

Commission B, Fields and Waves
Activity report
March 2009–July 2009

1 EuCAP 2009

The 3rd European Conference on Antennas and Propagation

EuCAP2009, supported by the top level Associations in Antennas & Propagation, provides, through its presentations and exhibition, the ideal place for the exchange of scientific and technical information, both at academic and industrial levels, and to foster collaboration and cooperation in the Antenna & Propagation domain both at European and global levels.

1.1 Statistics

Date: 23–27 March, 2009

Venue: Berlin, Germany

Web page: http://www1.vde.com/conferences_en/eucap2009/

Number of oral presentations: 549

Number of poster presentations: 375

Oral contributions from Japan: 30

Poster contributions from Japan: 14

1.2 Technical sessions

- Microwave/mmW Photonic Feed Architectures for Large Phased Arrays
- High resolution radio propagation prediction techniques and planning of GSM and UMTS/HSDPA networks
- AMTA Workshop: Calibration and certification of ranges for antenna measurements
- System Tests with an Emulated Radio Channel
- Metamaterial-based Gap Waveguides
- Array Antennas
- COST2100 - Vehicular Radio Channels
- Measurement and Statistics of Propagation Data
- Optimization Techniques
- Metamateria
- UWB Radar and Remote Sensing
- Novel Concepts for Handset Antennas
- Antennas for Space Applications
- Measurements of Antennas and Radar Scattering
- Body Area Networks and Medical Implants
- DLR SatCom
- Vehicular Channels
- Large Scale and Multidisciplinary Propagation Projects

- EM Theory for Imaging
- Small Reconfigurable Antennas
- Special Compact Range Topics
- UWB Antennas and Channel Characterization for Communication and Radar
- Dielectric Resonator Antennas, Theory, Design and Applications with the Latest Developments
- Workshop on very fast measurements of wireless devices with small antennas
- Body Area Networks
- Phased Array Techniques
- Convened: Honorary Session on behalf of Prof. Henry Bertoni
- Research activities on channel modelling and propagation impairment simulation within the Sat-NEx project
- EM Theory for New Materials
- EBG Structures
- New UWB Antennas
- Multi-Antenna Systems in Handhelds
- Sub-mm-Wave & THz
- Advances in Indoor and Outdoor Test ranges
- MIMO Antenna System Techniques
- Antennas & Propagation Research in China
- Reflector and Lens Antennas
- Models and Channel Simulations in the cm- and mm Frequency Range
- EM Theory - New Concepts
- FSS & Functional Materials
- UWB Antennas for Imaging/Medical
- Small antenna design and measurements
- Remote Sensing & Space
- Advances in Nearfield Measurements
- MIMO Antennas Systems
- ESA recent A/P supported activities (extract)
- Small Antenna Design for Mobile Handsets, UWB, Sensors, RFID tags and other Applications, and their Performance Enhancement by using EBGs and Metamaterials
- Workshop focus: Hands-on Antenna Design with SEMCAD-X
- The Future of Antenna Engineering - Educational Aspects
- mm-Wave/Quasi Optical Antenna Measurements
- Smart Antennas
- Reflect Arrays
- Mobile Propagation - Outdoor
- Propagation aspects beyond 50 GHz

- Numerical Methods
- UWB Analysis and Design Constraints
- Millimeter-Wave Antennas
- Testing of Antennas and Wireless Devices in Reverberation Chambers
- Automotive Antenna Systems
- European Workshop on Conformal Antennas (EWCA)
- Propagation for Radio Network Planning
- mm- and sub-mm Wave Propagation
- New Wideband Designs
- RFID Antennas & Systems
- Measurement Error Reduction, Diagnostics and Calibration Techniques
- Automotive Antennas
- Antennas and Periodic Structure
- ARTIC Workshop
- The Art and Science of Antenna Near- Field Measurements and Diagnostics: From Fundamentals to Recent Developments
- Atmospheric attenuation on microand mm-waves
- Workshop on 3D EM Modeling using EMPIRE XCcel 5.20
- Data Acquisition, Algorithms and Processing Methods
- Phased Array Antenna Testing
- EM Exposure and Medical Applications
- Linear and Planar Arrays
- Building Penetration
- Experiments and Databases
- Special Applications
- EBG Antenna Design-
- UWB Antennas for Communication
- Planar and Microstrip Antennas
- mm-Wave Antennas
- RCS Measurements
- Smart Antennas and MIMO
- Polarimetric und Propagation Aspects of Radar Remote Sensing
- Reconfigurable Reflect Arrays
- Mobile Propagation - Indoor
- Refractivity-related Effects
- EM Theory for RCS
- Reconfigurable Antennas
- RF Material Measurements
- UWB Systems
- Propagation Distortions and their Mitigation in Global Navigational and and Positioning Systems

2 PIERS 2009 in Beijing

The 25th Progress In Electromagnetics Research Symposium

PIERS provides an international forum for reporting progress and recent advances in all aspects of electromagnetics. Spectra range from statics to RF, microwave, photonics, and beyond. Topics include radiation, propagation, diffraction, scattering, guidance, resonance, power, energy and force issues, and all applications and modern developments.

