

Time	E	B	C	D	F	G	(Extra Activities)
<b>Monday, May 14</b>							
12:15-13:15	L0: Lunch						
13:30-17:30	TUTORIAL1: <i>High-Efficiency RF and Microwave Power Amplifiers: Historical Aspect and Modern Trends</i>	TUTORIAL2: <i>Aperture Synthesis in Radar Technologies: Geometries, Models and imaging Algorithms</i>	TUTORIAL3: <i>5G Key Technologies: What They Have to Do With Antennas?</i>	TUTORIAL4: <i>Noise in Linear Circuits</i>			
20:15-22:30	Borówiec excursion 1 (limited availability)						
<b>Tuesday, May 15</b>							
08:30-10:10	M01: <i>Antenna design</i>	M02: <i>Passive components</i>	M03: <i>Antenna arrays</i>	M04: <i>Direction of arrival techniques</i>	U01: <i>Radiodiagnostic in space weather</i>	U02: <i>Electromagnetic field in everyday life</i>	
10:10-10:35	Coffee break						
10:35-12:15	OPEN: <i>MRW Opening Session</i>						
12:15-13:50	L1: Lunch						
13:50-15:30	PLENARY: <i>MRW Plenary session</i>						
15:30-15:55	Coffee break						
15:55-17:55						U04: <i>Integrated photonics</i>	
16:45-18:45	M05: <i>Six-ports</i>	M06: <i>GaN power amplifiers</i>	M07: <i>EM effects of wind turbines and wind farms</i>	M08: <i>Radar signal processing</i>	U03: <i>New tools for space plasma diagnostic</i>	KN URSI: <i>Polish National URSI Committee meeting</i>	CCM: <i>MTT-S Chapter Chair Meeting</i>
17:30-18:50							
19:00-21:00	Gala dinner/Beer evening						
<b>Wednesday, May 16</b>							
08:30-10:10	M09: <i>Antenna applications</i>	M10: <i>Simulation of passive components</i>	M11: <i>Infrared and Terahertz</i>	M12: <i>Passive radars</i>	U05: <i>Radio astronomy - from instruments to astrophysics</i>	U06: <i>Radio channel modelling in 5G networks</i>	
10:10-10:35	Coffee break						
10:35-12:15	M13: <i>Milimeter-wave antennas</i>	M14: <i>III-V Devices</i>	M15: <i>Industrial, scientific, medicine applications</i>	M16: <i>Radar imaging</i>	U07: <i>D2D Communications in the 5G Era</i>	U08: <i>Medical and biological physical systems</i>	
12:15-13:50	L2: Lunch, Poster1: <i>Posters 1</i> , Posters-URSI: <i>Posters-URSI</i>						
13:50-15:30	M17: <i>Planar antennas</i>	M18: <i>Space technology</i>	M19: <i>Accelerators</i>	M20: <i>Tracking</i>	J1: <i>SiGe Bi-CMOS mm-wave radar sensors</i>	U09: <i>Photonics in detection and monitoring</i>	
15:30-15:55	Coffee break						
15:55-17:35	M21: <i>Microwave antennas</i>	M22: <i>RF Subsystems</i>	M23: <i>Field theory and numerical techniques</i>	M24: <i>Noise radars</i>	J2: <i>Electromagnetic fields and waves in the ELF and VLF range</i>	U10: <i>Stochastic near-field UWB electromagnetic radiations</i>	
17:35-18:45							MIR-PAN: <i>Microwave and Radiolocation Section meeting</i>
18:00-21:00	YP: <i>IEEE Young Professionals Meet Up</i>						
20:15-22:30	Borówiec excursion 2 (limited availability)						
<b>Thursday, May 17</b>							
08:30-10:10	U11: <i>EMC of systems and devices</i>	M25: <i>Filters</i>	M26: <i>Amplifiers</i>	M27: <i>Radar systems and applications</i>	U12: <i>Signal processing for medicine</i>	U13: <i>Microsystems 1</i>	
10:10-10:35	Coffee break						
10:35-12:15	M28: <i>Material characterization</i>	M29: <i>Microwave measurements and signal processing applications</i>	M30: <i>Milimeter-wave and sub-THz technology</i>	M31: <i>Passive radars on moving platforms</i>	U14: <i>Dynamic spectrum access</i>	U15: <i>Microsystems 2</i>	
12:15-13:50	L3: Lunch, Poster2: <i>Posters 2</i>						
13:50-15:30	M32: <i>Antennas</i>	M33: <i>RCS measurements</i>	M34: <i>Terahertz technology</i>	TUTORIAL5: <i>Antenna systems and algorithms for microwave imaging</i>	U16: <i>Technology, scenarios and compatibility in 5G networks</i>	U17: <i>Computer vision and image processing with focus on deep learning</i>	
15:30-15:55	Coffee break						
15:55-17:35	CLOSING: <i>MRW Closing session</i>						

Monday, May 14, 12:15 - 13:15

L0: Lunch  TOP

Monday, May 14, 13:30 - 17:30

TUTORIAL1: High-Efficiency RF and Microwave Power Amplifiers: Historical Aspect and Modern Trends  TOP

Andrei Grebennikov

Room: E

Subject overview:

- Polyharmonic Class-F and inverse Class-F power amplifiers (1 hour)
- Switchmode Class-E power amplifiers (1 hour)
- High-efficiency Doherty amplifier architectures (1 hour)

Please register in system [COFFEE](#)

TUTORIAL2: Aperture Synthesis in Radar Technologies: Geometries, Models and imaging Algorithms  TOP

Andon Dimitrov Lazarov

Room: B

Synthetic Aperture Radar and Inverse Synthetic Aperture Radar (SAR/ISAR) systems are powerful instruments for monitoring and imaging of stationary and moving objects during throughout the day and all weather conditions. Range resolution is achieved by using high informative wideband frequency emitted signals subjected to compression. Cross-range or azimuth resolution is achieved by aperture synthesis.

- SAR/ISAR/BSAR geometry and kinematics description.
- SAR/ISAR/BSAR signal formation and image reconstruction as direct and inverse spatial transforms: analytical description.
- SAR/ISAR/BSAR signal modeling and imaging algorithms - numerical experiments.
- ISAR software system: blocks, functionalities (Matlab - Simulink implementation).

Please register in system [COFFEE](#)

TUTORIAL3: 5G Key Technologies: What They Have to Do With Antennas?  TOP

Youssef El Gholb

Room: C

What is the 5th generation (5G) wireless communication? Nobody could tell us an exact definition at present. However, some emerging and potential technologies have attracted more and more attention. Of which, massive MIMO, millimetre wave, Beamforming, Full Duplex technologies are considered to be the key technologies for 5G wireless communications. Traditionally, the antenna in mobile communication systems is a passive element and generally is separated from the RF transceivers. To design the future antennas for mobile terminals, not only the bandwidth and antenna efficiency need to be acceptable, but also beam pointing and beam coverage is essential knowledge of the mobile channel. It is expected that the antennas or the antenna system will be adaptive. Moreover, the antennas or the system should not only cover the new frequency bands but also can be tightly integrated with the existing systems (4G) and evolutions of the 4G system primarily at the conventional sub-6 GHz bands. Several structures are available for designing multiband antenna such as planar inverted-F antenna (PIFA), monopole antenna and slot antenna etc. For example, by using monopole element, multiple resonances can be excited to cover large bands with reasonable system size. Moreover, at either lower microwave band or millimetre wave band, the antenna will be seamlessly integrated with RF transceivers and even with RoF or ADC (DAC) and E/O (O/E). Nowadays, for instance, mobile phones are required to be thin, elegant and have metal body along with other electrical requirements such as supporting multiple radios, large battery, high resolution display and camera etc. Several multiband antennas are required with sufficient isolation between them to support multiple radios and are essential for multifunctional devices. Therefore, the antenna for 5G communication systems will have distinct characteristics compared to traditional antennas. The tutorial will focus on the recent research advances in 5G antennas in interaction with the 5G Key technologies ingredients. It will be a good opportunity for students, professors and researchers in the field to brainstorm on and to identify the antenna's requirements to satisfy the 5G key emerging technologies.

Please register in system [COFFEE](#)

TUTORIAL4: Noise in Linear Circuits  TOP

Marian W. Pospieszalski

Room: D

The tutorial will address both theoretical and specific technical concepts encountered in the analysis, measurement and design of linear noisy circuits. Although the material to be presented can be found in many published books and papers, it is usually broadly scattered and not necessarily presented in orderly sequence. It will cover tutorial exposition of some key physical and network theoretic ideas as applied to practical models, circuits and measurement methods. It is therefore addressed to those interested in developing a good understanding of noise in microwave devices and circuits. The subjects to be covered are:

- Physical sources of noise
- Noise analysis of linear networks
- Noise measurement
- Noise models of microwave transistors
- Low-noise amplifiers
- Miscellaneous topics: Mixer as linear noisy two port, Introduction to radiometry

Please register in system [COFFEE](#)

Monday, May 14, 20:15 - 22:30

Borowiec excursion 1 (limited availability)  TOP

Rooms: E, B, C, D, F, G

Excursion to Astrogeodynamic Observatory in Borowiec:

- Cesium fountain (precise time reference installation)
- LOFAR (Low Frequency ARray) instrument
- Space debris tracking lasers
- Radiotelescope

One group of 45 people can visit the Observatory this night. Please register in system [COFFEE](#)

## Tuesday, May 15

Tuesday, May 15, 08:30 - 10:10

### M01: Antenna design



Room: E

Chairs: Alexander Yarovoy (TU Delft, The Netherlands), Włodzimierz Zieniutycz (Gdansk University of Technology, Poland)

Antenna design

- 08:30** *On Low-Fidelity Models for Variable-Fidelity Simulation-Driven Design Optimization of Compact Wideband Antennas*  
[Sławomir Koziel](#) and [Sigmar Unnsteinsson](#) (Reykjavik University, Iceland); [Adrian Bekasiewicz](#) (Gdansk University of Technology, Poland)
- 08:50** *Modeling and Analysis of the Impact of Reference Planes of Quasi Half Loop Bond Wire Antennas*  
[Ivan Ndjip](#), [Le Thi Huyen](#) and [Klaus-Dieter Lang](#) (Fraunhofer IZM, Germany)
- 09:10** *Implementation of the Theory of Characteristic Modes into Antenna Modeling Tools AToM and Visual Antenna*  
[Michal Masek](#) (Czech Technical University in Prague, Czech Republic); [Jaroslav Rymus](#) (MECAS ESI, Czech Republic); [Pavel Hazdra](#) and [Miloslav Capek](#) (Czech Technical University in Prague, Czech Republic)
- 09:30** *A Broadband Dual-Polarized Antenna with L-shaped Slots*  
[Wei Shi](#) and [Qing-Xin Chu](#) (South China University of Technology, P.R. China)
- 09:50** *Topological Modifications for Performance Improvement and Size Reduction of Wideband Antenna Structures*  
[Adrian Bekasiewicz](#) (Gdansk University of Technology, Poland); [Sławomir Koziel](#) (Reykjavik University, Iceland)

### M02: Passive components



Room: B

Chairs: Dmitry Kholodnyak (St. Petersburg Electrotechnical University, Russia), Rafal Lech (Gdansk University of Technology, Poland)

- 08:30** *A Novel Microstrip Dual-Layer Rat-Race Coupler with Compact Size and Enhanced Bandwidth*  
[Adrian Bekasiewicz](#) (Gdansk University of Technology, Poland); [Sławomir Koziel](#) (Reykjavik University, Iceland)
- 08:50** *Coupled-Line Sensor Setup with Liquids and Solids Permittivity Sensing Capability Developed with the Use of 3D Printing Technology*  
[Iłona Piekarz](#), [Jakub Sorocki](#), [Krzysztof Wincza](#) and [Sławomir Gruszczynski](#) (AGH University of Science and Technology, Poland)
- 09:10** *3D Printed Circular and Rectangular Waveguide Mode Converters*  
[Przemysław Piasecki](#) and [Jakub Strycharz](#) (PIT-Radwar, Poland)
- 09:30** *Design of Immittance Inverters and Phase Inverters with Non-Foster Elements*  
[Bair Buyantuev](#) and [Dmitry Kholodnyak](#) (St. Petersburg Electrotechnical University, Russia)
- 09:50** *Design and Implementation of a RF Energy Harvesting Module with DC Power Control*  
[Hakan P Partal](#) (Syracuse University & Radarcomm. LLC, USA); [Sibel Zorlu-Partal](#) (Yıldız Technical University, Turkey); [Mehmet Belen](#) (Artvin Çoruh University, Turkey)

### M03: Antenna arrays



Room: C

Chairs: Sławomir Gruszczynski (AGH University of Science and Technology, Poland), Edward Sedek (PIT-RADWAR S.A., Poland)

- 08:30** *Traveling-Wave Microstrip Array Antenna Using Substrate Integrated Waveguide*  
[Mehmet Belen](#) (Artvin Çoruh University, Turkey)
- 08:50** *Design of Multiband Sierpinski Fractal Carpet Antenna Array for C-Band*  
[Wojciech Krzysztofik](#) (Wrocław University of Technology, Poland); [Thanh Nghia Cao](#) (Wrocław University of Science and Technology Wrocław, Poland & Vinh University, Vietnam)
- 09:10** *A Novel Yin-Yang Fractal Antenna for Multiband Applications in Communication*  
[Elham Serria](#) and [Mousa Hussein](#) (UAE University, United Arab Emirates)
- 09:30** *X Band Patch Array Antenna Design for Marine Radar Application*  
[Mustafa Pehlivan](#), [Yavuz Aşçı](#) and [Korkut Yegin](#) (Ege University, Turkey); [Caner Ozdemir](#) (Mersin University, Turkey)
- 09:50** *The Investigation of Mutual Coupling Effects on a Large Array Antenna Radiation Pattern*  
[Adam Raniżewski](#) and [Przemysław Piasecki](#) (PIT-RADWAR S.A., Poland)

### M04: Direction of arrival techniques



Room: D

Chairs: Krzysztof Kulpa (Warsaw University of Technology, Poland), Pierfrancesco Lombardo (University of Rome La Sapienza, Italy)

- 08:30** *TDOA Estimation Using a Pair of Synchronized DW1000 Based Anchor Nodes*  
[Vítomir Djaia-Josko](#) (Institute of Radioelectronics and Multimedia Technology, Warsaw University of Technology, Poland); [Jerzy Kolakowski](#) and [Jozef Modelski](#) (Warsaw University of Technology, Poland)

**08:50 [APPR DoA Estimation Algorithm for Smart Antenna](#)**

[Henna Paaso](#) (VTT, Finland)

**09:10 [A Novel Calibration Method for RSS-Based DoA Estimation Using ESPAR Antennas](#)**

[Marek Plotka](#), [Michał Tarkowski](#), [Krzysztof Nyka](#) and [Lukasz Kulas](#) (Faculty of Electronics, Telecommunications and Informatics, Gdansk University of Technology)

**09:30 [Influence of ESPAR Antenna Radiation Patterns Shape on PPCC-Based DoA Estimation Accuracy](#)**

[Mateusz Rzymowski](#) and [Lukasz Kulas](#) (Faculty of Electronics, Telecommunications and Informatics, Gdansk University of Technology)



**U01: Radiodiagnostic in space weather**

Room: F

Chairs: [Mariusz Pożoga](#) (Polish Academy of Sciences, Poland), [Iwona Stanisławska](#) (Space Research Centre - Polish Academy of Sciences, Poland)

**08:30 [Observations of the AKR and the AKR-like Emissions](#)**

[Michał Marek](#) (Space Research Centre, Polish Academy of Sciences, Poland); [Barbara Matyjasiak](#) (Space Research Centre Polish Academy of Sciences, Poland); [Hanna Rothkaehl](#) (Space research centre - Polish Academy of Sciences, Poland); [Dorota Przepiórka](#) (Polish Academy of Sciences, Poland); [Roman Schreiber](#) (Space Research Centre Polish Academy of Sciences, Poland)

