

## Commission B, Fields and Waves

## Activity Report

March 2015 – June 2015

**1 iWAT2015**

## 2015 International Workshop on Antenna Technology

The International Workshop on Antenna Technology (iWAT) is an annual forum for the exchange of information on the research and development in innovative antenna technologies. It especially focuses on small antennas and applications of advanced and artificial materials to the antenna design. At iWAT, all the oral presentations are delivered by invited prominent researchers and professors. iWAT has a particular focus on posters by which authors have the opportunity to interact with leading researchers in their fields. iWAT2015 is a continuation of a series of annual international antenna workshops held in Singapore (2005), White Plains, USA (2006), Cambridge, UK (2007), Chiba, Japan (2008), Santa Monica, USA (2009), Lisbon, Portugal (2010), Hong Kong, PRC (2011), Tucson, USA (2012), Karlsruhe, Germany (2013), and Sydney, Australia (2014).

## 1.1 Statistics

Date: March 4-6, 2015

Venue: Seoul, Korea

Web page: <http://www.iwat2015.org/main/>

Number of invited papers: 45

Number of poster papers: 96

## 1.2 Technical sessions

- MIMO and Antenna Design Related Topics
- THz Antennas and Systems
- Interactive Session I
- Interactive Session II
- Interactive Session III
- Metamaterial-based Antennas
- 5G Antennas/Millimeter Wave Antennas and Systems
- Emerging Trends in Electrically Small Antennas
- Antennas for Biomedical and Wearable Applications
- Debate Session: Antennas and Systems for Next Generation Communications

- Sensor/Wireless Power Transfer with Antennas and Metamaterials

## 2 EuCAP2015

The 9th European Conference on Antennas and Propagation

EuCAP is owned by the European Association on Antennas and Propagation (EurAAP), organised each year since 2006, and which we have the pleasure to host in Lisbon, Portugal. EuCAP is supported by top level world-wide associations on Antennas and Propagation, and provides a forum on the major challenges faced by these communities.

### 1.1 Statistics

Date: April 12-17, 2015

Venue: Lisbon, Portugal

Web page: <http://www.eucap2015.org/>

Number of submitted papers: 1328

Number of full accepted papers: 1019

Number of poster papers: 352

### 1.2 Technical sessions

- Propagation Modelling and Simulation
- Array Antennas
- Chipless RFID Future and Challenges
- Electrically Small Antennas
- Millimetre-wave, submillimetre-wave and Terahertz antennas
- Full Wave Computation and Numerical Techniques
- Indoor Propagation
- Multi-beam satellites
- Deterministic & stochastic coupling analysis for Antennas, Near-Field & EMC applications
- Antenna systems and architectures
- Alpha-Sat Experiment
- Mode-based strategy for antenna analysis and design
- Beamforming and signal processing
- Printed elements, baluns and associated circuits
- Measurements and Simulations in Channel Modelling in Wireless Body Area Networks
- Mutual Coupling Formulation and its Effects in Antenna Systems

- Results of Ka and Q band propagation campaigns using Alphasat Aldo Paraboni and other Satellites
- Adaptive and reconfigurable antennas
- Propagation in Biomedical Environments
- Advances in Commercial Electromagnetic Simulation Tools
- Multiband and wideband antennas
- Scattering and Diffraction
- Antenna technologies for fixed wireless access at 60 GHz and above
- EMI/EMC/PIM Chamber design, measurement and instrumentation
- In Memoriam of Julien Perruisseau-Carrier
- Methodologies and modelling for EMF in medical diagnostics and therapy (MiMed)
- Over the Air (OTA) Testing in Antennas and Multiple Devices
- Array Antennas for Space
- Imaging and Inverse Scattering
- Propagation in Aeronautics and Navigation
- Urban Propagation
- Antenna Measurements at Rohde & Schwarz: The New Test Antenna Chamber
- The IET session on Propagation in the built environment
- Emerging techniques for multiband and wideband antennas
- Applications of Graphene and Novel Materials at Terahertz and Microwaves
- UWB antennas and time-domain techniques
- AMTA/EurAAP Measurements of integrated antennas at mm-wavelengths
- Electromagnetic theory and numerical techniques
- Inkjet Printed Antennas for Flexible, Wearable and Large Area Electronics
- Imaging and Inverse Scattering for Biomedical Applications
- Massive MIMO for 5G broadband communication networks
- Non-Uniform and Sparse Antenna Arrays - Innovative Concepts and Technological Solutions
- Dynamic radio channel modelling in mobile-to-mobile heterogeneous networks
- Slotted-, guided- and leaky-wave antennas
- INTELLECT
- 2011-2015 early stage research in COST VISTA
- Mm-wave Antenna Systems
- Wave-based sensing and imaging for security applications
- AMTA/EurAAP Diagnostics, imaging, and post-processing in antenna measurements
- Therapeutic Applications of Electromagnetic Fields (MiMed)
- Channel measurements and modelling in the higher frequency bands for 5G

- Satellite Propagation
- Network Planning, Optimisation and Simulation
- Advanced RF materials, metamaterials and EBG for Space Applications
- Application of Numerical Techniques to the Solution of Practical Antenna Problems with FEKO
- CST Workshop: Advanced Antenna System Simulation
- Measurement Techniques for Multi-beam Antennas
- Dense Multipath Component (DMC) characterization for radio channel modeling
- Metamaterial Lens and metasurfaces
- INTELLECT.
- Antennas and systems for Wireless Power Transmission in space applications
- Modelling scattering phenomena in wireless links
- Frequency and polarization selective surfaces
- AMTA/EurAAP Satellite and Aerospace Antenna Testing
- Wearable Antennas
- Propagation for multi-gigabit applications
- High North Satellite Propagation
- Propagation Channels for Wide-Sense Vehicle-to-X Communications
- Metamaterials
- Combined Simulation/Measurement Benchmark For Challenging Antennas
- Other Propagation Topics
- THz Antennas and Applications
- General Antenna Measurements
- Tropospheric Propagation
- Microwave Cancer Detection
- MIMO, diversity, and smart antennas
- Reflectarrays and transmitarrays
- Translating Microwave Medical Devices from Research Bench to Patient Bedside
- MIMO OTA Test Trade-offs
- Metamaterials Antennas and Components
- Advanced computational methods and analysis of optical nanoantennas, resonators, and other photonic circuit components
- Advances in near-field, far-field, compact and RCS test ranges
- Wireless Power Transmission and Energy Harvesting
- Lens antennas and radomes
- Conformal Antennas
- Antenna interactions and coupling

- Tuning and Miniaturization Techniques for Small Device Antennas operating at LTE bands
- Emerging chipless RFID technology trends
- Mobile antenna concepts leveraging circuit design techniques
- Latest Progress in Metamaterial-Based Antenna Design
- Domain decomposition methods and macro-basis functions for integral equations
- Wire antennas
- Pulsed-field radio: theory, applications, implementation
- Advances in Plasma-based Antennas and Devices
- Reflector, feed systems and components
- Body-Centric Communications
- Propagation for mmW and 5G
- Advances in space-fed antennas for millimeter-wave communications
- Propagation for Vehicle-to-X Communication
- Antennas and Propagation for Geoscience Applications
- 3D Printing / Additive Manufacturing Technology of Electromagnetic Structure
- Active and integrated antennas
- Conformal antennas
- Electromagnetic theory and numerical techniques for Space Applications
- Small antennas and RF sensors
- Microfluidics and Tunable Material Systems for Antenna Reconfiguration and Control
- Antennas for Space Applications

### **3 ATRASC2015**

1st URSI Atlantic Radio Science Conference

The newly established triennial URSI Atlantic Radio Science Conference (URSI AT-RASC) is the 3rd URSI flagship conference besides the triennial URSI General Assembly and Scientific Symposium and the triennial AP-RASC conference (AsiaPacific Radio Science Conference). This 1st URSI Atlantic Radio Science Conference will have an open scientific program composed of submitted papers within the domains covered by all ten Commissions of URSI.