2.1 Statistics

Date: 23–27 March, 2009

Venue: Beijing, CHINA

Web page: <http://piers.mit.edu/piers2k9beijing/>

Number of oral presentations: 514

Number of poster presentations: 170

Oral contributions from Japan: 52

Poster contributions from Japan: 5

2.2 Technical sessions

- Microwave/Terahertz Photonics Technologies and Their Applications
- Tunable and Nonlinear Metamaterials
- Backward Emitted Cherenkov Radiation in Left-Handed Material
- Radar Investigation of the Atmosphere from the Ground to 110 km
- Wave Propagation in Random Media
- EM Theory, Moving Media, Relativity, Field Quantization
- Extended/Unconventional Electromagnetic Theory, EHD (Electrohydrodynamics)/EMHD (Electromagnetohydrodynamics), Electrobiological
- Electromagnetic Wave Applications in Material Processing and Characterization
- Electromagnetic Field in Materials and EM Field Dispersion in Cloaks and Photonic Crystals
- Plasmonics Nanophotonics: Theory
- Modeling, Characterization and Measurement for Microwave and Millimeter Wave Applications
- Synthetic Aperture Radar and Its Applications
- Signal Processing for Communication Systems & Cognitive Radar
- RF Exposure Safety Issues
- Novel Computation Techniques in Microwaves
- Electromagnetic Field Modeling and Inversion and Applications
- Plasmonics Nanophotonics: Experimental
- Radio-Over-Fiber Communication System
- Metamaterial Technologies from Microwave to Optics
- Bioeffects and Exposure Standards for RF Pulses
- Medical Electromagnetics, RF biological Effect, MRI
- Electromagnetic Field in Bio Magnetism Materials and Instrument and Dispersion in Cloaks and Metamaterials

- Piezoelectric Devices and Systems
- Photonics Sensors
- Metamaterial Applications: from Antennas to Cloaking
- Mathematical and Numerical Tools for Metamaterials
- Microwave Remote Sensing of Soil Moisture
- Electromagnetic Application in the Advanced Manufacturing Technology
- Non-Thermal Mechanisms of Interaction between Electromagnetic Fields and Living Matter
- Progress in fs Laser Interaction with Matter
- Novel Mathematical Methods in Electromagnetics
- Electromagnetic Near Field Effects in Problems of Wave Radiation from and Scattering by Ordered and Disordered Media
- Radar Polarimetry
- Microwave Remote Sensing and Global Climate Change
- Antenna Applications and Measurement
- Antennas in RFID and Mobile Communications
- Fiber Optics, Optical Sensors, and All-optical Signal Processing
- Scattering by Canonical Objects
- Nano Scale Electromagnetics
- Optics and Photonics
- Millimeter-wave on-chip Antennas, Filters, and Passive Components
- EM Based Modeling and CAD Techniques
- Active and Passive Microwave Sensing: Modelling and Simulations
- Electromagnetic and Optical Wave Technologies for Communication and Sensing
- Antenna Theory and Radiation, Microstrip and Printed Antennas
- Scattering, and Inverse Scattering
- Computational Techniques
- MIMO, DOA and Wave Propagation in Wireless Communication
- Microwave Devices and Circuits
- Recent Advances in Metamaterials and Invisibility Cloaking
- Remote Sensing, GPR, SAR
- Rough Surface Scattering, Volume Scattering, and Electromagnetic Theory
- Wireless Sensor Network and Environment Monitoring
- Microwave Circuits and Systems
- State of the Art in Time Domain Methods
- Computational Electromagnetics

3 2009 IEEE AP-S & USNC/URSI

The 2009 IEEE International Symposium on Antennas and Propagation and the 2009 USNC/URSI (U.S. National Committee of the International Union of Radio Science) National Radio Science meeting

The 2009 IEEE International Symposium on Antennas and Propagation and the 2009 USNC/URSI National Radio Science Meeting was held jointly, from June 1-5, 2009 at the Embassy Suites Convention Center in North Charleston, South Carolina. The joint meeting is co-sponsored by the IEEE Antennas and Propagation Society (AP-S) and USNC/URSI Commissions A, B, C, D, E, F and K. Technical sessions (June 1-5), workshops and short courses (May 31 & June 6) are offered to provide a comprehensive and well- balanced program. This meeting provides an international forum for the exchange of information on state-of-the-art research in antennas, propagation, and electromagnetic engineering.

3.1 Statistics

Date: 1–5 June, 2009

Venue: Charleston, SC., U.S.A.