**08:46 [Observations of the Interstellar Scattering of Pulsars with the POLFAR Stations](#)**

[Wojciech Lewandowski](#) (University of Zielona Gora, Poland); [Leszek Blaszkiewicz](#) (University of Warmia and Mazury in Olsztyn, Poland); [Bartosz Smierciak](#) (Jagiellonian University, Poland); [Mariusz Pożoga](#) (Polish Academy of Sciences, Poland); [Jarosław Kijak](#) (University of Zielona Gora, Poland); [Andrzej Krankowski](#) (University of Warmia and Mazury in Olsztyn, Poland); [Krzysztof Chyży](#) (Jagiellonian University, Poland); [Hanna Rothkaehl](#) (Space research centre - Polish Academy of Sciences, Poland); [Robert Pękal](#) (Poznan Supercomputing and Networking Center, Poland); [Tomasz Sidorowicz](#) (University of Warmia and Mazury, Poland); [Marek Sendyk](#) (University of Zielona Gora, Poland); [Małgorzata Curyło](#) (Jagiellonian University, Poland); [Barbara Matyjasiak](#) (Space Research Centre Polish Academy of Sciences, Poland)

**09:02 [LOFAR4SpaceWeather: Towards Space Weather Monitoring with Europe's Largest Radio Telescope](#)**

[Richard Fallows](#) (ASTRON, The Netherlands); [Rene Vermeulen](#) (ASTRON - the Netherlands Institute for Radio Astronomy, The Netherlands); [Mario Bisi](#) (RAL Space, United Kingdom (Great Britain)); [Nicole Vilmer](#) (Observatoire de Paris, France); [Hanna Rothkaehl](#) (Space research centre - Polish Academy of Sciences, Poland); [Joris Verbiest](#) (Fakultät für Physik, Universität Bielefeld, Germany); [Peter Gallagher](#) (Trinity College Dublin, Ireland); [Michael Olberg](#) (Onsala Space Observatory, Sweden); [Maaijke Mevius](#) (ASTRON - the Netherlands Institute for Radio Astronomy, The Netherlands)

**09:18 [Anisotropy of Ionospheric Irregularities Theoretical and Experimental Results](#)**

[Marcin Grzesiak](#), [Dorota Przepiórka](#) and [Mariusz Pożoga](#) (Polish Academy of Sciences, Poland); [Barbara Matyjasiak](#) (Space Research Centre Polish Academy of Sciences, Poland); [Hanna Rothkaehl](#) (Space research centre - Polish Academy of Sciences, Poland)

**09:34 [Diagnostics of the Large Subauroral Ionospheric Structures on the Example of the Main Ionospheric Trough](#)**

[Barbara Matyjasiak](#) (Space Research Centre Polish Academy of Sciences, Poland); [Dorota Przepiórka](#) (Polish Academy of Sciences, Poland); [Hanna Rothkaehl](#) (Space research centre - Polish Academy of Sciences, Poland)

**09:50 [Delayed Response of the Ionospheric Weather to Five the Most Powerful Geomagnetic Superstorms](#)**

[Oksana Grynyshyna-Poliuga](#) (Space Research Centre PAS, Poland); [Iwona Stanisławska](#) (Space Research Centre - Polish Academy of Sciences, Poland)



**U02: Electromagnetic field in everyday life**

Room: G

Chairs: [Grzegorz Cieslar](#) (Medical University of Silesia in Katowice, Poland), [Aleksander Sieron](#) (Medical University of Silesia in Katowice, Poland)

**08:30 [Impact of Chronic Exposure to Static, High Voltage Electric Field Generated Nearby HVDC Transmission Lines on Behavior of Rats](#)**

[Grzegorz Cieslar](#) (Medical University of Silesia in Katowice, Poland); [Paweł Sowa](#) (Silesian University of Technology in Gliwice, Poland); [Karolina Sieron](#) and [Aleksander Sieron](#) (Medical University of Silesia in Katowice, Poland)

**08:50 [Effect of 50 Hz Electromagnetic Field Generated Nearby High Voltage Alternating Current Transmission Lines on Prooxidant Antioxidant Balance in Selected Internal Organs of Rats](#)**

[Paweł Sowa](#) (Silesian University of Technology in Gliwice, Poland); [Grzegorz Cieslar](#), [Aleksander Sieron](#) and [Karolina Sieron](#) (Medical University of Silesia in Katowice, Poland)

**09:10 [Impact of High Frequency Electromagnetic Field Generated by Mobile Phone on Prooxidant Antioxidant Balance in Stomach of Rats](#)**

[Karolina Sieron](#), [Aleksander Sieron](#) and [Grzegorz Cieslar](#) (Medical University of Silesia in Katowice, Poland); [Paweł Sowa](#) (Silesian University of Technology in Gliwice, Poland)

**09:30 [Simplified Numerical Models for Simulations of 5G Systems Interaction with Human Body](#)**

[Lukasz Januszkiewicz](#) (Lodz University of Technology, Institute of Electronics, Poland)

**09:50 [Electricity in Medicine](#)**

[Aleksander Sieron](#), [Grzegorz Cieslar](#) and [Karolina Sieron](#) (Medical University of Silesia in Katowice, Poland); [Paweł Sowa](#) (Silesian University of Technology in Gliwice, Poland)

**Tuesday, May 15, 10:35 - 12:15**



**OPEN: MRW Opening Session**

Earth Hall

Chairs: [Franco Giannini](#) (University of Tor Vergata, Rome, Italy), [Jozef Modelski](#) (Warsaw University of Technology, Poland)

**10:35 [Welcome Address by prof. Elżbieta Frąckowiak \(Polish Academy of Sciences\)](#)**

**10:50 [Greetings - Dominique Schreurs \(MTT-S\), Wolfgang Heinrich \(EuMA\)](#)**

**11:10 [Extremely Low-Noise Cryogenic Amplifiers for Radio Astronomy: Past, Present and Future](#)**

[Marian Pospieszalski](#) (National Radio Astronomy Observatory, USA)

**11:40 [Radar Systems for Space Observation](#)**

[Peter Knott](#) (Fraunhofer FHR, Germany)

Tuesday, May 15, 12:15 - 13:50

L1: Lunch 

Tuesday, May 15, 13:50 - 15:30

PLENARY: MRW Plenary session 

Earth Hall

Chairs: Krzysztof Kulpa (Warsaw University of Technology, Poland), Robert Weigel (Friedrich-Alexander Universität Erlangen-Nürnberg, Germany)

**13:50 InP DHBT Integrated Circuits for High Speed and Low Power Applications**

Agnieszka Konczykowska and Jean-Yves Dupuy (III-V Lab, France); Filipe Jorge and Muriel Riet (Alcatel Thales III-V Lab, joint la: Bell Labs and Thales Research and Technology, France); Virginie Nodjadjim (Alcatel-Thales 3-5 Lab, France)

**14:20 Trends for Airborne and Spaceborne Connectivity**

Volker Ziegler (AIRBUS Group Innovations, Germany)

**14:50 Sub-Nyquist and Cognitive Radar**

Yonina C. Eldar (Technion-Israel Institute of Technology, Israel)

Tuesday, May 15, 15:55 - 17:55

M05: Six-ports 

Room: E

Chairs: Alexander Koelpin (BTU & Chair for Electronics and Sensor Systems, Germany), Andrzej A. Kucharski (Wroclaw University of Technology, Poland)

**15:55 A Review of the Six-Port Technique for Metrology Applications**

Kamel Haddadi (University of Lille1/IEMN CNRS8520, France); Christophe Loyez (University of Lille, France); Simon Lallemand (SEGULA France, France)

**16:15 A Review on Six-Port Radar and Its Calibration Techniques**

Sarah Linz and Fabian Lurz (University of Erlangen-Nuremberg, Germany); Robert Weigel (Friedrich-Alexander Universität Erlangen-Nürnberg, Germany); Alexander Koelpin (BTU & Chair for Electronics and Sensor Systems, Germany)

**16:35 Monolithically Integrated Dual Polarization Six-Port Receiver for Fiber Optics Coherent Communications**

I. Molina-Fernández (University of Malaga & Escuela de Ingeniería de Telecomunicación de la Universidad de Malaga, Spain); Pedro Reyes (University of Malaga, Spain); Alejandro Ortega-Moñux and Robert Halir (Universidad de Málaga, Spain); Carlos Alberto Alonso Ramos (University of Málaga, Spain)

**16:55 Compact PCB Delay Line for Six-Port Based Instantaneous Frequency Measurement**

Fabian Lurz (University of Erlangen-Nuremberg, Germany); Benedict Scheiner (Friedrich Alexander University Erlangen Nürnberg, Germany); Sarah Linz (University of Erlangen-Nuremberg, Germany); Robert Weigel (Friedrich-Alexander Universität Erlangen-Nürnberg, Germany); Alexander Koelpin (BTU & Chair for Electronics and Sensor Systems, Germany)

**17:15 Application of 3 x 3 Butler Matrix in Wideband Measurements of Scattering Parameters**

Kamil Staszek, Krzysztof Wincza and Slawomir Gruszczynski (AGH University of Science and Technology, Poland)

**17:35 Photodiode Model for Multiport Modulator Design**

Adriana Serban (Linköping University, Sweden); Shaofang Gong (Linköping University, Sweden)

Tuesday, May 15, 15:55 - 17:35

M06: GaN power amplifiers 

Room: B

Chairs: Wolfgang Heinrich (Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik, Germany), Herbert Zirath (Chalmers University of Technology, Sweden)

**15:55 GaN Pushing the Limits of High-Speed Switching**

Wolfgang Heinrich, Nikolai Wolff, Olof Bengtsson, Thomas Hoffmann, Florian Hühn, Armin Liero and Andreas Wentzel (Ferdinand-Braun-Institut, Leibniz-Institut für Höchstfrequenztechnik, Germany)

**16:15 A Single Module Compact Efficient Harmonic Tuned 160W Power Amplifier for GPS Application**

Abdul Ali and Elisa Cipriani (University of Rome Tor Vergata, Italy); Paolo Colantonio (University of Roma Tor Vergata, Italy)

**16:35 Pulsed Measurements of Transmittance Deviations of Power Amplifiers for T/R Modules**

Dawid Kuchta, Daniel Gryglewski and Wojciech Wojtasiak (Warsaw University of Technology, Poland)

**16:55 A Hybrid Two Stage 20-W GaN HEMT Ku-Band Power Amplifier for Very Small Aperture Terminals**

Felix Rautschke, Daniel Maassen and Sönke Vehrung (Berlin Institute of Technology, Germany); Georg Boeck (TU Berlin, Germany)

**17:15 Highly Efficient Harmonic-Tuned GaN HEMT Power Amplifier for a 2.45 GHz ISM Band**

Marcin Goralczyk (Warsaw University of Technology, Poland)

M07: EM effects of wind turbines and wind farms 

Room: C

Chairs: Laith Danoon (University of Manchester, United Kingdom (Great Britain)), Frank Weinmann (Fraunhofer FHR, Germany)

**15:55 Radar micro-Doppler of Wind Turbines: Low-Frequency Polarimetric Extension of Simplified Analytical Model**

Kajengkhombi Chanu Wangkheimayum and Oleg Krasnov (Delft University of Technology, The Netherlands); Alexander Yarovoy (TU Delft, The Netherlands)

**16:15 *VOR Times Series for an Aircraft Trajectory in the Presence of Wind Turbines***  
Seif Ben Hassine, Alexandre Chabory, Christophe Morlaas and [Remi Douvenot](#) (ENAC, France)

**16:35 *Radar Demonstrator for Bird Monitoring in Wind Farms***  
[Christoph Wasserzier](#) (Fraunhofer Institute for High Frequency Physics and Radar Techniques FHR, Germany); [Taher Badawy](#) and [Jasmin Klimek](#) (Fraunhofer Institute for High Frequency Physics FHR, Germany); [Michael Caris](#), [Heiner Kuschel](#) and [Thomas Bertuch](#) (Fraunhofer FHR, Germany); [Claudius Loecker](#) (Fraunhofer Institute of High Frequency Technology and Radar Techniques FHR, Germany); [Frank Kloeppel](#) (Fraunhofer FHR, Germany); [Jörn Wilcke](#) and [Annkathrin Saalman](#) (Fraunhofer Institute for High Frequency Physics FHR, Germany)

**16:55 *Reducing the Effect of Offshore Wind Farms on the REWS CFAR Detection Threshold***  
[Laith Danoon](#) and [Anthony Keith Brown](#) (University of Manchester, United Kingdom (Great Britain))



#### M08: Radar signal processing

Room: D

Chairs: [Adam Kawalec](#) (Military University of Technology, Poland), [Jacek Misiurewicz](#) (Warsaw University of Technology, Poland)

**15:55 *Classification of Ground Moving Radar Targets Using Convolutional Neural Network***  
[Esra Al Hadhrami](#) (Emirates Technology and Innovation Center (ETIC) & Khalifa University, United Arab Emirates); [Maha Al Mufti](#) (ETIC/Khalifa University of Science Technology and Research, United Arab Emirates); [Bilal Taha](#) and [Naoufel Werghi](#) (Khalifa University, United Arab Emirates)

**16:15 *Probability of Detection for Swerling Model Fluctuating Targets with a Square-Law Detector and Different Signal to Noise Ratios***  
[Rami Kassab](#), [Thomas Boutin](#) and [Claude Adnet](#) (Thales Air Systems, France)

**16:35 *Helicopter Identification Using Blade Flash Sequence Matching***  
[Kamil Stawiarski](#) (Gdansk University of Technology, Faculty of Electronics, Telecommunications and Computer Science & PIT-RADWAR S.A., Poland); [Michał Meller](#) (Gdansk University of Technology, Poland)

**16:55 *A New Memory Based Ordered Statistic-CFAR Processing for Coherent Detection***  
[Stephane Kemkemian](#), [Vincent Corretja](#) and [Julien Petitjean](#) (Thales Systèmes Aéroportés, France)

**17:15 *Recognition of Signals with Time-Varying Spectrum Using Time-Frequency Transformation with Non-Uniform Sampling***  
[Ewa Swiercz](#) (Białystok University of Technology, Poland)



#### U03: New tools for space plasma diagnostic

Room: F

Chairs: [Gottfried Mann](#) (Leibniz-Institut für Astrophysik Potsdam, Germany), [Hanna Rothkaehl](#) (Space research centre - Polish Academy of Sciences, Poland)

**15:55 *LOFAR Observations of the Quiet Solar Corona***  
[Christian Vocks](#) (Leibniz-institut fuer Astrophysik Potsdam, Germany); [Gottfried Mann](#) (Leibniz-Institut für Astrophysik Potsdam, Germany); [Mario Bisi](#) (RAL Space, United Kingdom (Great Britain)); [Eoin Carley](#) (Trinity College Dublin, Ireland); [Bartosz Dabrowski](#) (University of Warmia and Mazury, Poland); [Richard Fallows](#) (ASTRON, The Netherlands); [Peter Gallagher](#) (Trinity College Dublin, Ireland); [Andrzej Krankowski](#) (University of Warmia and Mazury in Olsztyn, Poland); [Jasmina Magdalenic](#) and [Christophe Marque](#) (Royal Observatory of Belgium, Belgium); [Diana Morosan](#) (Trinity College Dublin, Ireland); [Hanna Rothkaehl](#) (Space research centre - Polish Academy of Sciences, Poland); [Pietro Zucca](#) (ASTRON, Germany)

**16:15 *LOFAR Single Station Analysis of Scattered Radio Signal***  
[Mariusz Pożoga](#) (Polish Academy of Sciences, Poland); [Barbara Matyjasik](#) (Space Research Centre Polish Academy of Sciences, Poland); [Hanna Rothkaehl](#) (Space research centre - Polish Academy of Sciences, Poland); [Marcin Grzesiak](#) (Polish Academy of Sciences, Poland); [Roman Wronowski](#) (Space Research Centre Polish Academy of Science, Poland); [Dorota Przepiórka](#) (Polish Academy of Sciences, Poland); [Katarzyna Budzinska](#) (Space Research Centre Polish Academy of Science, Poland)

**16:35 *Tracking of an Electron Beam Through the Solar Corona with LOFAR***  
[Gottfried Mann](#) (Leibniz-Institut für Astrophysik Potsdam, Germany); [Christian Vocks](#) (Leibniz-institut fuer Astrophysik Potsdam, Germany); [Mario Bisi](#) (RAL Space, United Kingdom (Great Britain)); [Eoin Carley](#) (Trinity College Dublin, Ireland); [Bartosz Dabrowski](#) (University of Warmia and Mazury, Poland); [Richard Fallows](#) (ASTRON, The Netherlands); [Peter Gallagher](#) (Trinity College Dublin, Ireland); [Andrzej Krankowski](#) (University of Warmia and Mazury in Olsztyn, Poland); [Jasmina Magdalenic](#) and [Christophe Marque](#) (Royal Observatory of Belgium, Belgium); [Diana Morosan](#) (Trinity College Dublin, Ireland); [Hanna Rothkaehl](#) (Space research centre - Polish Academy of Sciences, Poland); [Pietro Zucca](#) (ASTRON, Germany)

**16:55 *Scintillation Effects of Scattered Electromagnetic Waves in the Ionospheric Plasma***  
[George V. Jandieri](#) (Institute of Cybernetics & Georgian Technical University, Georgia); [Banmali S. Rawat](#) (University of Nevada, Reno, USA)

**17:15 *Towards the New Era of Low-Frequency Radio Astronomy: Studying the Stephan's Quintet at (Really) Long Waves***  
[Błażej Nikiel-Wroczyński](#) (Astronomical Observatory, Jagiellonian University, Poland); [Marian Soida](#) (Jagiellonian University, Poland)

Tuesday, May 15, 15:55 - 17:15



#### U04: Integrated photonics

Room: G

Chairs: [Zygmunt Mierczyk](#) (Military University of Technology, Poland), [Ryszard Piramidowicz](#) (Warsaw University of Technology, Poland)

**15:55 *Photonic Integrated Circuits - Rising Solutions for Telecommunication and Sensing***  
[Ryszard Piramidowicz](#), [Stanisław Stopiński](#), [Anna Jusza](#), [Krzysztof Anders](#), [Andrzej Kaźmierczak](#), [Aleksandra Pańnikowska](#), [Mateusz Słowikowski](#) and [Witold Pleskacz](#) (Warsaw University of Technology, Poland)

**16:15 *Photonic Integrated Circuits for Application in Modern Inertial Measurement Units***  
[Stanisław Stopiński](#), [Anna Jusza](#) and [Ryszard Piramidowicz](#) (Warsaw University of Technology, Poland)

**16:35 *PIC-based Readout Units for FBG Sensors Interrogation***  
[Andrzej Kaźmierczak](#), [Stanisław Stopiński](#), [Anna Jusza](#), [Krzysztof Anders](#) and [Mateusz Słowikowski](#) (Warsaw University of Technology, Poland); [Mariusz Krej](#) and [Łukasz Dziuda](#) (Military Institute of Aviation Medicine, Warsaw, Poland); [Ryszard Piramidowicz](#) (Warsaw University of Technology, Poland)

**16:55 *Integrated Transceivers for WDM-PON Access Systems***  
[Aleksandra Pańnikowska](#), [Stanisław Stopiński](#), [Krzysztof Anders](#), [Anna Jusza](#) and [Ryszard Piramidowicz](#) (Warsaw University of Technology, Poland); [Marcin Tomkiewicz](#) (FCA Ltd., Poland)

Tuesday, May 15, 16:45 - 18:45

CCM: MTT-S Chapter Chair Meeting



Jan Machac

Room: (Extra activities)

Tuesday, May 15, 17:30 - 18:50

KN URSI: Polish National URSI Committee meeting



Room: G

Tuesday, May 15, 19:00 - 21:00

Gala dinner/Beer evening



## Wednesday, May 16

Wednesday, May 16, 08:30 - 10:10

M09: Antenna applications



Room: E

- 08:30 *An Iterative Technique to Retrieve the Planar Wide-Mesh Scanning Near-Field Data from Those Affected by an Inaccurate Positioning***  
Francesco D'Agostino, Flaminio Ferrara, Claudio Gennarelli, Rocco Guerriero and Massimo Miglozzi (University of Salerno, Italy)
- 08:50 *Dual Band GNSS Antenna for Missile Applications***  
Olcaý Yiğit, Korkut Yegin and Yavuz Aşçı (Ege University, Turkey)
- 09:10 *3D Co-Site Interference Modeling Between Aircraft Antennas for the Purpose of Their Best Placement***  
Alexander V. Vishnevsky and Vladimir A. Ivanov (National Aviation University, Ukraine)
- 09:30 *Investigation of Electrical Properties of Fully Wearable Antenna for ISM Applications***  
Mohamed Ahmed (Electronics Research Institute, Egypt); Mai Fouad (Zagazig University, Faculty of Engineering, Egypt); Abd elhamid Shalaan (Zagazig University, Egypt)
- 09:50 *Broadband Quasi-optical sub-THz Detector Based on GaAs HEMT***  
Paweł Kopyt and Bartłomiej Salski (Warsaw University of Technology, Poland); Przemysław Zagrajek (Military Institute of Technology, Poland); Jan Bar and Dariusz Obrebski (Institute of Electron Technology, Poland); Jerzy Cuper (Warsaw University of Technology, Poland)

M10: Simulation of passive components



Room: B

Chairs: Krzysztof Wincza (AGH University of Science and Technology, Poland), Jerzy Julian Michalski (SpaceForest, Poland)

- 08:30 *A Novel Dual-Band Rectifier Circuit with Enhanced Bandwidth for RF Energy Harvesting Applications***  
Tologon Karataev and Adrian Bekasiewicz (Gdansk University of Technology, Poland); Sławomir Koziół (Reykjavik University, Iceland)
- 08:50 *Simulation Optimization of H-Plane Waveguide Filters - A New Approach***  
Przemysław Miazga (Warsaw University of Technology, Poland)
- 09:10 *An Analysis of Cylindrical Posts of Arbitrary Convex Cross Sections Located in Waveguide Junctions with the Use of Field Matching Method***  
Maciej Jasinski, Sebastian Dziedziewicz, Piotr Kruczynski, Rafal Lech and Piotr Kowalczyk (Gdansk University of Technology, Poland)
- 09:30 *Multipoint Excitation in the FDTD Eigenmode Port Template Generation***  
Maciej Sypniewski (Warsaw University of Technology, Poland)
- 09:50 *EM-Driven Topology Evolution for Bandwidth Enhancement of Hybrid Quadrature Patch Couplers***  
Adrian Bekasiewicz (Gdansk University of Technology, Poland); Sławomir Koziół (Reykjavik University, Iceland)

M11: Infrared and Terahertz



Devices and systems

Room: C

Chairs: Piotr Samczynski (Warsaw University of Technology, Poland), Norbert Pałka (Military University of Technology in Warsaw, Poland)

- 08:30 *Face Re-Identification in Thermal Infrared Spectrum Based on ThermalFaceNet Neural Network***  
Artur Grudzień, Marcin Kowalski and Norbert Pałka (Military University of Technology in Warsaw, Poland)
- 08:50 *Infrared-radio Wireless Communication System***  
Janusz Mikołajczyk, Beata Rutecka and Dariusz Szabra (Military University of Technology, Poland); Jacek Wojtas (Institute of Optoelectronics, Military University of Technology, Poland); Zbigniew Zawadzki and Zbigniew Bielecki (Military University of Technology, Poland)
- 09:10 *Optics for Free Space THz Transmission***  
Michał Walczakowski, Przemysław Zagrajek and Marek Piszczek (Military University of Technology, Poland); Jarosław Suszek (Warsaw University of Technology, Poland); Maciej Sypek (Ortech, Poland); Norbert Pałka (Military University of Technology in Warsaw, Poland)
- 09:30 *Carrier Trapping in the Terahertz Bow-Tie Diode Based on AlGaIn/GaN-heterostructures***  
Sandra Pralgauskaitė (Vilnius University, Lithuania); Kestutis Ikamas (Vilnius University & The General Jonas Žemaitis Military Academy of Lithuania, Lithuania); Jonas Matukas and Alvydas Lisauskas (Vilnius University, Lithuania); Vytautas Jakštis and Vytautas Janonis (Center for Physical Sciences and

Technology, Lithuania); Irmantas Kašalynas (Center for Physical Science and Technology, Lithuania); Paweł Prystawko and Michał Leszczynski (Institute of High Pressure Physics UNIPRESS, Poland)

**09:50 [NDIR-sensor Based Control System of Precise Human Breath Sampling for Gaseous Biomarkers Analyzers in Medical Applications](#)**  
[Artur Prokopiuk](#) and Jacek Wojtas (Institute of Optoelectronics, Military University of Technology, Poland)

## M12: Passive radars



Room: D

Chairs: Tadeusz Brenner (PIT-RADWAR S.A., Poland), Maria -Pilar Jarabo-Amores (Alcala university, Spain)

**08:30 [Impact of Beacon Interval on the Performance of WiFi-based Passive Radar Against Human Targets](#)**

[Ileana Milani](#) (Sapienza University of Rome, Italy); Fabiola Colone (University of Rome "La Sapienza", Italy); Carlo Bongioanni (Sapienza University of Rome, Italy); Pierfrancesco Lombardo (University of Rome La Sapienza, Italy)

**08:50 [Separation of GPS Signals in FSR System](#)**

[Hristo A. Kabakchiev](#) (Sofia University "St. Kliment Ohridski", Bulgaria); Vara Behar (Institute of Information and Communication Technologies, Bulgaria); Ivan Garvanov (University of Library Studies and Information Technologies, Bulgaria); Dorina Kabakchieva (University of National and World Economy, Bulgaria); Kalin Kabakchiev (Birmingham University, GB); Hermann Rohling (Technical University Hamburg-Harburg, Germany); Krzysztof Kulpa (Warsaw University of Technology, Poland); Alexander Yarovoy (TU Delft, The Netherlands)

**09:10 [Advantages of Non-Uniform Linear Arrays Based on COTS Elements in Passive Radar Applications](#)**

[Javier Rosado-Sanz](#) and Nerea del Rey-Maestre (University of Alcala, Spain); Maria -Pilar Jarabo-Amores (Alcala university, Spain); David Mata-Moya and Manuel Rosa (University of Alcalá, Spain); Jose Luis Bárcena-Humanes (University of Alcala, Spain)

**09:30 [DVB-T2 Passive Radar Developed at Saint Petersburg Electrotechnical University](#)**

[Evgenii Vorobey](#), Aleksey Barkhatov, Vladimir Veremyev and Vladimir Kutuzov (Saint-Petersburg Electrotechnical University LETI, Russia)

**09:50 [Antenna Array for the Passive Radar Monitoring System](#)**

[Polina Viktorovna Terentyeva](#) (Saint Petersburg Electrotechnical University LETI, Russia); Alexander Golovkov and Sergey Borovikov (Saint Petersburg Electrotechnical University Leti, Russia)

## U05: Radio astronomy - from instruments to astrophysics



Room: F

Chairs: Anna Bartkiewicz (Centre for Astronomy, Faculty of Physics, Astronomy and Informatics, Nicolaus Copernicus University, Poland), Andrzej Krankowski (University of Warmia and Mazury in Olsztyn, Poland)

**08:30 [POLFAR - The Current State and Development Perspectives](#)**

[Andrzej Krankowski](#) (University of Warmia and Mazury in Olsztyn, Poland); Katarzyna Otmianowska-Mazur (Kraków Jagiellonian University, Poland); Hanna Rothkaehl (Space research centre - Polish Academy of Sciences, Poland); Marian Soida (Jagiellonian University, Poland); Robert Pękal (Poznan Supercomputing and Networking Center, Poland); Krzysztof Chyży (Jagiellonian University, Poland); Jarosław Kijak (University of Zielona Gora, Poland); Leszek Błaszkiwicz (University of Warmia and Mazury in Olsztyn, Poland); Bartosz Dabrowski (University of Warmia and Mazury, Poland); Magdalena Kunert-Bajraszewska (Nicolaus Copernicus University in Toruń, Poland); Jarosław Dyks (Nicolaus Copernicus Astronomical Center, Poland); Ewa Szuszkiewicz (University of Szczecin, Poland)

**08:46 [Low Noise Radio Receivers on Torun 32 m Antenna](#)**

[Eugeniusz Pazderski](#) (Nicolaus Copernicus University in Torun, Poland)

**09:02 [Spectroscopy of Astrophysical Maser Lines with the Torun 32M Radio Telescope](#)**

[Paweł Wolak](#) (Centre for Astronomy, Faculty of Physics, Astronomy and Informatics, Nicolaus Copernicus University, Poland)

**09:18 [Study Unreachable - Imaging the Milliarsecond Structures of the Methanol Masers Using the European VLBI Network](#)**

[Anna Bartkiewicz](#) (Centre for Astronomy, Faculty of Physics, Astronomy and Informatics, Nicolaus Copernicus University, Poland); Marian Szymczak (Nicolaus Copernicus University, Poland)

**09:34 [Rotation Measure Synthesis - a Novel Tool for Discovering Cosmic Magnetic Field](#)**

[Marian Soida](#) (Jagiellonian University, Poland); Błażej Nikiel-Wroczyński (Astronomical Observatory, Jagiellonian University, Poland)

**09:50 [Current Observational Activities of LOFAR Baldy PL612 Station](#)**

[Leszek Błaszkiwicz](#) and Andrzej Krankowski (University of Warmia and Mazury in Olsztyn, Poland); Bartosz Dabrowski (University of Warmia and Mazury, Poland); Marcin Hajduk (University of Warmia and Mazury in Olsztyn, Poland); Kacper Kotulak, Adam Fron, Tomasz Sidorowicz and Karolina Sniadkowska (University of Warmia and Mazury, Poland); Jarosław Kijak and Wojciech Lewandowski (University of Zielona Gora, Poland)

## U06: Radio channel modelling in 5G networks



Room: G

Chair: Sławomir J. Ambroziak (Gdansk University of Technology, Poland)

**08:30 [System Loss Analysis in Body Area Networks with Space Diversity Scheme](#)**

[Szymon Wiszniewski](#) and Sławomir J. Ambroziak (Gdansk University of Technology, Poland)

**08:46 [A Body-Shadowing Model for Off-Body and Body-to-Body Communications](#)**

Kenan Turbic (IST - University of Lisbon & INESC-ID, Portugal); [Sławomir J. Ambroziak](#) (Gdansk University of Technology, Poland); Luis M. Correia (IST - University of Lisbon & INESC, Portugal)

**09:02 [System Loss in UWB Off-Body Communications in a Ferry Environment](#)**

[Krzysztof Cwalinga](#) and Sławomir J. Ambroziak (Gdansk University of Technology, Poland); Piotr Rajchowski (Gdańsk University of Technology, Poland); Luis M. Correia (IST - University of Lisbon & INESC, Portugal)

**09:18 [An Empirical System Loss Model for Body Area Networks in a Passenger Ferry Environment](#)**

[Paweł Kosz](#), Sławomir J. Ambroziak, Jacek Stefanski and Krzysztof Cwalinga (Gdansk University of Technology, Poland); Luis M. Correia (IST - University of Lisbon & INESC, Portugal); Kenan Turbic (IST - University of Lisbon & INESC-ID, Portugal)

**09:34 [Spatially Consistent LOS/NLOS Model for Time-Varying MIMO Channels](#)**

Rimvydas Aleksiejunas, [Albert Cesiul](#) and Kestutis Svirkas (Vilnius University, Lithuania)

**09:50 [The Impact of LOS Component on Information Disclosed to Eavesdroppers in Wireless Channels with PHY-based Secret Key Generation](#)**

[Michał Piłc](#) (IBCh PAS - Poznań Supercomputing and Networking Center, Poland); Piotr Remlein (Poznan University of Technology & Chair of Wireless



Wednesday, May 16, 10:35 - 12:15

M13: Millimeter-wave antennas



Room: E

Chairs: Wojciech Gwarek (Warsaw University of Technology, Poland), Arne F Jacob (Technische Universität Hamburg-Harburg, Germany)

- 10:35 **Experience in Developing, Manufacturing and Measurements of LTCC Leaky-Wave Antennas Operated in Millimeter Waves Range**  
Przemysław Piasecki (Warsaw University of Technology & PIT-RADWAR, Poland)
- 10:55 **Double-wired Bond Wire Antennas**  
Ivan Ndjip, Le Thi Huyen and Klaus-Dieter Lang (Fraunhofer IZM, Germany)
- 11:15 **Design of LTCC Patch Antenna for Increased Bandwidth and Reduced Susceptibility to Fabrication Process Inaccuracies**  
Jakub Sobolewski and Paweł R. Bajurko (Warsaw University of Technology, Poland)
- 11:35 **New Design of High-Gain Beam-Steerable Dipole Antenna Array for 5G Smartphone Applications**  
Yusnita Rahayu (Universitas Riau, Indonesia)
- 11:55 **A Comparative Analysis of 5G mmWave Antenna Arrays on Different Substrate Technologies**  
Ivan Ndjip and Le Thi Huyen (Fraunhofer IZM, Germany); Oliver Schwanitz (TU Berlin, Germany); Klaus-Dieter Lang (Fraunhofer IZM, Germany)

M14: III-V Devices



A Tribute to Tom Brazil

Room: B

Chairs: Dominique Schreurs (KU Leuven, Belgium), Agnieszka Konczykowska (III-V Lab, France)

- 10:35 **The Contributions of Tom Brazil**  
Michael B Steer (North Carolina State University, USA)
- 10:55 **Design of Broadband High-Efficiency GaN Power Amplifiers**  
Peng Chen (UCD, Ireland); Thomas Brazil (University College Dublin, Ireland)
- 11:15 **Multifunction MMICs for High Datarate Wireless and Optical Communication Based on State-Of-The-Art InP DHBT and SiGe BiCMOS Processes'**  
Herbert Zirath and Vessen Vassilev (Chalmers University of Technology, Sweden); Zhongxia Simon He (Chalmers University of Technology & Microwave Electronic Lab, Sweden); Mingquan Bao (Ericsson AB, Sweden); Sona Carpenter (Chalmers University of Technology, Sweden)
- 11:35 **InAlGa/GaN HEMT Technology for Ka Band Applications**  
Sylvain Delage (III-V Lab, 1 Avenue Augusting Fresnel, F-91767 Palaiseau); Stéphane Piotrowicz (III-V Laboratory, Marcoussis, France); Olivier Patard (FOTON INSA, France); Christian Dua (Microelectronics Group GIE Alcatel-Thales III-V Lab, France)
- 11:55 **mm-Wave Operation of AlN/GaN-Devices and MMICs at V- & W-band**  
Dirk Schwantuschke and Birte Julia Godejohann (Fraunhofer Institute for Applied Solid State Physics, Germany); Peter Brückner, Axel Tessmann and Rüdiger Quay (Fraunhofer IAF, Germany)

M15: Industrial, scientific, medicine applications



Room: C

Chairs: Mateusz Malanowski (Warsaw University of Technology, Poland), Jacek Misiurewicz (Warsaw University of Technology, Poland)

- 10:35 **Investigation of Continuous Wave Jamming in an IEEE 802.15.4 Network**  
Jakub Rewiński and Mateusz Groth (Gdansk University of Technology, Poland); Lukasz Kulas (Gdansk University of Technology, Faculty of Electronics, Telecommunications and Informatics, Poland); Krzysztof Nyka (Gdansk University of Technology, Poland)
- 10:55 **Detection of Direct Path Component Absence in NLOS UWB Channel**  
Marcin Kolakowski (Institute of Radioelectronics and Multimedia Technology, Warsaw University of Technology, Poland); Jozef Modelski (Warsaw University of Technology, Poland)
- 11:15 **Reflected Signal Variations Simulation and Estimation When Multi Polarization Measurements**  
Yuliya Averyanova, Igor Braun, Anna Rudiakova and Felix J Yanovsky (National Aviation University, Ukraine)
- 11:35 **Self-Jamming and Interference Cancellation Techniques for Continuous Wave Bi-static Radar Systems**  
Mustafa Pehlivan and Korkut Yegin (Ege University, Turkey)
- 11:55 **The Concept Review of the EMF RATEL Monitoring System**  
Nikola Djuric (Faculty of Technical Sciences, University of Novi Sad, Serbia); Nikola Kavecan (Falcon-Tech, IT Consulting, Development, Serbia); Maja Mitic, Nenad Radosavljevic and Aleksandar Boric (Regulatory Agency for Electronic Communications and Postal Services, Serbia)

M16: Radar imaging



SAR/ISAR

Room: D

Chairs: Stephane Kemkemian (Thales Systèmes Aéroportés, France), Hui Wang (Millimeter Wave Imaging Technology Laboratory, Shanghai Institute of Satellite Engineering, Shanghai, P.R. China)

- 10:35 **Capability Demonstration of Ocean Target Detection by Tiangong-2 Interferometric Imaging Radar Altimeter**  
Yunhua Zhang, Xiao Dong, Xiaojin Shi, Wenshuai Zhai, Dong Li, Qingshan Yang, Xueyan Kang and Jiang Jingshan (National Space Science Center, Chinese Academy of Sciences, P.R. China)
- 10:55 **Generalized SL0 Algorithm for 3D Circular SAR Imaging**  
Jedrzej Drozdowicz, Maciej Wielgo and Marcin Baczyk (Warsaw University of Technology, Poland)
- 11:15 **Synthetic Aperture Radar -  $\mu$ SAT Revolution**

Tomasz Górski and Tomasz Krzaczek (Creotech Instruments S.A., Poland)

**11:35 Interferometric Radar Compressive Sensing Imaging with Direct Downsampling**

Yunhua Zhang, Xiao Dong, Wenshuai Zhai, Xiaojin Shi, Qingshan Yang, Dong Li and Xueyan Kang (National Space Science Center, Chinese Academy of Sciences, P.R. China)



**U07: D2D Communications in the 5G Era**

**Room: F**

Chairs: Adrian Kliks (Poznan University of Technology, Poland), Vlad Popescu (Transilvania University of Brasov, Romania)

**10:35 QoS Feedback Mechanism for a Cooperative Indoor D2D System**

Vlad Popescu (Transilvania University of Brasov, Romania); Mauro Fadda and Michele Nitti (University of Cagliari, Italy)

**10:55 SDR-based Gateway for IoT and M2M Applications**

Vlad Popescu, Marian Alexandru, Cristinel Gavrilă and Csaba Zoltan Kertesz (Transilvania University of Brasov, Romania)

**11:15 Performance Evaluation of D2D-based SFN for Multicast Service Delivery in 5G Networks**

Mauro Fadda (University of Cagliari, Italy); Sara Pizzi (University "Mediterranea" of Reggio Calabria, Italy); Federica Rinaldi and Giuseppe Araniti (University Mediterranea of Reggio Calabria, Italy)

**11:35 Experimental Setup for IoT - Based Multi Sensorial Media**

Vlad Popescu (Transilvania University of Brasov, Romania); Maurizio Murrone and Lana Jalal (University of Cagliari, Italy)

**11:55 Network Graphs Reflecting Transmission Policies**

Łukasz Kulacz and Adrian Kliks (Poznan University of Technology, Poland); Shah Nawaz Khan (FBK CREATE-NET, Italy)



**U08: Medical and biological physical systems**

**Room: G**

Chairs: Adam Pawlak (Silesian University of Technology, Poland), Waldemar Susek (Military University of Technology, Poland)

**10:35 A Multiparameter Examination System to Assess Self-Regulatory Mechanisms of the Cardiovascular System Under Simulated Hypergravity Conditions**

Ewelina Sobotnicka, Aleksander Sobotnicki, Marek Czerw and Mariusz Sobiech (Institute of Medical Technology and Equipment ITAM Zabrze, Poland); Łukasz Dziuda and Mariusz Krej (Military Institute of Aviation Medicine, Warsaw, Poland)

**10:55 BCI Interface - New Opportunities and Hopes for the Disabled. An Overview of Available Solutions**

Ewelina Sobotnicka and Aleksander Sobotnicki (Institute of Medical Technology and Equipment ITAM Zabrze, Poland)

**11:15 A Wearable Multi-Sensor Solution for Daily Activities Monitoring with an Expanded Respiratory Part**

Dominik Grochala, Marcin Kajor and Eliasz Kańtoch (AGH University of Science and Technology, Poland)

**11:35 Optical Stand-Off Detection of Biological and Chemical Hazards - Prospects and Concerns**

Jacek Wojtanowski (Military University of Technology, Poland)

**11:55 Real-time Measurement and Analysis of Single Biological Particle's Fluorescence and Scattering**

Miron Kaliszewski, Maksymilian Włodarski and Jarosław Mlynczak (Military University of Technology, Poland); Maciej Leskiewicz (PCO S.A., Poland); Zygmunt Mierczyk and Krzysztof Kopczyński (Military University of Technology, Poland)

**Wednesday, May 16, 12:15 - 13:50**



**L2: Lunch**



**Poster1: Posters 1**

Chairs: Bronisław Stec (, Poland), Ewa Swiercz (Białystok University of Technology, Poland)

**Bias Dependence of the Access Resistance in GaN HEMTs**

Caram Nasser and Dan Ritter (Technion, Israel); Matthias Rudolph (Brandenburg University of Technology, Germany)

**Miniature High Directivity Couplers**

Arkadiusz Golaszewski (Warsaw University of Technology, Poland); Adam Abramowicz (Institute of Electronic Systems, Warsaw University of Technology, Poland)

**Analysis of Continuous-to-Discrete Transformation Effect on a Synthesis Filter Bank Project**

Bogusław Szlachetko and Zbigniew Świątach (Wrocław University of Science and Technology, Poland)

**Prototype Variable Resistors and Capacitors for RF and Microwave Phase Lock Loops**

Stanisław Hanasz, Krzysztof Czuba and Bartosz Gaśowski (Warsaw University of Technology, Poland); Holger Schlarb (Deutsches Elektronen Synchrotron, Germany)

**Quadrature Hybrid Coupler with Two Broadside Coupled Microstrip-Slot Lines**

Bronisław Stec (, Poland); Mirosław Czyżewski (Military University of Technology, Poland)

**Comparison of Angular Spread for 6 and 60 GHz Based on 3GPP Standard**

Jan M. Kelter, Cezary Ziółkowski and Bogdan Uljasz (Military University of Technology, Poland)

**Broadband Low-Loss Impedance Transforming Rat-Race Coupler in Suspended Microstrip Technique**

Robert Smolarz, Krzysztof Wincza and Sławomir Gruszczynski (AGH University of Science and Technology, Poland)

**A Broadband Test Setup for Differential Mode Measurement of Infrared Photodiodes in TO-8 Package**

Michał Abramowicz and Wojciech Wiatr (Warsaw University of Technology, Poland)

**Compact 2-Way H-Plane Power Dividers for a Rectangular Waveguide in Ku Band**

Owranq Wossugieniri (University of Tehran, Iran); Hadi Faezi (Iran University of Science and Technology, Iran); Mohsen Fallah (Malek-Ashtar University of Technology, Iran)

***Accurate Analysis of Whispering Gallery Modes in Dielectric Resonators with BoR FDTD Method***

Malgorzata Celuch (QWED, Poland); [Wojciech Gwarek](#) (Warsaw University of Technology, Poland)

***An Ultra-wideband Horn Antenna with Electromagnetic-Polarization Filter for Low Cross-Polarization Level***

Chang Ding and Fanyi Meng (Harbin Institute of Technology, P.R. China)

***Double-ridged Horn Antenna Operating in 18-40 GHz Range***

[Jerzy Cuper](#), Bartłomiej Salski, Paweł Kopyt and Adam Pacewicz (Warsaw University of Technology, Poland); Adam Raniszewski (PIT-RADWAR S.A., Poland)

***Design of Frequency Multiplier for Ku-band Applications***

Ahsan Waqas (Technical University of Munich & TUM, Germany); [Muhammad Hassam Malhi](#) (Technical University of Munich, Germany); Muhammad Kamran Khan (University of Engineering and Technology Lahore, Pakistan)

***Parametric SAR Study for 4G Cellular Phone Applications***

[Serdar Okuyucu](#) (Antalya Bilim Üniversitesi, Turkey); Korkut Yegin (Ege University, Turkey); Mustafa Secmen (Yasar University, Turkey); Basak Ozbakir (Vestel Electronics R&D, Turkey)

***Advanced Polarimetric Radar Waveforms for Enhancing Detection Probability of Small Airborne Targets and Tiny Objects on Sea Waters***

Dawid Sysak and Paweł Kabacik (Wrocław University of Science and Technology, Poland)

***Anti-Tank Projectile Detection by Means of CW Microwave Sensors and Portable Pulsed Radar***

[Adam Rutkowski](#), Adam Kawalec and Czesław Recko (Military University of Technology, Poland)

***Upgrading the Italian BIRALES System to a Pulse Compression Radar for Space Debris Range Measurements***

[Tonino Pisanu](#), Luca Schirru and Enrico Urru (National Institute for Astrophysics - Astronomical Observatory of Cagliari, Italy); Francesco Gaudiomonte (INAF Astronomical Observatory of Cagliari, Italy); Pierluigi Ortu (National Institute for Astrophysics - Astronomical Observatory of Cagliari, Italy); Giacomo Muntoni and Giorgio Montisci (University of Cagliari, Italy); Germano Bianchi, Claudio Bortolotti and Mauro Roma (National Institute for Astrophysics - Institute of Radioastronomy (Medicina), Italy); Fabio Protopapa, Angelo Podda and Andrea Sulis (Vitrociset spa, Italy); [Giuseppe Valente](#) (Italian Space Agency (ASI), Italy)

***Limits of Integration Using Polar Format Algorithm in Coherent Multistatic ISAR Processing***

[Marcin Baczyk](#) and Krzysztof Kulpa (Warsaw University of Technology, Poland)

***A Synthesis of Binary Sequences with Simple Dimensionality and Optimal Aperiodic ACF***

Roman Yankevych (Lviv Polytechnic National University, Ukraine)

***Jamming Efficiency of Land-Based Radars by the Airborne Jammers***

[Jan Matuszewski](#) (Military University of Technology, Poland)

***A Skewed-Beam Compensation Algorithm for a Full Digital Phased Array Antenna***

[Sungwon Hong](#), Jinwoo Shin, Chan-Hong Kim, Hyunwoo Ko and Kichul Yoon (Agency for Defense Development, Korea); Jongmann Kim (Yonsei University & ADD, Korea); Ji Heon Kim, Sang-Hyun Park and Myungsoo Chung (Agency for Defense Development, Korea)



TOP

Posters-URSI: Posters-URSI

Chair: Krzysztof Górecki (Gdynia Maritime University, Poland)

***Wireless Device Control by Means of Brain Signals***

[Urszula Jagodzinska-Szymanska](#) (PIT-RADWAR, Poland); Edward Sedek (PIT-RADWAR S.A., Poland)

***Diffraction by an Arbitrary-Angled Coated Wedge: An Alternative Uniform Asymptotic Solution***

[Giovanni Riccio](#) (University of Salerno, Italy); Gianluca Gennarelli (IREA-CNR, Italy)

***Path Loss Measurements in Wideband Radio Link Designed for Maritime Environment***

[Piotr Rajchowski](#) (Gdańsk University of Technology, Poland); Krzysztof Cwalina, Paweł Kosz and Jacek Stefanski (Gdańsk University of Technology, Poland); Jarosław Sadowski (Department of Radio Communication Systems and Networks, Gdańsk University of Technology, Poland, Poland)

***Terahertz Characterisation of Living Plant Leaves for Quality of Life Assessment Applications***

[Adnan Zahid](#) (University of Glasgow, United Kingdom (Great Britain)); Ke Yang (Queen Mary University Of London, United Kingdom (Great Britain)); Hadi Heidari, Chong Li and Muhammad Ali Imran (University of Glasgow, United Kingdom (Great Britain)); Akram Alomainy (Queen Mary University of London, United Kingdom (Great Britain)); Qammer H Abbasi (University of Glasgow, United Kingdom (Great Britain))

***Simple Method of Measuring Photometric and Radiometry Parameters of Power LEDs***

[Krzysztof Górecki](#) and Przemysław Ptak (Gdynia Maritime University, Poland)

***Influence of Thermometric Characteristics on Accuracy of Junction Temperature Measurements of Laboratory Made SiC Schottky Diodes***

[Paweł Górecki](#) and [Krzysztof Górecki](#) (Gdynia Maritime University, Poland); Ryszard Kisiel and Marcin Myśliwiec (Warsaw University of Technology, Poland)

***Analysis of Influence of Losses in the Core of the Inductor on Parameters of the Buck Converter***

[Krzysztof Górecki](#) and Kalina Detka (Gdynia Maritime University, Poland)

***Simulations and Analysis of MEMS Vibrating Gyroscope with Geometry Details in Matlab/SIMULINK Environment***

Jacek Nazdrowicz, Piotr Amrozik and [Michał Szermer](#) (Lodz University of Technology, Poland); Andrzej Napieralski (Technical University of Lodz, Poland)

***K Band Integrated Microwave Receiver***

Czesław Recko, Tomasz Rogala and [Waldemar Susek](#) (Military University of Technology, Poland)

***Creativity, Art and Stress***

[Dorota Myko](#) (Faculty of Electronics and Information Technology, Warsaw University of Technology, Poland)

Wednesday, May 16, 13:50 - 15:30



TOP

M17: Planar antennas

Room: E

Chairs: Adam Abramowicz (Institute of Electronic Systems, Warsaw University of Technology, Poland), Jan Macháć (Czech Technical University in Prague, Czech Republic)

**13:50 *Three-Objective Antenna Optimization by Means of Kriging Surrogates and Domain Segmentation***

[Sławomir Koziel](#) (Reykjavik University, Iceland); Adrian Bekasiewicz (Gdańsk University of Technology, Poland)

**14:10 *Microstrip Antennas Based on Fractal Geometries for UWB Application***  
[Roman Kubacki](#), Mirosław Czyżewski and Dariusz Laskowski (Military University of Technology, Poland)

**14:30 *Design a Microstrip UHF RFID Tag Antenna for Metallic and Non-Metallic Objects***  
[Dalia Mansour](#), Arafat Shabaneh, Beesan Qashou, Saif Smamraa and Alaa' Al-Ashqar (Palestine Technical University-Kadoorie-, Palestine); Fuad Erman (University of Malaya, Malaysia); Atallah Balalem (Palestine Technical University-Kadoorie, Palestine)

**14:50 *Extending Axial Ratio Bandwidth of Antenna Array by Parasitic Patches***  
[Jan Spurek](#) and Zbynek Raida (Brno University of Technology, Czech Republic)

**15:10 *The Use of Shunt-Stubs in Corporate-Feeding Network for S-band Planar Antenna Array***  
[Adam Slowik](#) (Military University of Thechnology, Poland); Blazej Slesicki and Mirosław Czyżewski (Military University of Technology, Poland)



#### M18: Space technology

##### Room: B

Chairs: Paweł Chodosiewicz (POLSA, Poland), Hristo A. Kabakchiev (Sofia University "St. Kliment Ohridski", Bulgaria)

**13:50 *Investigation on Adaptive Satellite Communication System Performance Using SDR Technique***  
[Sebastian Kozłowski](#), [Krzysztof Kurek](#), Jacek Skarzyński and Katarzyna Szczygielska (Warsaw University of Technology, Poland); Marcin Darmetko (Space Research Centre PAS, Poland)

**14:10 *The Concept of Mechanical and Radechon-Based Gammavision Cameras for the Use Onboard Martian Rovers***  
[Tomasz Aleksander Miś](#) (Warsaw University of Technology & Institute of Radioelectronics and Multimedia Technology, Poland)

**14:30 *Satellites Detection, Tracking and Cataloguing System***  
[Jakub Kopyciński](#), Agnieszka Borucka, Bartłomiej Majerski, Wioleta Rzęsa, Kamil Choromański and Paweł Kukliński (Warsaw University of Technology, Poland)

**14:50 *The Investigation on the Creation and Potential Usefulness of the Atmospheric Cavity Resonance in the VLF Range in the Current and Former Radio Communication Systems***  
[Tomasz Aleksander Miś](#) (Warsaw University of Technology & Institute of Radioelectronics and Multimedia Technology, Poland)



#### M19: Accelerators

##### Room: C

Chairs: Edward F Pliński (Wrocław University of Science and Technology, Poland), Krzysztof Czuba (Warsaw University of Technology, Poland)

**13:50 *Numerical Analysis of the Influence of a Gyrotron's Cavity Walls Curvature***  
[Bogusław Szlachetko](#), Tadeusz Więckowski and Edward F Pliński (Wrocław University of Science and Technology, Poland)

**14:10 *Concept of the Phase Reference Line for the European Spallation Source***  
[Krzysztof Czuba](#), Mateusz Zukocinski, Dominik Sikora, Michał Marcin Kalisiak, Krzysztof Oliwa, Jerzy Berliński, Tomasz Leśniak and Elżbieta Fistek (Warsaw University of Technology, Poland); Rihua Zeng and Anders Sunesson (European Spallation Source ERIC, Sweden); Wojciech Wierba, Maria Mielnik, Radosław Papis and Łukasz Czuba (Warsaw University of Technology, Poland)

**14:30 *The Concept of the RF Phase Reference Distribution System for SINBAD Accelerator Research Facility***  
[Maciej Urbanski](#) and Krzysztof Czuba (Warsaw University of Technology, Poland); Frank Ludwig, Holger Schlarb, Heinrich Pryschelski, Ulrich Dorda and Narcisse Ngada (Deutsches Elektronen Synchrotron, Germany)

**14:50 *RF Front-end for Cavity Simulator for the European Spallation Source***  
[Maciej Grzegorzolka](#), Igor Rutkowski and Krzysztof Czuba (Warsaw University of Technology, Poland)



#### M20: Tracking

##### Room: D

Chairs: Yuliya Averyanova (National Aviation University, Ukraine), Konrad Jędrzejewski (Warsaw University of Technology, Poland)

**13:50 *Efficient Multiple Hypotheses Tracking Scheme Using Adaptive Number of 'K' Best Hypotheses for Target Tracking in Clutter***  
[Sarojini Vudumu](#) (Bharat Electronics Limited, India)

**14:10 *Ensemble Kalman Filter for Track-Before-Detect Algorithm of pulse-Doppler Radar***  
[Jihoon Kwon](#) (Seoul National University & Hanwha Systems, Korea); Nojun Kwak (Seoul National University, Korea); Eunjung Yang and Kwansung Kim (Agency for Defense Development, Korea)

**14:30 *Long Range Radio Location System Employing Autonomous Tracking for Sounding Rocket***  
[Tomasz Chelstowski](#), Karol Dobrzyniewicz, [Przemysław Kant](#) and Jerzy Julian Michalski (SpaceForest, Poland)

**14:50 *Tracking and Data Fusion with the HENSOLDT Passive Radar System***  
[Oliver Zeeb](#) (HENSOLDT, Germany); Dietrich Fraenken (Hensoldt Sensors, Germany)



#### J1: SiGe Bi-CMOS mm-wave radar sensors

##### Room: F

Chair: Nils Pohl (Ruhr-University Bochum & Fraunhofer FHR, Germany)

**13:50 *Advances in Compact Integrated Multichannel Millimeter Wave Radar Systems Using SiGe BiCMOS Technology***  
[Simon Kueppers](#) and Reinhold Herschel (Fraunhofer FHR, Germany); Nils Pohl (Ruhr-University Bochum & Fraunhofer FHR, Germany)

**14:10 *A Comparison of Two Frequency Synthesizer Architectures in SiGe BiCMOS for FMCW Radar***  
[Arzu Ergintav](#) (IHP GmbH, Germany); Frank Herzel (IHP, Germany); Ahmad Mushtaq and Wojciech Debski (Silicon Radar GmbH, Germany); Herman J Ng and Dietmar Kissinger (IHP, Germany)

**14:30 *Pseudo-Random Noise Radar for Short-Range Applications in SiGe Technologies***  
[Herman J Ng](#), [Maciej Kucharski](#) and Dietmar Kissinger (IHP, Germany)

**14:50 Scalable 79- And 158-GHz Integrated Radar Transceivers in SiGe BiCMOS Technology**

Maciej Kucharski, Dietmar Kissinger and Herman J Ng (IHP, Germany)

**15:10 A Compact Ultra-Wideband mmWave Radar Sensor at 80 GHz Based on a SiGe Transceiver Chip**

Nils Pohl (Ruhr-University Bochum & Fraunhofer FHR, Germany); Timo Jaeschke (Ruhr-University Bochum, Germany); Christian Bredendiek (Ruhr-Universität Bochum, Germany); Simon Kueppers (Fraunhofer FHR, Germany); Dirk Nüßler (Fraunhofer Institute for High Frequency Physics and Radar Techniques FHR, Germany)

**U09: Photonics in detection and monitoring**



**Room: G**

Chairs: Jan Jabczynski (Military University of Technology, Poland), Krzysztof Kopczynski (Military University of Technology, Poland)

**13:50 Optoelectronic System for Stand-Off Detection of Alcohol Vapours**

Jan Kubicki, Jaroslav Mlynczak, Jadwiga Mierczyk and Krzysztof Kopczynski (Military University of Technology, Poland)

**14:10 Thermovision System for Flying Objects Detection**

Tomasz Sosnowski, Grzegorz Bieszczad, Henryk Madura and Mariusz Kastek (Wojskowa Akademia Techniczna, Poland)

**14:30 Photonic Input-Output Devices Used in Virtual and Augmented Reality Technologies**

Marek Piszczek, Marcin Maciejewski and Mateusz Pomianek (Military University of Technology, Poland)

**14:50 Raman and SERS Spectroscopies in the Detection of Hazardous Materials**

Malwina Liszewska, Bartosz Bartosewicz, Bogusław Budner and Bartłomiej Jankiewicz (Military University of Technology, Poland)

**15:10 Model of Partially Coherent Combining and Propagation of 2D Array of Laser Beams**

Jan Jabczynski and Przemyslaw Gontar (Military University of Technology, Poland)

**Wednesday, May 16, 15:55 - 17:35**

**M21: Microwave antennas**



**Room: E**

Chairs: Paweł R. Bajurko (Warsaw University of Technology, Poland), Wojciech J. Krzysztofik (Wroclaw University of Technology, Poland)

**15:55 Comprehensive Dimension Scaling of Multi-Band Antennas for Operating Frequencies and Substrate Parameters**

Slawomir Koziel (Reykjavik University, Iceland); Adrian Bekasiewicz (Gdansk University of Technology, Poland)

**16:15 Investigation of Effects of Grooves on Antenna Performance for Ku Band Antenna**

Yavuz Aşci, Mustafa Pehlivan, Olcay Yiğit and Korkut Yegin (Ege University, Turkey)

**16:35 A Non-resonant Slotted Corrugated Waveguide Array Antenna with Extended Frequency Scanning**

Adam Raniszewski (PIT-RADWAR S.A., Poland)

**16:55 Feasibility of Standard Instrumentation for Radiation Pattern Measurement of Time Modulated Antenna Array**

Grzegorz Bogdan (Warsaw University of Technology & Institute of Radioelectronics and Multimedia Technology, Poland); Konrad Godziszewski (Warsaw University of Technology, Poland); Yevhen Yashchshyn (Warsaw University of Technology & Institute of Radioelectronics, Poland)

**17:15 Statistical Analysis and Robust Design of Circularly Polarized Antennas Using Sequential Approximate Optimization**

Slawomir Koziel (Reykjavik University, Iceland); Adrian Bekasiewicz (Gdansk University of Technology, Poland)

**M22: RF Subsystems**



**Room: B**

Chairs: Georg Boeck (TU Berlin, Germany), Michael B Steer (North Carolina State University, USA)

**15:55 Power and Temperature Dependence of Passive Intermodulation Distortion**

Michael B Steer and Thomas Williamson (North Carolina State University, USA); Joshua Wetherington (Vadum, Inc, USA); Jonathan R Wilkerson (Rift Research and Design, USA); Peter Aaen (University of Surrey, United Kingdom (Great Britain)); Alex Schuchinsky (University of Liverpool, United Kingdom (Great Britain))

**16:15 Influence of Step Recovery Diode DC Bias on AM/PM Conversion in Sampling Phase Detectors**

Bartosz Gaśowski, Stanisław Hanasz, Krzysztof Czuba and Łukasz Zembala (Warsaw University of Technology, Poland)

**16:35 Phase Locked Loop Ku Band Frequency Synthesizer Based on a Tuned YIG Oscillator**

Marcin Rytel, Paweł Kopyt and Bartłomiej Salski (Warsaw University of Technology, Poland)

**16:55 A Measurement Setup for Digital Predistortion Using Direct RF Undersampling**

Tomasz Kowalski and Bartłomiej Dąbek (Warsaw University of Technology, Poland); Gian Piero Gibiino (University of Bologna, Italy); Samer Bou Habib (Warsaw University of Technology, Poland); Paweł Barmuta (KU Leuven, Poland)

**17:15 Technology and Performance of E/D-mode InAlN/GaN HEMTs for Mixed-Signal Electronics**

Jan Kuzmnik (Institute of Electrical Engineering Slovak Academy of Sciences, Slovakia); Michal Blaho and Dagmar Gregusova (Institute of Electrical Engineering, Slovak Academy of Sciences, Slovakia); Alexander Satka (Faculty of Electrical Engineering and Information Technology, STU in Bratislava, Slovakia); Juraj Marek (Slovenska Technicka Univerzita & Institute of Electronics and Photonics, Slovakia); Aleš Chvála (Slovak University of Technology in Bratislava & Faculty of Electrical Engineering and Information Technology, Slovakia); Štefan Haščik (Institute of Electrical Engineering SAS, Slovakia)

**M23: Field theory and numerical techniques**



**Room: C**

Chairs: Michał Mrozowski (, Poland), Luca Perregini (University of Pavia, Italy)

**15:55 An Analysis of Periodic Arrangements of Cylindrical Objects of Arbitrary Convex Cross Sections with the Use of Field Matching Method**

Małgorzata Warecka, Rafał Lech and Piotr Kowalczyk (Gdansk University of Technology, Poland)

**16:15 Efficient Implementation of Greedy Multipoint Model-Order Reduction Technique for Fast Wide-band Frequency Analysis of Microwave**

## Structures

[Damian Szypulski](#) (Gdansk University of Technology, Poland); [Martyna Czarniewska](#) and [Grzegorz Fotyga](#) (Gdańsk University of Technology, Poland)

### 16:35 [An Analysis of Scattering from Ferrite Post of Arbitrary Convex Cross Section with the Use of Field Matching Method](#)

[Michał Pastwa](#), [Tymoteusz Olszewski](#), [Rafał Lech](#) and [Piotr Kowalczyk](#) (Gdansk University of Technology, Poland); [Jerzy Mazur](#) (Gdańsk University of Technology, Poland)

### 16:55 [Large Deformations of Unstructured Meshes with Linear Elasticity for Applications in Computational Electromagnetics](#)

[Adam Lamecki](#) (Politechnika Gdańska, Poland)

### 17:15 [Analysis of a Matched Turnstile Junction by the BI-RME Method and the Segmentation Technique](#)

[Simone Battistutta](#), [Maurizio Bozzi](#), [Marco Bressan](#) and [Luca Perreggini](#) (University of Pavia, Italy)



## M24: Noise radars

### Room: D

Chairs: [Theodoros G Kostis](#) (Hellenic Military Academy, Greece), [Konstantin Alexandrovich Lukin](#) (IRE NASU National Academy of Sciences of Ukraine, Ukraine)

### 15:55 [FPGA Implementation of Relay-Type Correlator for Noise Radar Applications](#)

[Konstantin Alexandrovich Lukin](#) (IRE NASU National Academy of Sciences of Ukraine, Ukraine); [Sergiy Lukin](#) (O. Ya. Usikov Institute for Radiophysics and Electronics, National Academy of Sciences of Ukraine, Ukraine & Università degli Studi di Napoli Parthenope, Italy); [Vito Pascazio](#) (Università di Napoli Parthenope, Italy); [Dmytro Tatyanko](#) (O. Ya. Usikov Institute for Radiophysics and Electronics, NAS of Ukraine, Ukraine); [Oleg Zemlyaniy](#) (IRE NASU National Academy of Sciences of Ukraine, Ukraine)

### 16:15 [Buried Objects Detection Using Noise Radar](#)

[Waldemar Susek](#) and [Michał Kniola](#) (Military University of Technology, Poland); [Bronisław Stec](#) (, Poland)

### 16:35 [Advanced Range-Doppler Processing in Noise Radar](#)

[Christoph Wasserzier](#) (Fraunhofer Institute for High Frequency Physics and Radar Techniques FHR, Germany); [Gaspere Galati](#) (Tor Vergata University, Italy)

### 16:55 [Noise Radar Imaging Using Phase-only Data in Frequency Domain](#)

[Xiao Dong](#) and [Yunhua Zhang](#) (National Space Science Center, Chinese Academy of Sciences, P.R. China)

### 17:15 [Detection Range Limitation in MIMO and SISO Noise Radar](#)

[Krzysztof Kulpa](#) and [Lukasz Maślakowski](#) (Warsaw University of Technology, Poland)



## J2: Electromagnetic fields and waves in the ELF and VLF range

### Room: F

Chair: [Janusz Młynarczyk](#) (AGH University of Science and Technology, Poland)

### 15:55 [New Broadband ELF Receiver for Studying Atmospheric Discharges in Central Europe](#)

[Janusz Młynarczyk](#), [Andrzej Kulak](#) and [Sławomir Klucjasz](#) (AGH University of Science and Technology, Poland); [Jerzy Kubisz](#) (Jagiellonian University, Poland); [Martin Popek](#) (Institute of Atmospheric Physics CAS, Czech Republic); [Karol Martynski](#) (AGH University of Science and Technology, Poland)

### 16:15 [Comparison of Charge Moment Distribution in Supercell and Moderate Thunderstorm Based on ELF Electromagnetic Field Measurements](#)

[Karol Martynski](#) and [Andrzej Kulak](#) (AGH University of Science and Technology, Poland); [Rafał Iwanski](#) (Institute of Meteorology and Water Management - National Research Institute, Poland)

### 16:35 [Stratospheric VLF Vertical Electric Mono- And Dipole Antenna Tests in 2014-2015](#)

[Tomasz Aleksander Miś](#) (Warsaw University of Technology & Institute of Radioelectronics and Multimedia Technology, Poland); [Józef Modelski](#) (Warsaw University of Technology, Poland)

### 16:55 [The MECHANEMA, or New Method of Numerical Computation of Electromagnetic Field Intensity at Very Low Frequency Range Using Electromechanical Analogies](#)

[Tomasz Aleksander Miś](#) (Warsaw University of Technology & Institute of Radioelectronics and Multimedia Technology, Poland)

### 17:15 [The Use of Troposcatter Communications to Increase the Range of Unmanned Aerial Vehicle - UAV](#)

[Andrzej Lewandowski](#) (Politechnika Warszawska & Zakład Doskonalenia Zawodowego, Poland)



## U10: Stochastic near-field UWB electromagnetic radiations

### Room: G

Chairs: [Yury V. Kuznetsov](#) (Moscow Aviation Institute, Russia), [Piotr Słobodzian](#) (Wrocław University of Technology & Faculty of Electronics, Poland)

### 15:55 [Chip-Package-PCB Co-Design and Experimental Co-Verification of Smart Probes for Sensing Stochastic Electromagnetic Fields: Toward Energy-based Metrics](#)

[Sidina Wane](#) (EV-NXP-LaMIPS-CAEN & CAEN France, France)

### 16:15 [Phased Antenna Array Reconstructive Diagnostics Using Small Number of Measurements](#)

[Grigory Kuznetsov](#) (Moscow Aviation Institute & Research Institute of Precision Instruments, Russia); [Vladimir Temchenko](#) (Moscow Aviation Institute, Russia); [Maxim Miloserdov](#) (Research Institute of Precision Instruments, Russia); [Dmitry Voskresenskiy](#) (Moscow Aviation Institute National Research University, Russia)

### 16:35 [Synthesis of Plane Arrays with Improvement of Intersystem EMC in the near and Far Zones](#)

[Mykhaylo Andriychuk](#) (Pidstryhach Institute for Applied Problems in Mechanics and Mathematics, Ukraine)

### 16:55 [Time Delay Estimation of Cyclostationary Signals on PCB Using Spectral Correlation Function](#)

[Timofey Shevgunov](#) (Moscow Aviation Institute - National Research University & National Research University Higher School of Economics, Russia); [Evgeniy Efimov](#) (Moscow Aviation Institute - National Research University, Russia); [Yury V. Kuznetsov](#) (Moscow Aviation Institute, Russia)

### 17:15 [Time-domain Stochastic Electromagnetic Field Propagator Based on Jefimenko's Equations](#)

[Anastasia Gorbunova](#), [Yury V. Kuznetsov](#), [Andrey Baev](#) and [Maxim Konovalyuk](#) (Moscow Aviation Institute, Russia); [Johannes Russer](#) and [Michael Haider](#) (Technische Universität München, Germany)

Wednesday, May 16, 17:35 - 18:45

## MiR-PAN: Microwave and Radiolocation Section meeting

(Sekcja Mikrofal i Radiolokacji PAN)  
Room: (Extra activities)

Wednesday, May 16, 18:00 - 21:00

## YP: IEEE Young Professionals Meet Up

limited availability - please register!  
Room: E

All MRW participant - young professionals as well as experienced ones - are invited to join this event. Food and beverages are free of charge thanks to IEEE sponsorship (YP, MTT-S, AESS).  
[Please register to join the event](#)

Wednesday, May 16, 20:15 - 22:30

## Borówiec excursion 2 (limited availability)

Rooms: B, C, D, F, G

Excursion to Astrogeodynamic Observatory in Borówiec:

- Cesium fountain (precise time reference installation)
- LOFAR (LOw Frequency ARray) instrument
- Space debris tracking lasers
- Radiotelescope

One group of 45 people can visit the Observatory this night. Please register in system [COFFEE](#)

## Thursday, May 17

Thursday, May 17, 08:30 - 10:10

## U11: EMC of systems and devices

Room: E

Chairs: Mykhaylo Andriychuk (Pidstryhach Institute for Applied Problems in Mechanics and Mathematics, Ukraine), Tadeusz Więckowski (Wroclaw University of Science and Technology, Poland)

**08:30 *Practical Analysis of the Mutual Interference Between IEEE 802.11Ac Wave 1 and IEEE 802.11N Networks***  
[Andrzej Zankiewicz](#) (Bialystok University of Technology, Poland)

**08:50 *Application of Undersampling to Measurement of Fluctuations of Frequency in Presence of Disturbances***  
[Adam Nikolajew](#) (Bialystok University of Technology, Poland)

**09:10 *Conceptual Basis for Providing EMC of Invariant Amplifying-Converter Syst***  
[Vladimir Pilinsky](#) (NTUU "KPI" & NTUU "KPI", Ukraine); [Vladimir Smirnov](#) and [Viktor Spiwak](#) (Igor Sikorsky Kyiv Polytechnic Institute, Ukraine); [Dmytro Vayts](#) (NTUU "KPI", Ukraine)

**09:30 *Extensions of the Maxima Regulation Range of an Amplitude-Frequency Characteristic of the Smart RFI Filters***  
[Volodymyr Shvaichenko](#) (Igor Sikorsky Kyiv Polytechnic Institute, Ukraine); [Vadym Bakiko](#) (Igor Sikorsky Kyiv Polytechnic Institute & TV CHANNEL ESPRESO, Ukraine); [Othman Sharadjah](#) (Igor Sikorsky Kyiv Polytechnic Institute, Ukraine)

**09:50 *Printed Self-Complementary Hilbert Curve (SCHC) Fractal Broad-Band Antenna***  
[Johannes Russer](#) (Technische Universität München, Germany)

## M25: Filters

Room: B

Chairs: Richard V. Snyder (RS Microwave Company Inc., USA), Daniel Pasquet (LaMIPS, France)

**08:30 *A Multilayer Dual-Band Filter Using Dual-Mode Resonators with Second Harmonic Suppression***  
[Nils Hansen](#), [Wanja Gitzel](#), [Stefan Radziejewski](#), [Jan-Philip Mohncke](#) and [Arne F. Jacob](#) (Technische Universität Hamburg-Harburg, Germany)

**08:50 *A 5.8 - 10.6 GHz UWB Filter Using Novel SIR Structure***  
[Mateusz Zukocinski](#) (Warsaw University of Technology, Poland)

**09:10 *DR Narrowband Filters for XFEL Accelerator***  
[Adam Abramowicz](#) (Institute of Electronic Systems, Warsaw University of Technology, Poland)

**09:30 *Low-Loss Pseudo-Highpass Filters Using Distributed-Element Unit Cells***  
[Jakub Sorocki](#), [Ilona Piekarz](#), [Slawomir Gruszczynski](#) and [Krzysztof Wincza](#) (AGH University of Science and Technology, Poland)

**09:50 *Electrically Controlled Variable Inductors for Applications in Tunable Filters***  
[Bair Buyantuev](#) (St. Petersburg Electrotechnical University, Russia); [Evgenii Vorobei](#) (Saint-Petersburg Electrotechnical University LETI, Russia); [Alexandra Baskakova](#) (Czech Technical University in Prague, Czech Republic); [Viacheslav Turgaliev](#) and [Dmitry Kholodnyak](#) (St. Petersburg Electrotechnical University, Russia)

## M26: Amplifiers

Room: C

Chair: Paolo Colantonio (University of Roma Tor Vergata, Italy)

**08:30 Turbo Class-AB Amplifier for GSM-EDGE**

Huseyin Aniktar (Tubitak & Bilgem, Turkey)

**08:50 Impact of Transistor DC Operating Condition on Effectiveness of PA Digital Predistortion**

[Konrad Jedrzejewski](#), Dawid Rosolowski and Wojciech Wojtasiak (Warsaw University of Technology, Poland)

**09:10 Digital Trimmable 24 GHz Low-Noise Amplifier in 65 nm CMOS**

[Sönke Vehring](#) and Yaoshun Ding (Berlin Institute of Technology, Germany); Georg Boeck (TU Berlin, Germany)

**09:30 18-31 GHz GaN MMIC LNA Using a 0.1 Um T-Gate HEMT Process**

[Xiaodong Tong](#) (Microsystem & Terahertz Research Center, China Academy of Engineering Physics, P.R. China)

**09:50 A GaN Single Chip Front-End for C-Band Synthetic Aperture Radars**

[Alessandro Salvucci](#), Giorgio Polli and Marco Vittori (University of Rome Tor Vergata, Italy); Rocco Giofrè (University of Roma Tor Vergata, Italy); Sergio Colangeli (University of Rome Tor Vergata, Italy); Walter Ciccognani (Università di Roma Tor Vergata, Italy); Ernesto Limiti (University of Rome Tor Vergata, Italy); Diego Carosi (LEONARDO COMPANY, Italy); Marziale Feudale (Thales Alenia Space Italia, Italy); Claudio Lanzieri (LEONARDO COMPANY, Italy); Andrea Suriani (THALES ALENIA SPACE, Italy)



TOP

**M27: Radar systems and applications**

Room: D

Chairs: Piotr Samczynski (Warsaw University of Technology, Poland), Andreas Stelzer (Johannes Kepler University Linz, Austria)

**08:30 Micro-Doppler Feature Extraction for Interferometric Radar Based on Viterbi Algorithm and Intrinsic Chirp Component Decomposition**

[Wenwu Kang](#) (The Key Laboratory of Microwave Remote Sensing, Chinese Academy of Sciences & University of Chinese Academy of Sciences, P.R. China); [Yunhua Zhang](#) and [Xiao Dong](#) (National Space Science Center, Chinese Academy of Sciences, P.R. China)

**08:50 Detection of Sport Ball in C-Band Using Continuous-Wave Radars**

[Krzysztof Stasiak](#) (Warsaw University of Technology, Institute of Electronic Systems, Poland); Marcin Zywek, Grzegorz Krawczyk, Mateusz Malanowski, Jędrzej Drozdowicz and Damian Gromek (Warsaw University of Technology, Poland); Karol Klineciewicz (Warsaw University Of Technology, Poland); Piotr Samczynski (Warsaw University of Technology, Poland)

**09:10 Millimeter-wave Imaging Radar System Design Based on Detailed System Radar Simulation Tool**

[Marie Mbeutcha](#) (Goethe University Frankfurt, Germany); Giacomo Ulisse (Johann Wolfgang Goethe-Universität, Germany); Viktor Krozer (Goethe University of Frankfurt am Main, Germany)

**09:30 A Study on Using Different Kinds of Continuous-Wave Radars Operating in C-Band for Drone Detection**

[Krzysztof Stasiak](#) (Warsaw University of Technology, Institute of Electronic Systems, Poland); Marek Ciesielski and Anna Kurowska (Warsaw University of Technology, Poland); [Wojciech Przybysz](#) (Politechnika Warszawska, Poland)

**09:50 A Low Cost Dual-Band Transmit-Receive Module for a Commercial Maritime Radar with Digital Beamforming**

[Niels Hansen](#), Stefan Radziejewski, Jan-Philip Mohncke and Arne F Jacob (Technische Universität Hamburg-Harburg, Germany)

**10:10 Low-cost Target Simulator for End-of-Line Tests of 24 GHz Radar Sensors**

Werner Scheibhofer (Johannes Kepler University Linz & Institute for Communications Engineering and RF-Systems, Austria); Reinhard Feger (Johannes Kepler University Linz, Austria); Andreas Haderer (INRAS GmbH., Austria); [Andreas Stelzer](#) (Johannes Kepler University Linz, Austria)



TOP

**U12: Signal processing for medicine**

Room: F

Chairs: Adam Miroslaw Dabrowski (Poznan University of Technology, Poland), Sławomir Hausman (Lodz University of Technology, Poland)

**08:30 Segmentation of Pedestrians in Thermal Imaging**

[Karol Piniarski](#) and Paweł Pawłowski (Poznan University of Technology, Poland)

**08:50 Interactive Virtual Sound Source for Auditory Localization Tests**

Andrzej Meyer, [Paweł Pawłowski](#) and Adam Miroslaw Dabrowski (Poznan University of Technology, Poland); Wawrzyniec Loba, Dorota Hojan-Jeziarska and Leszek Kubisz (Poznan University of Medical Sciences, Poland)

**09:10 Influence of OCT Acquisition on Fovea Shape Analysis in the Parameterization Applications**

[Agnieszka Anna Stankiewicz](#) (Poznan University of Technology, Poland); Tomasz Marciniak (PUT, Poland); Adam Miroslaw Dabrowski (Poznan University of Technology, Poland); Marcin Stopa and Piotr Rakowicz (Poznan University of Medical Sciences, Poland); Elżbieta Marciniak (Heliodor Swiecicki Medical Hospital, Poznan University of Medical Sciences, Poland)

**09:30 Method of Adaptive Pixel Averaging for Impulse Noise Reduction in Digital Images**

Adam Konieczka, Julian Balcerk and [Adam Miroslaw Dabrowski](#) (Poznan University of Technology, Poland)



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**U13: Microsystems 1**

Room: G

Chairs: Jan Dziuban (Wroclaw University of Science and Technology, Poland), Krzysztof Górecki (Gdynia Maritime University, Poland)

**08:30 Application of 3D Printing in MEMS Technique**

Rafał Walczak (Wroclaw University of Science and Technology, Poland)

**08:50 Rb/Cs Optical High Vacuum Self-Pumping MEMS Cell for Atomic Spectroscopy**

Paweł Knapkiewicz, Jan Dziuban and Tomasz Grzebyk (Wroclaw University of Science and Technology, Poland)

**09:10 Towards MEMS-based Mechanical Microbiology - How Parametrize Mechanically a Single Cell**

[Aleksandra Pokrzywnicka](#) (Wroclaw University of Science and Technology, Poland); Danylo Lizanets (Wroclaw University of Science and Technology, Poland); Rafał Walczak (Wroclaw University of Science and Technology, Poland)

**09:30 MEMS Based Natural Gas Meter for Home Applications**

Paweł Knapkiewicz, Jan Dziuban, Piotr Szyszka and Łukasz Urbaniak (Wroclaw University of Science and Technology, Poland); Krzysztof Domański (Institute of Electron Technology, Poland)



**09:50 Zero-energetic 3D Printed Water Flow MEMS Meter for Smart Digital Planting**

[Krzysztof Adamski](#) and Jaroslaw Adamski (Wroclaw University of Science and Technology, Poland); Jan Dziuban (Wroclaw University of Science and Technology, Poland); Rafał Walczak (Wroclaw University of Science and Technology, Poland)

**Thursday, May 17, 10:35 - 12:15**



**M28: Material characterization**

Room: E

Chairs: Yuriy Prokopenko (National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Ukraine), Bartłomiej Salski (Warsaw University of Technology, Poland)

**10:35 Ferromagnetic Linewidth Measurements of CFMS Heusler Alloy Films**

[Adam Pacewicz](#), Bartłomiej Salski and Paweł Kopyt (Warsaw University of Technology, Poland); Oleksandr Chumak and Adam Nabialek (Institute of Physics, Polish Academy of Sciences, Warsaw, Poland); Jerzy Krupka (Warsaw University of Technology, Poland)

**10:55 Deconvolution-based Spatial Resolution Improvement Technique for Resistivity Scans Acquired with Split-Post Dielectric Resonator**

[Przemysław Korpas](#) (Warsaw University of Technology, Poland)

**11:15 Microwave Determination of Liquid Mixing Ratio for Microfluidics**

[Paweł Barmuta](#) (KU Leuven & Warsaw University of Technology, Belgium); Juncheng Bao and Tomislav Markovic (University of Leuven, Belgium); Dominique Schreurs (KU Leuven, Belgium); Ilja Ocket (IMEC & ESAT-TELEMIC, KU Leuven, Belgium)

**11:35 Broadband Permittivity Measurement of Liquids in a Semi-Open Coaxial Test Cell with Meniscus-Effect Removal**

[Michał Marcin Kalisiak](#) and Wojciech Wiatr (Warsaw University of Technology, Poland)

**11:55 Method for Dielectric Measurement in Liquids Using an Estimation Equation Without Short Termination**

[Kouji Shibata](#) (Hachinohe Institute of Technology, Japan)



**M29: Microwave measurements and signal processing applications**

Room: B

Chairs: Kamil Staniec (Wroclaw University of Technology, Poland), Wojciech Wiatr (Warsaw University of Technology, Poland)

**10:35 Optimal Processing of Low Power Signal in the System of Internet of Things**

[Alexander Parshin](#) (Ryazan State Radioengineering University, Russia); Yuri Parshin (Ryazan State Radio Engineering University, Russia)

**10:55 Interference Mitigation in LTE-CA FDD Based on Mixed-Signal Widely Linear Cancellation**

[Silvester Sadjina](#) (Christian Doppler Laboratory for Digitally Assisted RF Transceivers for Future Mobile Communications & Intel DMCE, Austria); Krzysztof Dufrene (Intel DMCE, Austria); Ram Sunil Kanumalli (Intel Mobile Communications GmbH, Austria); Mario Huemer (Johannes Kepler University Linz, Austria); Harald Pretl (Johannes Kepler Universität, Austria)

**11:15 Modelling the Radiowave Propagation with a Split-Step Wavelet Method for Radio Occultation**

[Remi Douvenot](#) and Alexandre Chabory (ENAC, France); Sebastien Rougerie (CNES, France)

**11:35 Towards Analog Filter-Free All-Digital Transmitters Through Hybrid Estimation and Cancellation of  $\Delta\Sigma$ 's Quantization Noise**

Daniel Costa Dinis (Universidade de Aveiro & Instituto de Telecomunicações, Portugal); Rui Ma and [Koon Hoo Teo](#) (Mitsubishi Electric Research Lab, USA); Philip Orlik (Mitsubishi Electric Research Laboratories, USA); Arnaldo Oliveira (Universidade de Aveiro, Institute of Telecommunications, Portugal); Jose Vieira (Universidade de Aveiro & IEETA, Portugal)

**11:55 Time Interval Measurement Technique Based on the Transformation of the Reference Oscillation Amplitude to Time**

[Tomasz Tankeliun](#) (Vilnius Gediminas Technical University & JSC ELTESTA, Lithuania); Vytautas Urbanavičius (Vilnius Gediminas Technical University, Lithuania); Oleg Zaytsev (JSC ELTESTA, Lithuania)



**M30: Millimeter-wave and sub-THz technology**

Room: C

Chair: Yevhen Yashchyshyn (Warsaw University of Technology & Institute of Radioelectronics, Poland)

**10:35 Real-Time Microwave Characterization of Low-Molecular-Weight Antioxidant Biomarkers**

Natalia Naumova and Hanna Hlukhova (Forschungszentrum Juelich, Germany); Alexander Barannik, Alexey Gubin and Iryna Protsenko (O. Usikov Institute for Radiophysics and Electronics of NASU, Ukraine); Nickolay T. Cherpak (Usikov Institute for Radiophysics and Electronics, National Academy of Sciences, Ukraine); [Svetlana Vitusevich](#) (Forschungszentrum Juelich, Germany)

**10:55 Broadband Characterization of Dielectrics in Sub-THz Range**

[Konrad Godziszewski](#) (Warsaw University of Technology, Poland); Yevhen Yashchyshyn (Warsaw University of Technology & Institute of Radioelectronics, Poland)

**11:15 Coordinate Transformation Approach to the Solution of the Fabry-Perot Open Resonator**

[Tomasz Karpisz](#), Bartłomiej Salski, Paweł Kopyt and Jerzy Krupka (Warsaw University of Technology, Poland)

**11:35 Millimetre Band Detectors Based on GaN/AlGaN HEMT**

[Dmytro But](#) (Institute of High Pressure Physics PAS & Laboratoire Charles Coulomb (L2C), Université de Montpellier, France); Grzegorz Cywinski, Ivan Yahniuk and Pavel Sai (Institute of High Pressure Physics PAS, Poland); Nina Diakonova (Université de Montpellier, France); Yan Wei, Zhang Bo-Wen, Fu-Hua Yang and Li Zhao-Feng (Institute of Semiconductors, Chinese Academy of Sciences, P.R. China); Wojciech Knap (Université Montpellier, CNRS, France)

**11:55 Millimeter and Submillimeter Range Detector Based on Graphene Ballistic Rectifiers**

[Dmytro But](#) (Institute of High Pressure Physics PAS & Laboratoire Charles Coulomb (L2C), Université de Montpellier, France); Auton Gregory (University of Manchester, United Kingdom (Great Britain)); Christophe Consejojo (Université de Montpellier, France); Jeremie Torres (Université Montpellier, France); Ernie Hill and Jiawei Zhanga (University of Manchester, United Kingdom (Great Britain)); Luca Varani (University Montpellier & Institut d'Electronique et des Systemes, France); Dominique Coquillat (University of Montpellier - CNRS France, France); Wojciech Knap (Université Montpellier, CNRS, France); Aimin Song (University of Manchester, United Kingdom (Great Britain))



**M31: Passive radars on moving platforms**

Room: D

Chairs: Diego Cristallini (Fraunhofer FHR, Germany), Mateusz Malanowski (Warsaw University of Technology, Poland)

**10:35 Preliminary Experimental Results of STAP for Passive Radar on a Moving Platform**

[Philipp Wojaczek](#) (Fraunhofer FHR, Germany & University of Rome La Sapienza, Italy); Ashley Summers (Defence Science and Technology Group, Australia); Diego Cristallini (Fraunhofer FHR, Germany)

**10:55 Single Channel Clutter Cancelation in Mobile PCL**

[Krzysztof Kulpa](#), Bartek Dawidowicz, Łukasz Maślowski and Zbigniew Gajo (Warsaw University of Technology, Poland)

**11:15 Cluster Analysis for Multistatic Passive Combined PCL and PET Fusion System**

Leszek Lamentowski and Tadeusz Brenner (PIT-RADWAR S.A., Poland); [Witold Dyszyński](#) (PIT-RADWAR, Poland)

**11:35 Robust Pulse Repetition Interval (PRI) Classification Scheme Under Complex Multi Emitter Scenario**

[Usman Iqbal Ahmed](#) (CAE, National University of Sciences and Technology (NUST) & IAA, AU, Islamabad, Pakistan)



U14: Dynamic spectrum access

Room: F

Chairs: Piotr Gajewski (Military University of Technology, Poland), Jerzy Łopatka (Military University of Technology, Poland)

**10:35 Radio Environment Map to Support Frequency Allocation in Military Communications Systems**

Marek Suchanski and Paweł Kaniewski (Military Communication Institute, Poland); [Janusz Romanik](#) and Edward Golan (Military Communications Institute, Poland)

**10:55 Propagation Models in Radio Environment Map Design**

[Piotr Gajewski](#) (Military University of Technology, Poland)

**11:15 Hybrid Model of Radio Channels Occupancy Prediction for Dynamic Spectrum Access**

[Jerzy Łopatka](#), Krzysztof Malon and Michał Kryk (Military University of Technology, Poland)

**11:35 Performance of Hybrid Sensing Method in Multipath Fading Environment**

[Mateusz Kustra](#) (Military Communication Institute, Poland); Kosmowski Krzysztof (Defence Communication Institute, Poland); Marek Suchanski (Military Communication Institute, Poland)

**11:55 Performance of Subcarrier Intensity Modulation over Imperfect Gamma-Gamma Fading Links**

[Piotr Remlein](#) (Poznan University of Technology & Chair of Wireless Communications, Poland); Tansal Gucluoglu and Abdulgani Ibrahim (Yildiz Technical University, Turkey)



U15: Microsystems 2

Room: G

Chairs: Jan Dziuban (Wroclaw University of Science and Technology, Poland), Witold Pleskacz (Warsaw University of Technology, Poland)

**10:35 Flying to Mars? A Study of New Integrated MEMS Instrumentation for Space Applications**

Jan Dziuban (Wroclaw University of Science and Technology, Poland)

**10:55 Highly Effective MEMS Gas Ionizer - a Significant Step of Development of Integrated Ion-Mass Spectrometer**

[Piotr Szyszka](#), Tomasz Grzebyk, Anna Górecka-Drzazga and Jan Dziuban (Wroclaw University of Science and Technology, Poland)

**11:15 High Vacuum in MEMS**

[Tomasz Grzebyk](#) and Anna Górecka-Drzazga (Wroclaw University of Science and Technology, Poland)

**11:35 Transmission Electron Microscope On-The-Chip - a Reality or Mystification**

[Michał Krysztof](#), Tomasz Grzebyk, Anna Górecka-Drzazga and Jan Dziuban (Wroclaw University of Science and Technology, Poland)

**11:55 Different Methods of Capacitive Comb Drive MEMS Accelerometer Simulations**

Jacek Nazdrowicz, Michał Szermer and [Cezary Maj](#) (Lodz University of Technology, Poland); Andrzej Napieralski (Technical University of Lodz, Poland)

Thursday, May 17, 12:15 - 13:50



L3: Lunch



Poster2: Posters 2

Chair: Konrad Jędrzejewski (Warsaw University of Technology, Poland)

**Software Arbitrary Signal Generator on the PXI Platform for Application in Microwave Medical Diagnostic System Development**

[Grzegorz Jaworski](#) (Wroclaw University of Technology, Poland); Piotr Krasnowski (Université Cote d'Azur, France)

**Influence of Train Interior on Train-Onboard Communication**

[Johann Lichtblau](#) (Friedrich-Alexander-Universität, Germany); Benedikt Sanftl (Friedrich Alexander University of Erlangen-Nuremberg, Germany); Christian Kraus (Friedrich-Alexander-Universität, Germany); Robert Weigel (Friedrich-Alexander Universität Erlangen-Nürnberg, Germany); Alexander Koelpin (BTU & Chair for Electronics and Sensor Systems, Germany)

**Basic Channel Parameters of Ultrasound Transmission in Air**

[Gustaw Mazurek](#) (Warsaw University of Technology, Poland)

**Short Range Mini-radar Making Use of Polarimetric Technique for Detection of Pollutions on Sea Surface**

Paweł Kabacki, Dawid Sysak, Arkadiusz Byndas, Tomasz Wasik and Mariusz Hofman (Wroclaw University of Science and Technology, Poland)

**Monitoring and Tracking System (MTS) for Specialized Vehicles**

Ahsan Waqas (Technical University of Munich & TUM, Germany); [Muhammad Hassam Malhi](#) (Technical University of Munich, Germany)

**Detection of Harmonic Signal in the Mixture with Narrow Band Clutter**

[Ihor Prokopenko](#) (National Aviation University, Ukraine)

**Monopulse Estimation of Direction of Arrival in Case of Multiple Incoherent Sources**

[Roman Mularzuk](#) (PIT-RADWAR S.A., Poland)

**Mobile System for Localization of People Inside Buildings**

Piotr Kaniewski and [Tomasz Kraszewski](#) (Military University of Technology, Poland)

**Evaluation of BAQ on Tiangong-2 Interferometric Imaging Radar Altimeter Data Compression**

[Xiaojin Shi](#) (Center for Space Science and Applied Research, Chinese Academy of Sciences, P.R. China); Yunhua Zhang and Xiao Dong (National Space Science Center, Chinese Academy of Sciences, P.R. China)

**An Interacting Multiple Model Filtering Method Aided by Radial Velocity Information**

[RunZhi Jiao](#), Jian Wang, Qian Song and Yang Gu (National University of Defense Technology, P.R. China)

**Chosen Results of Frequency Modulation and Window Weighting for Radar Pulse Compression**

Michał Kniola, [Tomasz Rogala](#) and Adam Kawalec (Military University of Technology, Poland)

**A Millimeter Wave Narrow Beam Antenna**

Andrea Nagy (Silicon Laboratories & Budapest University of Technology and Economics, Hungary)

**Dyadic Green Function for Layered Coaxial Cylindrical Cavity**

Sanaz Zarei (University of Tehran, Iran); Jalil A. Rashed-Mohassel (School of Electrical and Computer Engineering College of Engineering & University of Tehran, Iran)

**Frequency Divider Module for the European XFEL Phase Reference Signal Distribution System**

[Maciej Urbanski](#), Paweł Jatczak, Dominik Sikora and Krzysztof Czuba (Warsaw University of Technology, Poland); Frank Ludwig, Julien Branlard and Holger Schlarb (Deutsches Elektronen Synchrotron, Germany)

**Leaky-Wave Antenna Designed in SIW Technique with SRR Slots**

[Izabela Slomian](#), Krzysztof Wincza and Sławomir Gruszczynski (AGH University of Science and Technology, Poland)

**Evaluation of Angular Dispersion for Various Propagation Environments in Emerging 5G Systems**

Jan M. Kelner, Cezary Ziolkowski and [Bogdan Uljasz](#) (Military University of Technology, Poland)

**Passive Analysis of Prism-Like Folded Cavity Surface-Emitting Laser Diode**

Jerzy Cuper, [Mateusz Krywicki](#), Bartłomiej Salski and Paweł Kopyt (Warsaw University of Technology, Poland); Andrzej Małag (Institute of Electronic Materials Technology, Poland)

**Design of a Ku-band Compact Dual Polarized Horn Arrays with OMT**

Chang Ding and Fanyi Meng (Harbin Institute of Technology, P.R. China)

**Deferentially-fed Band-Pass Filter with Common Mode Rejection**

[Sławomir Gruszczynski](#), Krzysztof Wincza, Robert Smolarz and Konrad Janisz (AGH University of Science and Technology, Poland)

**IFM Receiver Based on Microwave Frequency Discriminator That Uses Rat-Race Directional Couplers**

[Adam Rutkowski](#) (Military University of Technology, Poland); Hubert Stadnik (Polish Air Force Academy, Poland)

**Interactive Application for Visualization of the Basic Phenomena in RF and Microwave Devices**

[Sebastian Dziedziewicz](#), Maciej Jasinski, Rafał Lech and Piotr Kowalczyk (Gdansk University of Technology, Poland)

**Dielectric Strength of Micromechanically Tunable Microstrip Lines**

[Yuriv Prokopenko](#) and Victor Kazmirenko (National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute", Ukraine); Irina Golubeva (National Technical University of Ukraine "Igor Sikorsky KPI", Ukraine)

**Evaluation of Substrate's Characteristics from the Relation Between Wave and Characteristic Impedances for a CPW**

[Kassem Hamze](#) (Presto Engineering Europe, France); Daniel Pasquet (LaMIPS, France); Philippe Descamps (ENSICAEN/CRISMAT/UMR 6508, Caen, France); Cédric Mayor and Christian Gautier (Presto Engineering Europe, France); Dominique Lesenechal (ENSICAEN/CRISMAT/UMR 6508, Caen)

**Millimeter-wave Propagation in 3D Knitted Fabrics**

[Martin Kokolia](#) and Zbynek Raida (Brno University of Technology, Czech Republic)

**Study of Residual VNA Measurement Errors Due to Imperfect Thru-Reflect-Match Calibration Standards**

[Jarosław Szatkowski](#) and Wojciech Wiatr (Warsaw University of Technology, Poland)

**A Fractional-N Phase-Locked Loop Synthesizer Optimized for Microwave Q-Meter Application**

[Andrzej Musiał](#) and Przemysław Korpas (Warsaw University of Technology, Poland)

**Microwave Synthesizer Subsystem**

[Bence Cseppentő](#) and Tibor Berceli (Budapest University of Technology and Economics, Hungary)

**Mutual Coupling Reduction Using Metamaterial Supersubstrate for High Performance & Densely Packed Planar Phased Arrays**

Mohammad Alibakhshikenari (Università degli Studi di Roma "Tor Vergata", Roma - ITALY, Italy); [Alessandro Salvucci](#) and Giorgio Polli (University of Rome Tor Vergata, Italy); Bal Virdee (London Metropolitan University, United Kingdom (Great Britain)); Chan See (University of Bolton, United Kingdom (Great Britain)); Raed A Abd-Alhameed (University of Bradford, United Kingdom (Great Britain)); Francisco Falcone (Universidad Publica de Navarra, Spain); Aurora Andújar (Fractus, Spain); Jaume Anguera (Fractus Antennas & Universitat Ramon Llull, Spain); Ernesto Limiti (University of Rome Tor Vergata, Italy)

Thursday, May 17, 13:50 - 15:30

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M32: Antennas

Room: E

Chairs: Paweł Kabacik (Wrocław University of Science and Technology, Poland), Roman Kubacki (Military University of Technology, Poland)

**13:50 *On the Broadband Behaviour of Planar Elliptical Dipole -Modal Approach***  
Mariusz Pergol (PIT-RADWAR S.A., Poland); [Włodzimierz Zienuitycz](#) (Gdansk University of Technology, Poland)

**14:10 *Isotropic Antenna Design via Machine Learning***  
[Saifullah Amin](#) and Bilal Ahmed (Institute of Space Technology, Islamabad, Pakistan)

**14:30 *Important Effects Related to the Graphene Layer Implemented into Antennas***  
Paweł Kabacik (Wrocław University of Science and Technology, Poland); Arkadiusz Byndas and Mariusz Hofman (Wrocław University of Science and Technology)

**14:50 *Suppressing Antenna Sidelobes by Means of Inhomogeneous Radome Wall Design***  
[Aleksey Solovey](#) (L3 ESSCO, USA)



### M33: RCS measurements

#### Room: B

Chairs: Boris Levitas (Geozondas, Lithuania), Robert Szelenbaum (PIT-RADWAR S. A., Poland)

**13:50 *Time Domain Indoor System for RCS Measurement and ISAR Imaging***  
Boris Levitas (Geozondas Ltd., Lithuania)

**14:10 *Drone RCS Estimation Using Simple Experimental Measurement in the WIFI Bands***  
Stanisław Rzewuski, Krzysztof Kulpa, Bartłomiej Salski, Paweł Kopyt, Krzysztof Borowiec, Mateusz Malanowski and Piotr Samczynski (Warsaw University of Technology, Poland)

**14:30 *Evaluating the Radar Cross Section of Commercial Drones to Design Anti-Drone Radar***  
Stefano Pisa, Emanuele Piuze and Erika Pittella (Sapienza University of Rome, Italy); [Pierfrancesco Lombardo](#) (University of Rome La Sapienza, Italy); Nertjana Ustalli (University of Rome "La Sapienza", Italy); Wei Cao (National University of Defense Technology, P.R. China); Domenico D Bloisi (University of Verona, Italy); Daniele Nardi (University of Roma, Italy); Paolo D'Atanasio and Alessandro Zambotti (ENEA Casaccia Research Centre, Italy)

**14:50 *Frequency-Domain Chipless RFID Transponders: Improvement the Reading Response***  
[Jan Macháč](#), Milan Polivka, Milan Svanda and Jaroslav Havlíček (Czech Technical University in Prague, Czech Republic)

**15:10 *Radar Cross-Section of a Volley Sport Ball in 0.8 - 18 GHz Range***  
[Bartłomiej Salski](#), Paweł Kopyt, Jerzy Cuper, Piotr Samczynski and Jacek Misiurewicz (Warsaw University of Technology, Poland)



### M34: Terahertz technology

#### Room: C

Chairs: Wojciech Knap (University Montpellier2 and CNRS, France), Viktor Krozer (Goethe University of Frankfurt am Main, Germany)

**13:50 *Terahertz Vision Using Field Effect Transistors Detectors Arrays***  
[Wojciech Knap](#) (University Montpellier2 and CNRS, France); Nina Diakonova (Université de Montpellier, France); Dominique Coquillat (University of Montpellier - CNRS France, France); Frederic Teppe (University of Montpellier & CNRS, France); Jarosław Suszek and Agnieszka Siemion (Warsaw University of Technology, Poland); Maciej Sypek (Orteb, Poland); Grzegorz Cywinski (Institute of High Pressure Physics PAS, Poland); Dmytro But (Institute of High Pressure Physics PAS & Laboratoire Charles Coulomb (L2C), Université de Montpellier, Poland); Ivan Yahniuk and Pavel Sai (Institute of High Pressure Physics PAS, Poland); Przemysław Zagrajek (Military University of Technology, Poland); Jacek Marczewski, Daniel Tomaszewski and Michał Zaborowski (Institute of Electron Technology, Poland)

**14:10 *Towards Resonant THz Detector Devices Based on Schottky Diodes to 2DEG GaN/AlGaIn***  
[Grzegorz Cywinski](#) (Institute of High Pressure Physics PAS, Poland); Pavlo Sai (Institute of High Pressure Physics PAS); Ivan Yahniuk, Piotr Kruszewski, Bartłomiej Grzywacz, Jacek Przybytek, Paweł Prystawko, Alexandr Khachapuridze and Krzesimir Nowakowski-Szkudlarek (Institute of High Pressure Physics PAS, Poland); Wojciech Knap (Université Montpellier, CNRS, France); Piotr Wiśniewski and Bartłomiej Stonio (Central Laboratory CEZAMAT, Poland); Grigory Simin (University of South Carolina, Columbia, USA); Sergey Rummyantsev (National Research University of Information Technologies, Mechanics, and Optics)

**14:30 *Quasi Optical THz Detectors in Si CMOS***  
Kestutis Ikamas (Vilnius University & The General Jonas Žemaitis Military Academy of Lithuania, Lithuania); Justinas Zdanevičius, Lukas Dundulis, Sandra Pralgauskaitė and [Alvydas Lisauskas](#) (Vilnius University, Lithuania); Dovilė Čibiraitė, Daniel Voß and Viktor Krozer (Goethe University of Frankfurt am Main, Germany); Hartmut G. Roskos (Physikalisches Institut, Johann Wolfgang Goethe-Universität Frankfurt, Germany)

**14:50 *A Simulation Study of Terahertz Dielectric Resonator Using Graphitic Carbon Nitride***  
[Uzma Memon](#), Arif Ibrahim and Arnab Pattanayak (IIT Bombay, India); S Duttgupta (Indian Institute of Technology Bombay, India)

**15:10 *THz Resonant-Tunneling Diodes***  
[Michael Feiginov](#) (Technical University of Vienna, Austria)



### TUTORIAL5: Antenna systems and algorithms for microwave imaging

Alexander Yarovoy, Delft University of Technology

#### Room: D

Nowadays, microwave imaging is broadly used for non-destructive testing, concealed weapon detection, through-the-wall imaging, land mine detection, road pavement inspection, underground facilities survey, archaeological investigation, imaging of biological tissues, etc. This list is still expanding, especially at sub-mm wave frequencies. In all cases, the scene of interest is illuminated by natural or man-made sources and image is formed based on received scattered electromagnetic field. The two principal modalities of image formation are analogue (when image is formed by means of lens or mirrors following quasi-optical approach) and digital (when image is formed by means of digital signal processing of scattered field, which is measured at different spatial locations by antennas). While in the former case intensity of electromagnetic field in a single point of the image corresponds to scattering/reflection properties of a corresponding area of the scene, in the latter case electromagnetic field amplitude and phase measured by an antenna at a particular position depend on scattering/reflection properties of the whole scene. In both cases the image cross-range resolution is mainly determined by the electrical size of the imaging aperture (area, at which the scattered field is collected by mirror, lens or antennas) and the range of the scene. The tutorial is focused on selection of measurement locations of the scattered field within the imaging aperture and main digital processing algorithms used to create an image from the measured amplitude and phase of the scattered field.



### U16: Technology, scenarios and compatibility in 5G networks

#### Room: F

Chairs: Hanna Bogucka (Poznan University of Technology, Poland), Jerzy Edmund Zurek (Gdynia Maritime University, Poland)

- 13:50 Assessment of Human Exposure to Cellular Networks Electromagnetic Fields**  
Arkadiusz Kalinowski and [Rafal Pawlak](#) (National Institute of Telecommunications, Poland); [Augustyn Wójcik](#) (National Institute of Telecommunications & Warsaw University of Technology, Poland)
- 14:10 Compatibility Analysis of the 4G/5G Systems with DTT in the 700 MHz Frequency Band**  
[Dariusz P. Wiecek](#) (National Institute of Telecommunications, Poland); Daniel Niewiadomski (The National Institute of Telecommunications, Poland); Marcin Mora (National Institute of Telecommunications, Poland)
- 14:30 Services Orchestration Within 5G Networks - Challenges and Solutions**  
Konrad Sienkiewicz (National Institute of Telecommunication, Poland); Waldemar Latoszek (National Institute of Telecommunications, Poland); Piotr Krawiec (Warsaw University of Technology & National Institute of Telecommunications, Poland)
- 14:50 The Technical Concept of Using the 700 MHz Band as a Base for 5G Smart Cities Networks in Poland**  
Krzysztof Bronk, Adam Lipka and [Rafal Niski](#) (National Institute of Telecommunications, Poland)
- 15:10 Learning and Detection Mechanisms of Spectral-Activity Information Towards Energy Efficient 5G Communication**  
[Krzysztof Cichon](#) and Hanna Bogucka (Poznan University of Technology, Poland); Gediminas Molis and Juozas Adamonis (Baltic Institute of Advanced Technology, Lithuania); Tomas Krilavičius (Vytautas Magnus University & Baltic Institute of Advanced Technology, Lithuania)

## U17: Computer vision and image processing with focus on deep learning

Room: G

Chairs: Tomasz Trzciński (Warsaw University of technology, Poland), Andrzej Witczak (Military University of Technology, Poland)

- 13:50 Does Fragile Co-Adaptation Occur in Small Datasets?**  
Akbar Gumbira and [Rajmund Kozuszek](#) (Warsaw University of Technology, Poland)
- 14:10 Deep Neural Networks for Terrain Recognition Task**  
Pawel Kozlowski and [Krzysztof Walas](#) (Poznan University of Technology, Poland)
- 14:30 Optimal Products Presentation in Offer Images for E-Commerce Marketplace Platform**  
[Anna Wróblewska](#) (Warsaw University of Technology & Applica ai, Poland)
- 14:50 Neural Network for Finding Mathematical Formulas in Videos from Data Science Conferences**  
[Radoslaw Załuska](#) (The Faculty of Electronics and Information Technology, Warsaw University of Technology, Poland)
- 15:10 Adversarial Examples: a Survey**  
[Pawel Zawistowski](#) (Faculty of Electronics and Information Technology, Warsaw University of Technology, Poland)

Thursday, May 17, 15:55 - 17:35

## CLOSING: MRW Closing session

Chairs: Andrzej Napieralski (Technical University of Lodz, Poland), Marian Pospieszalski (National Radio Astronomy Observatory, USA)

- 15:55 The Present and Future of Small Satellites for Remote Sensing of the Earth's Atmosphere**  
[Steven Reising](#) (Colorado State University, USA)
- 16:15 The Fourth Wave in Space Systems Evolution Technology Challenges and New Business Models in the Earth Observation Geo Spatial Domain**  
[Massimo Comparini](#) (E-GEOS, Italy)
- 16:35 MIKON and BaltiURSI Young Scientist Awards Ceremony**
- 16:55 MRW-2018 Closing**