

UWBUSIS-2018 Conference Schedule

Tuesday 04.09

9:00 – 18:00	Registration
10:00 – 10:30	Opening ceremony
10:30 – 11:00	Plenary session. It is devoted to the Henning Harmuth 90 Anniversary. Keynote speaker: Konstantin Lukin
11:00 – 11:30	Coffee break
11:30 – 13:00	Plenary session. (Invited Speakers: Felix Yanovsky, Volodymyr Kniaziev, and Alistair Duffy)
13:00 – 14:00	Lunch
14:00 – 16:00	Young Scientist Contents session. Part 1 (YSC1)
16:00 – 16:30	Coffee break
16:30 – 18:15	Propagation and scattering in natural and artificial materials (complex media, radio absorbers, biomaterials, nano-structures, metamaterials etc.) UWB Antennas
18:30 – 21:00	Welcome party

Wednesday 05.09

9:00 – 10:40	Plenary session. Keynote Speaker David Daniels. Invited Speakers: Lorenzo Capineri and Vadym Volkov
10:40 – 11:00	Conference Photo
11:00 – 11:30	Coffee break
11:30 – 13:00	Plenary session. Invited Speakers: Gaspare Galati, Sergey Nechitaylo, Oleg Drobakhin
13:00 – 14:00	Lunch
14:00 – 16:30	Young Scientist Contents session. Part 2 (YSC2)
17:00 – 20:00	Excursion

Thursday 06.09

9:00 – 11:00	UWBUSIS-2018 Young Scientist School. Speakers: Gaspare Galati & Oleg Lazorenko
11:00 – 11:30	Coffee break
11:30 – 13:00	IEEE EMC Young Scientist School. Speaker: Alistair Duffy
13:00 – 14:00	Lunch
14:00 – 14:45	Poster Presentation
14:45 – 16:00	Poster Session
18:00 – 23:00	Banquet (Conference Dinner)

Friday 07.09

9:00 – 11:00	Signal Processing, Theory Investigations, Numerical Simulations Applications (generation, communication, radar, GPR, medicine, etc.)
11:00 – 11:30	Coffee break
11:30 – 13:00	Plenary session Keynote Speaker: Sung Ho Cho. Invited Speakers: Yuriy Shckorbatov and Oleg Lazorenko
13:00 – 13:30	Closing Ceremony and Awards

UWBUSIS-2018 Conference Program

Tuesday 04.09

10:00 – 10:20 **Opening ceremony.** (Chairs are Mariya Antyufeyeva and Alexander Butrym)

10:20 – 11:00 **Plenary session** (Session chairs are Gaspare Galati and Gennady Pochanin)

Keynote Speaker: **Konstantin Lukin**

Contributions to Electromagnetic Theory, UWB Radar and Telecommunications by Dr. Henning F. Harmuth

11:00 – 11:30 **Coffee break**

11:30 – 13:00 **Plenary session** (Session chairs are David Daniels and Alexander Butrym)

11:30 **Alistair Duffy**

A Heuristic for the Comparison of Transient and Pulse phenomena

12:00 **Felix Yanovsky**, Yu.G. Rapoport, V. V. Grimalsky, S. V. Koshevaya, and A. D. Boardman

Ultrashort Pulses in Metamaterial and Plasmonic Structures

12:30 **Volodymyr Kniaziev** and Sergey Melnik

Methodology of Computer Simulation of Lightning Electromagnetic Phenomena Action on the Elements of the Spaceport

13:00 – 14:00 **Lunch**

14:00 – 16:00 **Young Scientist Contest Session, Part 1**
(Session chairs are Felix Yanovsky and Lorenzo Capineri)

Signal processing, theory investigations, numerical simulations

Oleg Lazorenko, Leonid Chernogor and **Andrey Onishchenko**

Multi-Fractal Analysis of the Acoustic Ultra-Wideband Signal Caused by the Chelyabinsk Meteoroid

Mariia Roiuk, Mstislav Kaliberda, Sergey Pogarsky and Leonid Lytvynenko

Diffraction by Finite Graphene Grating above Perfectly Electric Conducting Plane

Rolan Akhmedov and Oleksandr Dumin

Ultrashort Impulse Radiation from Plane Disk with Uniform Current Distribution

Generation, radiation, and receiving of UWB signals

Alexander Lysenko, **Iurii Volk** and Oleksandr Rybalko

On theory of Multiharmonic Two-Stream Superheterodyne FELs With Helical Electron Beams

Leonid Chernogor, Oleksandr Liashchuk and **Mykyta Shevelev**

Ultra-Wideband Infrasonic Signals Generated by Series of Chemical Explosions

Alexander Lysenko and **Galyna Oleksiienko**

Axial Guiding Magnetic Field Influence on Gain Characteristics of Plasma-Beam Superheterodyne Free-Electron Laser of Dopplertron Type with Helical Electron Beam

Ihor Storozhenko, Marina Kaydash, **Oleksandr Yaroshenko** and Yuri Arkusha

Wide-Band Gunn Diodes Based on Graded-Gap InGaP/InPAs

Propagation and scattering in natural and artificial materials (complex media, radio absorbers, biomaterials, nano-structures, metamaterials etc.)

Vlad Khrychov and Maxim Legenkiy

Electromagnetic Scattering for Complex Shape Objects with and without Cloaking

16:00 – 16:30 **Coffee break**

16:30 – 18:15 **UWB Antennas** (Session chairs are Volodymyr Kniaziev and Pierluigi Falorni)

Victor Ovsyanikov, Valentin Morozov, Elena Beznosova, **Lidia Tsypko** and Nikolay Gorobets
Broadband Antenna with Reactive Loads

Nikolay Gorobets, Anna Bulgakova, Valentina Lyashchenko and Alexey Gorobets

Optimizing the Vibrator Antenna, Parallel to a Flat Screen, by the Maximum Directional Activity Coefficient in the Normal Direction

Aleksander Karpov, Sergiy Yarmolchuk, **Nikolai Syvozalizov**

Modeling of Random Broadband Signals and Antenna for their Radiation

Uladzimir Keda

Effect of coaxial balun transformer on characteristics of the compact loop antenna with controllable polarization

Dmitriy Mayboroda, Sergey Pogarsky, Artem Poznyakov, Vladimir Sukhov and Eugene Shcherbatiuk
The Quasi-Fractal Microstrip Antenna

Valentina Lyashchenko, Ludmila Yatsuk and **Nikolay Medvedev**
Mathematical Model of Transverse Circumferential Slots in Coaxial Line Shield With
Nonhomogeneous Dielectric Interior

Nikolay Gorobets and **Elena Ovsyannikova**
Electromagnetic Fields in the Searchlight Beam of Aperture Antennas With the Aperture of a Round
Shape

16:30 – 18:15 **Propagation and scattering in natural and artificial materials** (complex media, radio absorbers, biomaterials, nano-structures, metamaterials etc.)
(Session chairs are Konstantin Lukin and Alistair Duffy)

Anatoliy Lyakhovskiy, Ludmila Yatsuk, Viktor Katrich, Andriy Lyakhovskiy and **Oleksandr Dumin**
Electromagnetic Wave Scattering on Longitudinal Slot with Layered Medium in Rectangular
Waveguide

Kemal Güvenli, Sibel Yenikaya and Mustafa Seçmen
Design and Implementation of Substrate Integrated Waveguide Filter to Work on X-Band and Ku-
Band

Anton Yevchik, Vasyl Moiseyenko, Ruslana Levchenko, **Mykhailo Derhachov** and Serhii Plaksin
Study of Raman Spectra of $Pb_3(P0.5V0.5O_4)_2$ Crystallized in Nanoscale Opal Pores

Alexandr Shmat'ko, Alexandr Kazanko, Viktoriya Mizernik, **Eugene Odarenko** and Nataliia
Shevchenko
Surface Plasmon Polariton Resonances of Diffraction Metamaterial Grating

Anatoliy Kirilenko, **Lyudmila Mospan** and Sergiy Steshenko
A Way to Realize a Multi-Frequency Polarization Plane Rotator

Lutz Angermann, **Vasyl Yatsyk** and Mykola Yatsyk
Computation of Excitation Frequencies for Nonlinear Wave Scattering and Generation Processes

Alexander Butrym and Xiangyu Hao
Time Domain Modelling of Pulse Wave Scattering on Small Metal Spheres

18:30 – 21:00 **Welcome party**

Wednesday 05.09

9:00 – 11:00 **Plenary Session**
(Session chairs are Irina Dmitrieva and Eugen Odarenko)

9:00 Keynote Speaker: **David Daniels**
Key design challenges for short range radar systems

9:40 Gennadiy Pochanin, **Lorenzo Capineri**, Timothy Bechtel, Vadym Ruban, Tetiana Ogurtsova,
Oleksandr Orlenko, Iryna Pochanina, Pavlo Kholod, Pierluigi Falorni, Andrea Bulletti, Mattia Dimitri,
Luca Bossi and Fronefield Crawford
Application of the Industry 4.0 Paradigm to the Design of UWB Radiolocation Systems

10:10 Dmytro Vavriv, **Vadym Volkov**, Volodymyr Vinogradov, Andrii Kravtsov, Yevhenii Bulakh, Sergii
Sosnytskiy, Stanislav Sekretarov, Oleg Nechaev, Viktor Gikalov, Konstantin Gordeyev, Oleksii Suvid,
Artur Kondrikov and Alexandr Kluchko
Surveillance Radar «OKO»: an Effective Instrument for Security Applications

10:40 – 11:00 **Conference Photo**

11:00 – 11:30 **Coffee break**

11:30 – 13:00 **Plenary session** (Session chairs are David Daniels and Alexander Butrym)

Gaspere Galati and Gabriele Pavan
High Resolution Measurements and Characterization of Urban, Suburban and Country Clutter at X-
band and Related Radar Calibration

Oleg Sukharevskiy, **Sergey Nechitaylo**, Valery Orlenko and Vitaly Vasilets
Frequency response of impedance screens of finite thickness in the resonance band

Mikhail V. Andreev, Valentyn F. Borulko and **Oleg O. Drobakhin**
Pulse Signal Propagation in Bragg-Type Layered Structures

13:00 – 14:00 **Lunch**

14:00 – 16:30 Young Scientist Contest Session, Part 2
(Session chairs are Alistair Duffy and Mariya Antyufeyva)

Applications (communication, radar, GPR, medicine, etc.)

Dmytro Shtoda, Yevhenii Antonenko, Mykola Mustetsov and Valentyn Kozheshkurt
Possibilities of Using Microwave Imaging to Study Suspensions of Copper and Iron Nanoparticles

Valentyn Kozheshkurt, Yevhenii Antonenko, Dmytro Shtoda, Olena Slipchenko and Viktor Katrych
Possibilities of impedance spectroscopy for the study of bioliquids

Dingyang Wang, Seong Kyu Leem and Sung Ho Cho
3D Shape Reconstruction Method for Multiple Aspects using MIMO IR-UWB Radar System

Propagation and scattering in natural and artificial materials (complex media, radio absorbers, biomaterials, nano-structures, metamaterials etc.)

Alexander Maslovskiy and Maxim Legenkiy
Experimental Measuring of Bright Spots on Complex Shape Object Surface with Decomposition Method

Yuri Nitsuk, Anna Leonenko and Yaroslav Lepikh
Colloidal CdSe Nanocrystals as a Material for Optoelectronics and Biomedical Imaging

Illia Fedorin
Influence of Dissipations in the Semiconductor Layers on the Properties of Hybrid Surface Waves at the Interface between Porous Nanocomposite and Hypercrystal

Turgut Ozturk
Estimation of Complex Permittivity for Solids and Liquids at sub-THz Frequency Range

Signal processing, theory investigations, numerical simulations

Stas Shalamov
Current Measuring Shunts for Impulse Current Test According to IEC 62305-2010

Generation, radiation, and receiving of UWB signals

Oleg Botsula and **Kyrylo Prykhodko**
Graded Band Diode for Noise Generation in Terahertz Range

UWB Antennas

Yury Yukhanov, Tatiana Privalova, **Egor Privalov**, Elena Kryuk and Ilya Merglodov
Reverse radar cross-section (RCS) of multimode waveguide Van-Atta array

17:00 – 20:00 Excursion

Thursday 06.09

9:00 – 11:00 UWBUSIS-2018 Young Scientist School
Chair: Oleksander Butrym

Speaker: **Prof. Gaspare Galati**
Field Experiments vs. Computer Evaluation: Radar Cross Section Trials in Tor Vergata Area

Speaker: **Prof. Oleg Lazorenko**
Fractal Ultra-Wideband Signals and Processes: Analysis and Nature

11:00 – 11:30 Coffee break

11:30 – 13:00 IEEE Electromagnetic Compatibility Soc. Young Scientist School
Chair: Oleksander Dumin

Speaker: **Prof. Alistair Duffy**
1. Think physically to help understand the fundamentals of electronics and electromagnetics
2. Techniques from the arts and humanities to help write better reports and papers

13:00 – 14:00 Lunch

14:00 – 14:45 Poster Presentations
(Session chairs are Sung Ho Cho and Nikolay Gorobets)

Propagation and scattering in natural and artificial materials (complex media, radio absorbers, biomaterials, nano-structures, metamaterials etc.)

Oleg Rybin, Sergey Shulga, Muhammad Raza, Olga Bagatska and Volodymyr Sukhov
Effective Microwave Electromagnetic Response of the Infinite chain of Dielectric Coated Circular Metallic Cylinders

Natalya Blinova, Ludmila Yatsuk, Anatoliy Lyahovskiy, Viktor Kiyko and **Andrey Selutin**
A slot in the end wall of a rectangular waveguide with a dielectric insert as an irradiator of fragments of the material medium

Yuliia Antonenko and Alexandr Gribovsky
Polarization Properties of the Fabry-Perot Resonator with Coaxial-Sector Apertures in Mirrors

UWB Antennas

Nikolay Gorobets, Alexey Gorobets and Yevgeniy Mahov
Impedance Matching of Dipole Antennas by Metal Rod and Disk Placing

Applications (communication, radar, GPR, medicine, etc.)

Valeriy Volosyuk, Vladimir Pavlikov, Nikolay Ruzhentsev, Simeon Zhyla, O.V. Odokienko and Anton Sobkolov (Speaker **Huu Nguyen Van**)
Method of detection of thermal microwave radiation increments

Oleg Botsula, **Kyrylo Prykhodko** and Valeriy Zozulia
Monte Carlo Modeling of the Diodes with Lateral Resonant Tunneling Border

Signal processing, theory investigations, numerical simulations

Dmitry Batrakov, **Mariya Antyufeyeva**, Alexandr Antyufeyev and Angelika Batrakova
Spectral Analysis of UWB Signals for Solving Problems of Plane-Layered Media Sensing

Mariya Antyufeyeva, Dmitry Batrakov, Alexandr Antyufeyev and Angelika Batrakova
UWB Signal Processing for the Solving Inverse Scattering Problem of Plane-Layered Media

Sergii V. Panasenko, Leonid F. Chernogor, **Oleg V. Lazorenko**, Yuichi Otsuka and Max van de Kamp
Observations of Ultrawideband Signals in GPS TEC Variations Over Europe During Solar Eclipse

Sergii V. Panasenko, Leonid F. Chernogor and **Oleg V. Lazorenko**
Characteristics of Wave Processes in the Ionosphere over Kharkiv During Solar Eclipse of 20 March 2015

Andriy Semenov, Anton Savvitskyi, Olena Semenova and Maksym Huz
Numerical Simulation of the Chua's Oscillator Based on a MOSFET Structure with a Cubic Non-linearity

Pavel Sukhachevski
Spectral method analysis of radio-frequency pulse signal scattering from cylindrical and conical shapes object in the VHF band

Vasyl Oreshkov and Vitaliy Balashov
Expansion of the class of the orthogonal harmonic signals

Oleg Sytnik, Gennadiy Pochanin, Sergey Masalov, Vadim Ruban and Pavel Kholod
UWB Technology for Detecting Alive People behind Optically Opaque Obstacles

Volodymyr Baliar and Olena Mazurkiewicz
QoS estimation for Wireless Video Streaming Based on WiGIG Technology

Maxim Legenkiy
Calculation of Pulse Signal Propagation in Periodic Structures with Mode Expansion in Time Domain Method

Generation, radiation, and receiving of UWB signals

Yana Kremenetskaya, Sergey Markov and Svetlana Morozova
Features of Millimeter-Wave Ultra-Wideband Signals Application in Telecommunications

Yurii Penkin, Victor Katrych, Mikhail Nesterenko and **Sergey Berdnik**
Combined Wide-Angle Scanning by a Two-Dimensional Dipole Array

Leonid Chernogor, Yuriy Mylovanov and **Victor Rozumenko**
The Action of Ultra-Short Super-Powerful Radio Pulses on Earth's Atmosphere and Ionosphere

Nadezhda Yeliseyeva, Sergey Berdnik, Victor Katrych and Svetlana Pshenichnaya
Radiation Resistance of Resonant Impedance Monopole Placed on Metal Square Screen

Aleksandr Serkov, Vitalii Breslavets, Maksym Tolkachov and **Gennadiy Churyumov**
The Wideband Pulsed Antenna and its Application

Victor Banket and **Sergei Manakov**
Composite Walsch-Barker sequences

14:45 – 16:00 **Poster Session**

18:00 – 23:00 **Banquet**

Friday 07.09

9:00 – 11:00 Applications (communication, radar, GPR, medicine, etc.)
(Session chairs are Oleg Lazorenko and Yuriy Shckorbatov)

Sungwon Yoo, Dong-Min Seol, Sungmoon Chung and Sung Ho Cho
Adaptive Clutter Suppression Algorithm for Detection and Positioning using IR-UWB Radar (**Invited**)

Viktor Bykov, Sergey Bykov, Nikolay Kolchigin, Nikolay Lotoh, **Gennady Osinovy** and Tatiana Berezhnaya

Methods of Active Protection of Small-Sized Ground Objects from Radiometric Detection Systems Millimeter Band

Vladimir Pavlikov, Simeon Zhyla, **Huu Nguyen Van** and Valeriy Volosyuk
Active aperture synthesis radar for high spatial resolution imaging

Yevhenii Antonenko, Nikolay Chizh, Dmytro Shtoda, Mykhailo Buriak and Oleksii Osypenko
Wireless Charger for Implantable Biotelemetry System

Anton Abramovych and Volodymyr Piddubnyi
A New Feature in the Pulsed Signals of the Near-Field Radiotechnical System

Vladimir Berest, Olga Gorobchenko, Olga Vashchenko, Natalia Kasian and Oleg Nikolov
Narrow band dielectrometry as a tool to monitor drug release and accumulation in liposomes

Oleksandr Dumin, Vadym Plakhtii, Oleksandr Prishchenko and Dmytro Shyrokorad
Application of UWB Electromagnetic Waves for Subsurface Object Location Classification by Artificial Neural Networks

Rustem Sinitsyn, Felix Yanovsky, Yevhen Chervoniak, Vitalii Makarenko, Vadim Tokarev, Oleksandr Zaporozhets and Nadiia Sinitsyna
Invariant methods of Wideband Acoustic Signals Detection and Target Localization

9:00 – 11:00 Signal Processing, Theory Investigations, Numerical Simulations
(Session chairs are Sung Ho Cho and Vadim Volkov)

Alistair Duffy
Data comparison with many degrees of freedom: the FSV (Feature Selective Validation) in multiple dimensions

Irina Dmitrieva and Dmitriy Larin
Analytic Research and Numerical Simulation of the Spatial Electromagnetic Wave Propagation

Galyna Prytula, Vadym Vekslerchik, Oleg Usatenko and Sergiy Melnik
Correlation properties of additive linear high-order Markov chains

Denys Bahachuk, Mykola Odegov, Dmytro Stepanov and Ludmyla Stepanova
Spectral properties of approximations of optical signals by Gaussian pulses

Tetiana Ogurtsova, Vadym Ruban, Anatoly Pojedinchuk, Oleksandr Pochanin, Gennadiy Pochanin, Lorenzo Capineri, Pierluigi Falorni, Giovanni Borgioli, Timothy Bechtel and Fronefield Crawford
Criteria for Selecting Object Coordinates at Probing by the Impulse UWB GPR with the "1Tx + 4Rx" Antenna System

Oleg Gofaizen, **Olena Osharovska**, Mikola Patlayenko and Volodymyr Pyliavskiy
Complex Algorithm of Image Wavelet Compression: Distortion Evaluation in the Light of Trade of Contour Separation and Compression Ratio

Igor Prokopenko, Vitalii Vovk and Kostiantyn Prokopenko
Synthesis and Effectivity Analysis of Robust Radar Signal Detection Algorithms

Mstislav Kaliberda, Sergey Pogarsky, Tatiana Ilina and Leonid Lytvynenko
Operator Method in Diffraction by Layered Graphene Grating

11:00 – 11:30 Coffee break

11:30 – 13:10 Plenary session (Session chairs are Oleg Lazorenko and Gennady Pochanin)

11:30 Keynote Speaker: **Sung Ho Cho**
IR-UWB Radar for Sleep Monitoring

12:10 **Yuriy Shckorbatov**
The Application of Pulsed Electric Fields and Other Types of Electromagnetic Radiation in Therapy of Cancer

12:40 **Oleg Lazorenko**, Leonid Chernogor and Andrey Onishchenko
Fractal Analysis of the Gravitational Waves as a Unique Ultra-Wideband Process

13:10– 14:00 Closing Ceremony and Awards (Chairs are Mariya Antyufeyeva and Alexander Butrym)