Web page: <http://www.apsursi2009.org/>

Number of oral presentations: 1,113

Number of poster presentations: 252

Number of WITHDRAWN oral presentations: 70

Number of WITHDRAWN poster presentations: 10

Oral contributions from Japan: 43

Poster contributions from Japan: 9

WITHDRAWN oral contributions from Japan: 31

WITHDRAWN poster contributions from Japan: 2

Note: Most of withdrawn papers from Japan are probably due to swine flu.

3.2 Technical sessions

- Metamaterial-Inspired Devices, Components, and Antennas
- AMC Metamaterials and Applications
- RFID Systems: Antenna Designs for Tag and Reader
- Advanced FDTD with Applications
- Electromagnetics and Solar Energy
- Fast Integral Methods
- Photonics and Optical Techniques in Antenna, Lens, and Fiber Design
- Guided-Wave Structures
- Human Body Interactions with Antennas and Other Electromagnetic Devices
- Antennas for 60 GHz applications
- Dipole, Loop, and Slot Antennas
- Quantitative, Hybrid, and Large-Scale Inverse Scattering Methods
- Adaptive Beamforming
- Adaptive Arrays
- Adaptive Antenna Arrays
- DOA and Adaptive Antennas

- Smart Antennas
- Beamforming Antennas and Systems
- Microstrip Antenna Arrays and Feeds
- Microstrip Antenna Arrays and Applications
- Antenna Diversity Techniques
- Nanoscale Electromagnetics
- Artificial and Impedance Surfaces
- Novel RFID Antennas
- Finite Element Techniques and Domain Decomposition
- Hardware Accelerated Computational Techniques for EM Applications
- Integral Equations Methods and Fast Multipole Algorithms
- Electrically Small Antennas
- Array Antennas for Radio Astronomy
- Biological Effects, Dosimetry, and Exposure Assessment
- Rough Surfaces and Random Media
- Electromagnetic Theory
- Leaky Wave and Cavity Antennas
- Electromagnetic Environments and Interference: High- Power, Transients, and Spectrum Management
- FSS and Periodic Structures
- Homogenization and Characterization Techniques for Metamaterials
- Green Antennas for RFID, Paper-based Electronics and Wireless Sensors
- FDTD Subcellular Structures and Complex Media
- Compact Antennas for Wireless Communications
- Miniaturized Multiband Antennas
- Antennas for WiMax and MIMO Applications
- Bioelectromagnetic Imaging and Sensing Applications
- Urban Propagation Characterization
- Slot and Printed Antennas
- Radar Imagery
- Antenna Performance Analysis and Optimization
- Optimization and Antenna Design
- Design and Optimization of Microwave Devices
- Optimization and Design of Waveguides and Transmission Lines
- Optimization
- Optimization of Antenna Arrays
- Performance Optimization with EBG Structures
- Antennas and Propagation for On-Body Communication

- Applications of Metamaterials, EBG Structures and Interdigitated Sensors
- Cloaking, Tunneling and Transformation EM
- RFID Systems: Coupling and Environmental Effects
- Frequency-Domain and Hybrid Methods
- Antennas for Security and Public Safety Applications
- Antennas for Mobile Applications
- Multi-band and Wide Band Microstrip Antennas
- Near Field & Efficiency Measurement Techniques
- Cancer Detection and Treatment
- Propagation in Complex Environments
- Time-Domain Methods
- Electromagnetics Education
- Tunable & Active Metamaterials and Applications
- Antenna Matching and Feed Designs
- Nanomaterials and Nanostructures for RF, MMW, and THz Applications
- Antennas with Metamaterial Structures
- Microstrip Antenna Designs and Measurements
- FDTD Analysis, Subgridding, and Huygens Surfaces
- Printed and Wire Antennas for Wireless Applications
- Dielectric Resonator Antennas
- Multiband and Wideband Antennas
- Wireless Communications
- Biomedical Applications and EM Exposure
- Manufacturing Techniques
- Preconditioning and Fast Methods
- Numerical Methods
- Numerical Methods and Higher Order Models
- Reconfigurable Antennas for Wireless Applications
- Reconfigurable Antennas
- Reconfigurable Arrays and Reflectors
- Integral Equation Methods and Wire Modelling
- Active Antenna Arrays and Transceivers Based on Coupled Oscillators
- Metamaterials and Antennas
- FDTD Modeling and Unconditionally Stable Methods
- Integral Equations Methods
- Applications of Dielectric Resonator and Lens Antennas
- Predictions and Tracking of Environmental and Wildlife Phenomena
- Integral Equations and Novel Discretization Techniques

- Propagation Phenomena
- Diverse Measurement Techniques
- Material Characterization and Extraction Methods
- Transmission Line Metamaterials and Applications
- Ultra Wideband Antennas
- Military Applications
- High Frequency and Asymptotic Methods
- Integral Equation Methods in the Low Frequency Regime
- