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Joint Chapter



# The Third Microwaves, Radar and Remote Sensing Symposium

Program of MRRS-2011, August 25-27, 2011, Kiev, Ukraine

Thursday, August 25, 2011

<b>8:00</b>	<b>Registration</b>		
<b>10:00</b> <b>Assembly Hall</b>	<p align="center"><b>OPENING CEREMONY AND PLENARY SESSION</b></p> <p>First Vice-Chairman of the Committee on Science and Education of The Verkhovna Rada (Parliament) of Ukraine, First Vice-Rector of NAU: <b>M. Lutsky</b>, MRRS-2011 Chairman: <b>F. Yanovsky</b>, IEEE Region 8 Director: <b>J. Modelski</b>, EuMA Past President: <b>R. Sorrentino</b>, SPS Official Representative: <b>J. Trelewicz</b></p> <p>PLENARY PRESENTATIONS:</p> <ol style="list-style-type: none"> <li><b>Dmytro Vavriv</b>, Institute of Radio Astronomy, NAN of Ukraine, Kharkiv, <b>Ukraine</b>: SAR Systems for Light-Weight Aircrafts</li> <li><b>Roberto Sorrentino</b>, University of Perugia, <b>Italy</b>: Recent progress in miniaturized and reconfigurable filters for advanced communications and space applications</li> <li><b>Joachim Schiller</b>, Fraunhofer-FHR, Wachtberg, <b>Germany</b>: Developments, Capabilities and Challenges in Non Cooperative Target Identification by Radar</li> </ol>		
<b>12:50-</b>	<b>Lunch</b>		
	<b>Stream A – Lecture Hall 1-001</b>	<b>Stream B – Academic Council Hall</b>	<b>Stream C – Lecture Hall 1-002</b>
<b>13:40-15:00</b>	<p><b>SESSION A1 - RECENT ADVANCES ON POWER AMPLIFIER DESIGN (Focused)</b> <b>Chairperson: Almudena Suarez (Spain)</b></p> <ol style="list-style-type: none"> <li>Stability analysis of power amplifiers considering modulation effect <i>Almudena Suarez</i> (Invited), F. Ramirez, I. Lizarraga, J-M. Collantes, <b>Spain</b></li> <li>1 KW Compact L-band Pulsed Power Amplifier for Radar Applications <i>Angel Mediavilla</i>, <b>Spain</b> <i>Antonino Tobia, and Paolo Colantonio</i>, <b>Italy</b></li> <li>Design consideration for CMOS RF and mm-wave power amplifiers <i>Patrick Reynaert</i>, <b>Belgium</b></li> <li>The Doherty Amplifier and its Evolution for Modern Communication Systems <i>Paolo Colantonio, Franco Giannini, Rocco Giofr'e, Luca Piazzon</i>, <b>Italy</b></li> <li>Low Phase-Noise HEMT Microwave Voltage-Controlled Oscillator <i>Vladimir Ulansky</i>, <b>Libya</b></li> </ol>	<p><b>SESSION B1 - REMOTE SENSING OF THE EARTH AND PLANETS</b> <b>Chairperson: Robert McMillan (USA)</b></p> <ol style="list-style-type: none"> <li>Radar Detection of Seismic Origin Waves on the Black Sea Surface <i>A.G. Boev, O.Y. Matveyev, D.M. Bychkov, V.B. Yefimov, V.N. Tsymbal, and A.A. Boeva</i>, <b>Ukraine</b></li> <li>Ionosphere Compensation and Stepped Frequency Processing in the MARSIS Experiment <i>M. Restano, M.Mastrogiuseppe, A. Masdea, G. Picardi, and R. Seu</i>, <b>Italy</b></li> <li>Doppler Analysis for data inversion and image processing in the MARSIS experiment <i>M. Restano, A. Masdea, G. Picardi, and R. Seu</i>, <b>Italy</b></li> <li>Advanced Processing of Altimetry Cassini Radar Data <i>M. Mastrogiuseppe, V. Poggiali, R. Seu, and G. Picardi</i>, <b>Italy</b></li> <li>Three Dimensional Reconstruction using COSMO-SkyMed High-Resolution Data <i>Fabio Baselice, Giampaolo Ferraioli and Vito Pascazio</i>, <b>Italy</b></li> </ol>	<p><b>SESSION C1 – IMAGING RADAR/LADAR SYSTEMS AND IMAGE PROCESSING</b> <b>Chairperson: Krzysztof Kulpa (Poland)</b></p> <ol style="list-style-type: none"> <li>High Resolution and High Dynamic Range Noise Radar <i>K.A. Lukin, O.V. Zemlyaniy, P.L. Vyplavin, S.K.Lukin, V.P. Palamarchuk</i>, <b>Ukraine</b></li> <li>Through the Wall Radar Imaging with MIMO Conventional Beamforming Processing <i>B. Boudamouz, P. Millot, and C. Pichot</i>, <b>France</b></li> <li>The Development of Construction Methods of Air Objects Radar Images for Signals with Frequency Tuning <i>D.G. Mitrofanov</i>, <b>Russian Federation</b></li> <li>Simulation of 3D LADAR Imaging System Using Fast Target Response Generation Approach <i>Ali Adnan Al-Temeemy</i>, <b>UK</b></li> <li>Three Dimensional LADAR Imaging System using AR-4000LV Laser Rangefinder <i>Ali Adnan Al-Temeemy</i>, <b>UK</b></li> </ol>

15:00	<b>Coffee Break</b>		
15:20-17:00	<p>SESSION A2 - <b>MICROWAVE COMPONENTS AND DEVICES</b>  <b>Chairperson: Roberto Sorrentino (Italy)</b></p> <p>1. Modelling of an inductor on SiGe: from the measurement to the equivalent scheme  <i>Daniel Pasquet</i> (Invited), <i>Linh Nguyen-Tran</i>, <i>Philippe Descamps</i>, <i>Emmanuelle Bourdel</i>, <i>Dominique Lesénéchal</i>, and <i>Sébastien Quintanel</i>, <b>France</b></p> <p>2. High Q Bandpass Filters on Sapphire Substrate for Atmosphere Remote Sensing  <i>K. Zemlyakov</i>, <i>P. Turalchuk</i>, <i>I. Vendik</i>, and <i>V. Khaikin</i>, <b>Russian Federation</b>  <i>V. Radzikhovsky</i>, <b>Ukraine</b></p> <p>3. Superheterodyne Amplification of Optical and Terahertz Pulses in n-GaN Films  <i>V.V. Grimalsky</i>, <i>S.V. Koshevaya</i>, and <i>A. Zamudio-Lara</i>, <b>Mexico</b>  <i>Yu.G. Rapoport</i>, <b>Ukraine</b></p> <p>4. Cavity with Dispersive Medium that Refractive Index is Positive and Negative  <i>Mariya Antyufeyeva</i>, <b>Ukraine</b></p> <p>5. Broadband 4 x 4 Butler matrices utilizing tapered-coupled-line directional couplers  <i>Slawomir Gruszczyński</i>, <i>Krzysztof Wincza</i>, and <i>Krzysztof Sachse</i>, <b>Poland</b></p>	<p>SESSION B2 - <b>OBJECT RECOGNITION AND CLASSIFICATION</b>  <b>Chairperson: Gerhard Greving (Germany)</b></p> <p>1. License Plate Location Based on Combinatorial Feature  <i>Zheng Yan-qing</i>, <i>Li Dai-ping</i>, and <i>Shu-wen</i>, <b>China</b></p> <p>2. Fuzzy Logic Track Classifier  <i>Jacek Karwatka</i>, <b>Poland</b></p> <p>3. Ground Moving Target Classification by Using DCT Coefficients Extracted from Micro-Doppler Radar Signatures and Artificial Neuron Network  <i>Pavlo Molchanov</i>, <i>Jaakko Astola</i>, and <i>Karen Egiazarian</i>, <b>Finland</b>  <i>Alexander Totsky</i>, <b>Ukraine</b></p> <p>4. Recognition of foreign objects hidden in clutter conditions based on a novel method of diffraction tomography  <i>N. Blaunstein</i>, <b>Israel</b></p> <p>5. System of Standartless Diagnostic of Cell Panels Based on Fuzzy-Art Neural Network  <i>V.S. Eremenko</i>, <i>A.V. Pereidenko</i>, and <i>V.O. Rogankov</i>, <b>Ukraine</b></p>	<p>SESSION C2 - <b>PASSIVE SURVEILLANCE METHODS AND SYSTEMS</b>  <b>Chairperson: Sergey Kolomiets (Russian Federation)</b></p> <p>1. The Concept of Airborne Passive Radar  <i>Krzysztof Kulpa</i> (Invited), <i>M. Malanowski</i>, <i>P. Samczynski</i>, and <i>B. Dawidowicz</i>, <b>Poland</b></p> <p>2. A Concept of GSM-based Passive Radar for Vehicle Traffic Monitoring  <i>Piotr Samczynski</i>, <i>K. Kulpa</i>, <i>M. Malanowski</i>, <i>P. Krysik</i>, and <i>Ł. Maślikowski</i>, <b>Poland</b></p> <p>3. A Hybrid Passive Radar System Concept for Medium Range Air Surveillance  <i>Heiner Kuschel</i>, <i>J. Heckenbach</i>, <i>D. O'Hagan</i>, and <i>M. Ummenhofer</i>, <b>Germany</b></p> <p>4. Radiometric Modules at 22 and 36 GHz for Continuous Monitoring of Atmospheric Opacity at RATAN-600 Radio Telescope  <b>V.B.Khaikin</b>, <i>K.N.Zemlyakov</i>, and <i>I.B.Vendik</i>, <b>Russian Federation</b>  <i>V.N.Radzikhovsky</i> and <i>S.E.Kuzmin</i>, <b>Ukraine</b></p>
17:30	<b>Welcome Party – In the cafeteria of NAU, 1<sup>st</sup> floor</b>		

**Friday, August 26, 2011**

<p><b>9:00-10:40</b></p>	<p><b>SESSION A3 - ANTENNA DESIGN, MODELING AND ANALYSIS</b>  <b><u>Chairperson: Jozef Modelski (Poland)</u></b></p> <p>1. A Novel Planar Square Fractal Antenna for Wireless Devices  <i>S.Suganthi, S.Raghavan, and D.Kumar, India</i></p> <p>2. Fast and Accurate Numerical Modeling of a TARA-like Shielded Paraboloidal Reflector Antenna  <i>Vitaliy S. Bulygin, Alexander I. Nosich, and Yuriy V. Gandel, Ukraine</i></p> <p>3. Analysis of Back Wall Smoothing and Multisource Feeding Effects for H-Plane Horn Radiator  <i>OzanYurduseven and OkanYurduseven, Turkey</i></p> <p>4. Parametric Analysis of Open-ended Waveguide Array Feeder for Pattern Shaping of Parabolic Reflector Antenna  <i>Ahmet Serdar Turk and Okan Mert Yucedag, Turkey</i></p> <p>5. Circular Multiuser Beam-Free Phased Array Antenna for Wireless Communications and Comparison with the Standard Multisector Antennas  <i>I. Yu. Sergeev, Russian Federation</i></p>	<p><b>SESSION B3 - SAR AND ISAR METHODS AND SYSTEMS</b>  <b><u>Chairperson: Piotr Samczynski (Poland)</u></b></p> <p>1. Image Reconstruction in SAR, ISAR and Tomography Applications at Millimeter Wave Band  <i>A. Vertiy (Invited), H. Cetinkaya, A. Pavlyuchenko, M. Tekbas, A. Unal, A. Kizilhan, A.Kaya, C. Ozdemir, S. Demirci, E. Yigit, Turkey</i>  <i>S. Panin, Ukraine</i></p> <p>2. ISAR Motion Parameter Estimation via Multilateration  <i>S. Brisken and J. G. Worms, Germany</i></p> <p>3. Through-Wall Synthetic Aperture Radar Based on Finite Beamwidth Processing  <i>Jiabing Zhu, Yi Hong, and Liang Tao, China</i></p> <p>4. Combining Level Set and Orthogonal Transforms for Speckle Reduction and Detail Preservation in SAR Images  <i>Dmitriy V. Fevraleev and Vladimir V. Lukin, Ukraine</i>  <i>R.C.P. Marques and F.N.S. Medeiros, Brazil</i></p> <p>5. Range-Doppler Algorithm with Extended Number of Looks  <i>O.O. Bezvesilniy, I.M. Gorovyi, V.V. Vynogradov, and D.M. Vavriv, Ukraine</i></p>	<p><b>SESSION C3 - TIME AND DOA ESTIMATION PROBLEMS</b>  <b><u>Chairperson: Rustem Sinitsyn (Ukraine)</u></b></p> <p>1. A New Method of the Spectral Correlation-Interferometric Radio Direction-Finding  <i>V.V. Tsyporenko, Ukraine</i></p> <p>2. Improvement of 2-D DOA Estimation with Tapered Matrix Pencil Algorithm  <i>Ali Azarbar, O. Mehdinejad, and Morteza Kazerooni, Iran</i></p> <p>3. Experimental Estimation of the Time of Arrival Measurement Accuracy Increasing along the Propagation Path at the Cost of Multi-channel Processing  <i>M.V. Mironov, E.P. Voroshilin, and V.P. Denisov, Russian Federation</i></p> <p>4. Theoretical and Experimental Results on Recognition of Polarized Signal Multipath Propagation in Secondary Radar and Multilateration Systems  <i>I.M. Ivashko, E.I. Gabrusenko, and F.J. Yanovsky, Ukraine</i></p>
<p><b>10:40</b></p>	<p align="center"><b>Coffee Break</b></p>		

<p><b>11:00-12:40</b></p>	<p><b>SESSION A4 – UWB SIGNALS, DEVICES, AND SYSTEMS</b>  <b>Chairperson: Ahmet Serdar Turk (Turkey)</b></p> <p>1. Ambiguity in the Definition of Ultra-Wideband Microwave Imaging Systems' Resolution  <i>Marek Bury, Jozef Modelski, Sebastian Kozlowski, and Yevhen Yashchyshyn, Poland</i></p> <p>2. The Interaction Between the Human Body and the Ultra Wide Band Radar Pulse  <i>Elmissaoui Taoufik, Soudani Nabila, and Bouallegue Ridha, Tunisia</i></p> <p>3. Ultra-Wideband Planar Spiral Antenna  <i>I. Ivanchenko, V. Pishchikov, and N. Popenko, Ukraine</i></p> <p>4. Multi-Band Impulse Filtered UWB Signal Transmission by Wideband Optical VCSEL Transmitter  <i>Gábor Fehér, Csaba Füzy, and Tibor Berceli, Hungary</i></p> <p>5. Ultrabroadband 4 x 4 Butler matrix with the use of multisection coupled-line directional couplers and phase shifters  <i>Krzysztof Wincza, Slawomir Gruszczynski, and Krzysztof Sachse, Poland</i></p>	<p><b>SESSION B4 - REMOTE SENSING OF THE ATMOSPHERE</b>  <b>Chairperson: Gaspare Galati (Italy)</b></p> <p>1. Polarimetric Passive Remote Sensing of Atmospheric Temperature at 60 GHz  <i>Robert McMillan (Invited), USA</i></p> <p>2. New Approach to Smoke Detection by Means of Doppler Radar  <i>A.G. Gorelik and S.F. Kolomiets, Russian Federation</i></p> <p>3. Profiling of rain parameters by double frequency radar  <i>A.Linkova,G.Khlopov, and O.Voitovych, Ukraine</i></p> <p>4. Connection of Reflected Radar Signal with Liquid-Hydrometeor Deformation Rate  <i>Yu.A. Averyanova, A.A. Averyanov, and F.J. Yanovsky, Ukraine</i></p> <p>5. Polarimetric method for remote predicting a zone of icing-in-flight in clouds and precipitation  <i>A.A. Pitertsev and F.J. Yanovsky, Ukraine</i></p>	<p><b>SESSION C4 - STATISTICAL SIGNAL PROCESSING</b>  <b>Chairperson: Igor Prokopenko (Ukraine)</b></p> <p>1. An Adaptive Meridian Estimator  <i>Dmitriy Kurkin, Alexey Roenko, and Vladimir Lukin, Ukraine</i>  <i>Igor Djurovič, Montenegro</i></p> <p>2. Robust Space-Time Adaptive Processing Against Doppler and Direction-of-Arrival Mismatch  <i>Moein Ahmadi and Kamal Mohamedpour, Iran</i></p> <p>3. Improving the Performance of Root-MUSIC via Pseudo-Noise Resampling and Conventional Beamformer  <i>V. Vasylyshyn, Ukraine</i></p> <p>4. Generalized Copula Ambiguity Function Application for Radar Signal Processing  <i>Zh. Bokal, R.B. Sinitsyn, and F.J. Yanovsky, Ukraine</i></p> <p>5. Circular Measurement Data Modeling and Statistical Processing in LabView  <i>Yuriy V. Kuts, Svetlana V. Shengur, and Leonid N. Scherbak, Ukraine</i></p>
<p><b>12:50</b></p>	<p style="text-align: center;"><b>Lunch</b></p>		

13:40-14:20	<p style="text-align: center;"><b>POSTER SESSION</b></p> <p><b><u>Chairperson: Yuliya Averyanova (Ukraine)</u></b></p> <ol style="list-style-type: none"> <li>1. On Longitudinal Electromagnetic Wave Formation due to Discrete Change of the Charge Density for Cases of Normal and Oblique Incidence of an Accelerated Point Charged Particle <i>S.D. Prijmenko, Ukraine</i></li> <li>2. Microwave Beamforming Networks Employing Rotman Lenses and Cascaded Butler Matrices for Automotive Communications Beam Scanning Electronically Steered Arrays <i>Ardavan Rahimian, UK</i></li> <li>3. Transformation of Mechanical Signals into Electrical Signals in Carbon Nanotubes Massive <i>D.E. Aznakayeva, G.Y. Mihaylova, M.M. Nischenko, Ukraine</i></li> <li>4. Underground Object Detection Based on Cross Correlation and Hough Transform <i>Jian Wang and Yi Su, China</i></li> <li>5. Nonlinear Interaction of Space Charge Waves of Millimeter Wave Range in Nonuniformn-GaN Films <i>V.V. Grimalsky, S.V. Koshevaya, G. Urquiza-Beltran, and A. Garcia-Barrientos, Mexico</i></li> <li>6. Conditional Linear Random Process as a Mathematical Model of Radar Noise <i>Mykhailo Fryz and Leonid Scherbak, Ukraine</i></li> <li>7. Modelling of radiating effects in transistors <i>K.B. Aldamzharov and A.A. Tujakbaev, Kazakhstan</i> <i>D.A. Tujakbaev, Turkey</i></li> <li>8. Methods of Processing of Broadband and Narrowband Radar Signals <i>Yuriy Kuts, Leonid Scherbak, and Ganna Sokolovska, Ukraine</i></li> <li>9. Comparative analysis of modern time-series analysis methods <i>A.V. Dergunov, Y.V. Kuts, and L.M. Shcherbak, Ukraine</i></li> <li>10. Compact Parabolic Reflector Antenna Design with Coscant-Squared Radiation Pattern <i>OkanYurduseven and OzanYurduseven, Turkey</i></li> <li>11. MIMO PCL in a Single Frequency Network <i>Mojtaba Radmard, Seyyed M. Karbasi, Babak H. Khalaj, and Muhammad M. Nayebi, Iran</i></li> <li>12. A novel mathematical approach for the problem of CFAR clutter model approximation <i>Giovanni Marino and Evan J. Hughes, UK</i></li> </ol>
14:20-16:00	<b>Excursion in the National Aviation University</b>
16:00	<b>Coffee-Break</b>

<p><b>16:20-18:00</b></p>	<p><b>SESSION A5 - COMPUTATIONAL ELECTROMAGNETICS AND EMC</b>  <b>Chairperson: Vladimir Ulansky (Libya)</b></p> <p>1. The integral equation technique: applications at THz, IR, and optical frequencies  <b>Guy Vandebosch</b> (Invited), <i>Niels Verellen, and Victor Moshchalkov, Belgium</i></p> <p>2. Analysis of Q-factor of dielectric resonator by means of fractional-rational approximation of reflection response  <b>M. V. Andreev, O.O. Drobakhin, D.Yu. Saltykov, and U.V. Zhernoklova, Ukraine</b></p> <p>3. Calculation of Reflection Coefficient of Complicated Inhomogeneous Layers Using Piecewise Constant and Piecewise Linear Approximation  <b>V. Borulko, O. Drobakhin, and D. Sidorov, Ukraine</b></p> <p>4. Radiation of a Current-Conductive 2D Object of a Complex Shape  <b>O.V. Vyshnevsky, Ukraine</b></p> <p>5. Compressed Sensing and r-Algorithms  <b>N.M. Glazunov, Ukraine</b></p>	<p><b>SESSION B5 - METEOROLOGICAL RADAR SIGNAL PROCESSING</b>  <b>Chairperson: Dmytro Vavriv (Ukraine)</b></p> <p>1. New approach for Fast Processing of Polarimetric Doppler Radar Signals  <b>K.I. Shelevytska, O.V. Semenova, I.V. Shelevytsky, and F.J. Yanovsky, Ukraine</b></p> <p>2. Spectral Moment Estimation of Weather Echoes in Pulsed Doppler Weather Radars: Mean Radial Velocity  <b>D.I. Lekhovytskiy, D.S. Rachkov, A.V. Semeniaka, V.P. Ryabukha, and D.V. Atamanskiy, Ukraine</b></p> <p>3. Spectral Moment Estimation of Weather Echoes in Pulsed Doppler Weather Radars: Mean Power  <b>D.I. Lekhovytskiy, D.S. Rachkov, A.V. Semeniaka, V.P. Ryabukha, and D.V. Atamanskiy, Ukraine</b></p> <p>4. Spectral Moment Estimation of Weather Echoes in Pulsed Doppler Weather Radars: Spectrum Width  <b>D.I. Lekhovytskiy, D.S. Rachkov, A.V. Semeniaka, V.P. Ryabukha, and D.V. Atamanskiy, Ukraine</b></p> <p>5. Signal Processing for DDV Estimation  <b>D.N. Glushko and F.J. Yanovsky, Ukraine</b></p>	<p><b>SESSION C5 - RADAR SIGNAL DETECTION AND CLUTTER</b>  <b>Chairperson: Joachim Schiller (Germany)</b></p> <p>1. Radar and Wind Turbines - RCS Theory and Results for Objects on the Ground and in Finite Distances  <b>Gerhard Greving</b> (Invited), <b>Germany</b></p> <p>2. Detection of Fluctuating Targets in the Presence of Clutter in HRR(High Range Resolution) RADARS Using the Hough Transform  <b>Vahid Riazi, Fariba Haghjoo, and Abbas Sheikhi, Iran</b></p> <p>3. Extraction of GLR Detector for Target Lines in the Range-Time Space of a Search RADAR  <b>S. Sharify, A. Moqiseh, and M.M. Nayebi, Iran</b></p> <p>4. Signal Detection in the Condition of Aprioristic Uncertainty of the Interference Characteristics  <b>I.G. Prokopenko, Ukraine</b></p>
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<p><b>Saturday, August 27, 2011</b></p>	
<p><b>9:00</b>  <b>Assembly Hall</b></p>	<p style="text-align: center;"><b>PLENARY SESSION AND CLOSING CEREMONY</b></p> <p><b>Chaipersons: Felix Yanovsky, Roberto Sorrentino</b></p> <p>1. PLENARY PRESENTATION: On the Signal Design for Multifunction/Multi-parameter Radar, <b>Gaspere Galati</b>, Tor Vergata University, Roma, <b>Italy</b></p> <p>2. EuMA Awards</p> <p>3. Closing Remarks</p>
<p><b>11:00-19:00</b></p>	<p style="text-align: center;"><b>Boat Trip along Dnieper River with Conference Dinner on the Island (swimsuit is recommended)</b></p> <p style="text-align: center;">The buses depart from the National Aviation University at 11:00</p>
<p><b>11:00-14:00</b></p>	<p style="text-align: center;"><b>Excursion to the State Museum of Aviation (for those who depart in the evening Saturday)</b></p> <p style="text-align: center;">The bus departs from the National Aviation University at 11:00</p>