#### 1.1 Statistics

Date: May 18-22, 2015

Venue: Gran Canaria, Canary Islands

Web page: <http://www.at-rasc.com/>

Number of full accepted papers: 560 (148 for Commission B)

Number of registration: 460

Number of technical meeting; 122

Number of general lectures: 5

## 1.2 Technical sessions

- J01 Realtime data processing
- J02 Array Technology in Radio Astronomy 1
- J03 Array Technology in Radio Astronomy 2
- B01 Scattering and diffraction
- B05 Guided waves and waveguiding structures 1
- B07 Guided waves and waveguiding structures 2
- B02 Antennas: recent advances and future outlook 1
- B04 Antennas: recent advances and future outlook 2
- B08 High-frequency techniques
- B03 Electromagnetic interaction and coupling
- B06 Electromagnetic inverse scattering and remote sensing 1
- B09 Electromagnetic inverse scattering and remote sensing 2
- GH1 Modeling Geospace Boundaries and the need for Radio Science Observations 1
- GH2 Modeling Geospace Boundaries and the need for Radio Science Observations 2
- GH3 Modeling Geospace Boundaries and the need for Radio Science Observations 3
- D01 Energy harvesting in wireless systems
- D02 Trends in THz Communications
- A01 Microwave to submillimeter measurements and standards 1
- A02 Future of Coordinated Universal Time
- H01 Plasma instabilities, turbulence and wave propagation 1
- H02 Plasma instabilities, turbulence and wave propagation 2
- F01 Atmospheric Remote Sensing 1
- F02 Atmospheric Remote Sensing 2
- H03 Plasma instabilities, turbulence and wave propagation, Poster
- J04 New Telescopes, techniques, and Observations 1
- J05 New Telescopes, techniques, and Observations 2
- J06 New Telescopes, techniques, and Observations 3
- B10 Mathematical modeling of electromagnetic problems 1
- B12 Mathematical modeling of electromagnetic problems 2
- B14 Numerical methods

- B11 Antenna theory, design and measurements 1
- B13 Antenna theory, design and measurements 2
- B15 Antenna theory, design and measurements 3
- G01 Ionospheric Morphology
- G02 Data Modeling and Forecasting 1
- G03 Data Modeling and Forecasting 2
- ISSSE1 Cognitive and Software-Defined Radio Communications 1
- ISSSE2 Novel Radio Communication Systems 1
- ISSSE3 Energy Efficient Communications
- F03 Remote Sensing of Earth and Oceans 1
- F04 Remote Sensing of Earth and Oceans 2
- EAB Chaos and complexity in electromagnetics
- A03 Antennas and wireless metrology
- A04 Microwave to submillimeter measurements and standards 2
- AD1 Wireless Power Transmission and Energy Harvesting (COST IC1301)
- H04 Space radio weather: the radio subdomain of space weather 1
- H05 Space radio weather: the radio subdomain of space weather 2
- H06 Space radio weather: the radio subdomain of space weather 3
- GF1 GRAPE (GNSS Research and Application for the Polar Environment) 1
- GF2 GRAPE (GNSS Research and Application for the Polar Environment) 2
- J07 SKA & other instruments
- J08 Ionospheric models and their validation 1
- J09 Ionospheric models and their validation 2
- B16 Novel mathematical methods in electromagnetics 1
- B18 Novel mathematical methods in electromagnetics 2
- B20 Novel mathematical methods in electromagnetics 3
- B17 Photonic and microwave metamaterials 1
- B19 Photonic and microwave metamaterials 2
- B21 Orbital angular momentum in radio frequency bands
- G04 Space Weather Studies 1
- G06 Space Weather Studies 2
- G08 Space Weather Studies 3
- ISSSE4 Cognitive and Software-Defined Radio Communications 2
- ISSSE5 Novel Radio Communication Systems 2
- ISSSE6 Radio Localization, Detection, and Positioning
- E01 EMC of complex systems

- F05 Propagation Measurement and models 1
- F06 Propagation Measurement and models 2
- K01 Biological effects
- K02 Electromagnetics in biomedicine 1
- K03 Electromagnetics in biomedicine 2
- G05 Assimilative modeling and the global ionosonde network 1
- G07 Assimilative modeling and the global ionosonde network 2
- G09 Assimilative modeling and the global ionosonde network 3
- HG1 Highly-Transient Space Plasma Events 1
- HG2 Highly-Transient Space Plasma Events 2
- IC1004-1 Smart and Efficient Wireless Networks and Technologies 1
- IC1004-2 Smart and Efficient Wireless Networks and Technologies 2
- J10 Observatory Reports & Late Papers
- J11 Radio astronomy systems and enabling components 1
- J12 Radio astronomy systems and enabling components 2
- B22 Microstrip antennas and printed devices
- B24 Complex media 1
- B26 Complex media 2
- B23 Novel mathematical methods in electromagnetics 4
- B25 Novel mathematical methods in electromagnetics 5
- B27 Novel mathematical methods in electromagnetics 6
- G10 Ionospheric Effects on GNSS Systems at Low-latitudes 1
- G11 Ionospheric Effects on GNSS Systems at Low-latitudes 2
- G13 Ionospheric Effects on GNSS Systems at Low-latitudes 3
- ISSSE7 Devices and techniques for RF, microwave and photonics 1
- ISSSE8 Devices and techniques for RF, microwave and photonics 2
- G12 GNSS for Ionospheric Studies
- F07 Remote Sensing in Disaster Management 1
- F08 Remote Sensing in Disaster Management 2
- KBE1 Stochastic methods and techniques in radio science 1
- KBE2 Stochastic methods and techniques in radio science 2
- K04 Human body interactions with antennas and other electromagnetic devices
- EC1 Time reversal in electromagnetic environments: theory and applications 1
- EC2 Time reversal in electromagnetic environments: theory and applications 2
- EF1 Statistical methods in electromagnetics
- D03 Photonics in the International Year of the Light 1



- D04 Photonics in the International Year of the Light 2
- ISSSE9 Spectral, Spatial, and Power Utilization in Communication Channels, Poster
- EB1 High Power Electromagnetics and Modelling of Lightning Effects
- EF2 Understanding microwave processing of materials 1
- EF3 Understanding microwave processing of materials 2
- B28 Advances in super-resolution electromagnetic imaging 1
- B30 Advances in super-resolution electromagnetic imaging 2
- B32 Advances in super-resolution electromagnetic imaging 3
- B29 Computational techniques and EM field simulators 1
- B31 Computational techniques and EM field simulators 2
- B33 Computational techniques and EM field simulators 3
- G14 Radar and Radio Techniques for Ionospheric Diagnostics 1
- G15 Radar and Radio Techniques for Ionospheric Diagnostics 2
- G16 Radar and Radio Techniques for Ionospheric Diagnostics 3
- D06 Photonics in the International Year of the Light 3
- D08 Photonics in the International Year of the Light 4
- D05 Trends in RFID for Identification and Sensing 1
- D07 Trends in RFID for Identification and Sensing 2
- D09 Plasmonics
- K05 EMF methods of exposure assessment

#### **4 Future Conferences**

##### **4.1 PIERS 2015 in Prague**

The 35th PIERS 2013 in Guangzhou, China

Date: July 6–9, 2015

Venue: Prague, Czech Republic

Web page: <http://www.piers.org/>

##### **4.2 IEEE APS URSI CNC/USNC 2015**

The 2015 IEEE AP-S Symposium on Antennas and Propagation and URSI CNC/USNC Joint Meeting

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Vancouver 2015

Date: July 19–25, 2015

Venue: Vancouver, Canada

Web page: <http://www.piers.org/>

**4.3 ICEAA 2015, IEEE APWC 2015**

2015 International Conference on Electromagnetics in Advanced Applications, IEEE-APS Topical Conference

on Antennas and Propagation in Wireless Communications

Date: September 7-11, 2015

Venue: Torino, Italy

Web Page: <http://www.iceaa.net>