21:00 Conference Dinner

Thursday (June 25, 2015)

09.30-10.00 Registration

10.00-10.40 **Invited 4: Testing Embedded Software**
Detlef Streitferdt (Ilmenau University of Technology, Germany)

10.40-11.00 Coffee Break

11.00-13.00 **Session ThAM-1: Embedded Software Engineering**

11.00-11.20 Hybrid Modeling Method for DDoS-attack Simulation
K. Borisenko, Ya. Bekeneva, A. Shorov
(St. Petersburg Electrotechnical University "LETI", Russia)

11.20-11.40 The Method of Identification Version of Remote Host System Software Based on Integrated Analysis of TCP/IP Properties
A. Lavrov (St. Petersburg Electrotechnical University "LETI", Russia)

11.40-12.00 Development Process for Embedded System in the Measurement Domain
I. Kaiser, W. Fengler, D. Streitferdt, T. Fröhlich
(Ilmenau University of Technology, Germany)

12.00-12.20 Creating Access Control Policies in Linux-based Systems Using Kernel Security Modules
Yu. Kolerov, D. Obrezkov, A. Berezin
(St. Petersburg Electrotechnical University "LETI", Russia)

12.20-12.40 High Performance Computing - From Locks to Transactional Memory
E. Kalishenko (St. Petersburg Electrotechnical University "LETI", Russia)

12.40-13.00 Simulation of the Induction Heating of Plane Products
V. Demidovich*, F. Tchmilenko*, V. Andrushkevich*, I. Rastvorova**
(* - St. Petersburg Electrotechnical University "LETI", Russia;
** - National Mineral Resources University, St. Petersburg, Russia)

11.00-13.00 **Session ThAM-2: Nonlinear Dynamic System Modeling and Analog/Digital Signal Processing**

11.00-11.20 Power Amplifier Linearization Techniques for Communication Systems
E. Solovyeva (St. Petersburg Electrotechnical University "LETI", Russia)

11.20-11.40 Equalization of Nonlinear Systems Using Volterra Model Based Operator Approaches
S. Degtiarev (St. Petersburg Electrotechnical University "LETI", Russia)

11.40-12.00 Two Modes Self-coordinated Free Beam Dynamics in Dielectric Wakefield Structures
I. Sheinman (St. Petersburg Electrotechnical University "LETI", Russia)

12.00-12.20 Digital Filter Banks and Their Implementations Using High-performance Software-hardware Tools
D.I. Kaplun, D.M. Klionskiy, V.V. Gulvanskiy
(St. Petersburg Electrotechnical University "LETI", Russia)

12.20-12.40 Adaptive Multiscale and Multiband Approach to Multicomponent Signal Processing
D.M. Klionskiy, N.I. Oreshko, V.V. Geppener
(St. Petersburg Electrotechnical University "LETI", Russia)

12.40-13.00 Research of State Commonness Condition and Observability of Basic Models Representing Technological Process of Wastewater Treatment
E.D. Isupova, S.E. Dushin
(St. Petersburg Electrotechnical University "LETI", Russia)

13.00-14.00 Lunch

14.00-15.40 **Session WeAM-2: Renewable Energy and Wireless Energy Transfer**

14.00-14.40 **Invited 5: Applications in the Pioneering Hydrogen Technology**
Johannes Gulden (Stralsund University of Applied Sciences, Germany)

14.40-15.20 Degradations Effects on a PEM Fuel Cell Supplied with Hydrogen From a LOHC
A. Sklarow*, J. Gulden*, T. Luschtinetz*, D. Teichmann**
(* - Stralsund University of Applied Sciences, Germany; ** - Hydrogenous Technologies GmbH, Erlangen, Germany)

15.20-15.40 A Dual-Mode Resonator for a Dual-Band Wireless Energy Transfer System with Possible Simultaneous Data Transmission
V.N. Yashchenko, D.S. Kozlov, V.M. Turgaliev, I.B. Vendik (St. Petersburg Electrotechnical University "LETI", Russia)

15.40-17.00 **Poster Session**

1 Information Content for Sensor Placement Optimization: Comparison of Figures of Merit
A. Warda, H. Töpfer (Ilmenau University of Technology, Germany)

2 Scalar Quantization with Entropy Coding and Block Length Constraint
V.P. Klimentyev, A.B. Sergienko
(St. Petersburg Electrotechnical University "LETI", Russia)

3 Integration of 802.15.4 Based Wireless Sensor Networks into Existing Intra-vehicle Networks
S. Krug*, J. Seitz*, E. Chervakova**, H. Töpfer**
(* - Ilmenau University of Technology, Germany; ** - IMMS GmbH, Ilmenau, Germany)

4 BSTO and STO Tunable Capacitors for Microwave Applications
A.G. Gagarin, A.V. Tumarkin, A.A. Odinec, A.B. Kozlyrev
(St. Petersburg Electrotechnical University "LETI", Russia)

5 Magnetic Properties of Defective Graphene
A.A. Komlev*/**, E. Lähderanta*, T.L. Makarova*
(* - Lappeenranta University of Technology, Finland;
** - St. Petersburg Electrotechnical University "LETI", Russia)

6 Enhanced Tunable Properties of BaSnTiO₃ and BaZrTiO₃ Thin Films for Microwave Applications
A.V. Tumarkin, S.V. Razumov, A.A. Odinet, A.G. Altyntnikov, A.G. Gagarin, A.B. Kozlyrev (St. Petersburg Electrotechnical University "LETI", Russia)

7 Thin Film Ferroelectric Structures on Diamond for High Power Microwave Applications
A.V. Tumarkin, S.V. Razumov, A.A. Odinet, A.G. Altyntnikov, A.G. Gagarin, A.B. Kozlyrev
(St. Petersburg Electrotechnical University "LETI", Russia)

8 Software Analysis with an Embedded Real Time Operating System
V. Lylin*/**
(* - National Research University "Moscow Power Engineering Institute", Russia;
** - Ilmenau University of Technology, Germany)

9 Compact EPR Equipment for Biomedical Applications
Yu.V. Bogachev, M.N. Knyazev, Ya.Yu. Marchenko
(St. Petersburg Electrotechnical University "LETI", Russia)

10 Design of Acoustic Wave Simulator
A. Golubkov (St. Petersburg Electrotechnical University "LETI", Russia)

11 The Algorithm of Joint Detection and Estimation of the Directions of Arrival of Signals from Radio Emission Sources in Wide Band under Two Signals Spectrum Overlapping
M.E. Shevchenko, D.O. Zadirako
(St. Petersburg Electrotechnical University "LETI", Russia)

12 A Television Camera Based on VIS-NIR Single Image Sensor
A. Chirkunova, A. Mantsvetov, P. Baranov
(St. Petersburg Electrotechnical University "LETI", Russia)

Friday (June 26, 2015)

09.30-10.00 Registration

10.00-10.40 **Keynote 4: The Research on Human Foot and Ankle Biomechanics**
Anmin Liu (University of Salford, UK)

10.40-11.00 Coffee Break

11.00-13.00 **Session FRAM-1: Biomedical Diagnostics, Technologies and Applications**

11.00-11.20 "Smart" Microplasma Analyzers for Continuous Personal Biomedical Diagnostics
A.S. MustafaeV*, E.N. Maximova*, J.V. Rastvorova*, A.S. Chirtsov**
(*- National Mineral Resources University, St. Petersburg, Russia;
**- St. Petersburg Electrotechnical University "LETI", Russia)

11.20-11.40 Optoelectronic Sensor for Online Monitoring of the Efficiency of Dialysis Treatment
O.S. Stepanova (St. Petersburg Electrotechnical University "LETI", Russia)

11.40-12.00 Motion Simulation of Airflow to Create Noninvasive Method for Upper Airways Diseases Diagnostic
G.N. Lukyanov, A.A. Voronin, R.V. Neronov
(National Research University of Information Technologies, Mechanics and Optics (ITMO), St. Petersburg, Russia)

12.00-12.20 A New Method and the Sensor for Diagnosis of the Respiratory Diseases
G.N. Lukyanov, S.L. Makarov, A.A. Rassadina
(National Research University of Information Technologies, Mechanics and Optics (ITMO), St. Petersburg, Russia)

12.20-12.40 Combined Algorithm of Respiration Frequency Estimation from the Pulse Wave
A. Zahharova (St. Petersburg Electrotechnical University "LETI", Russia)

12.40-13.00 Development of a Method of Human Health Status Control According to the Data from Monitoring of His Physiological Parameters Dynamics
A. Yafarov (St. Petersburg Electrotechnical University "LETI", Russia)

11.00-13.00 **Session FRAM-2: Smart Sensors and Sensor Networks**

11.00-11.20 Design and Implementation of an Algorithm for a Low-energy and Low-cost Mobile Inertial Measurement Unit, Using Accelerometer, Gyro- and Magnetic Field Sensors
J. Meier, T. Hutschenreuther, E. Chervakova
(Ilmenau University of Technology, Germany)

11.20-11.40 Geo-coded Smart Space Performance Evaluation
K. Yudenok, K. Krinkin
(St. Petersburg Electrotechnical University "LETI", Russia)

11.40-12.00 Wireless Sensor Network and Network Security
J. Olaode (St. Petersburg Electrotechnical University "LETI", Russia)

12.00-12.20 The Artificial Landmark Design for Mobile Robots Localization and Mapping
A. Huletski*, D. Kartashov*, K. Krinkin**
(*- The Academic University, St. Petersburg, Russia;
**- St. Petersburg Electrotechnical University "LETI", Russia)

12.20-12.40 Smart Sensors and Other Intellectual Elements in Chemical Control Systems
A.V. Andrushin, N.S. Dolbikova, S.V. Kiet, E.I. Merzlikina, I.S. Nikitina (National Research University "Moscow Power Engineering Institute", Russia)

12.40-13.00 Sine-Cosine Angular Sensor Based on Logarithmic Differentiation of Resolver Signals
D.V. Samokhvalov, F.V. Statsenko
(St. Petersburg Electrotechnical University "LETI", Russia)

13.00-14.00 Lunch

14.00-14.40 **Keynote 5: Frequency-tunable Superconducting Microwave Metamaterials**
Alexey Ustinov (Karlsruhe Institute of Technology, Germany)

14.40-15.20 **Invited 6: Wavefront Sensors**
Vladimir Venediktov (St. Petersburg Electrotechnical University "LETI", Russia)

15.20-15.40 Closing Session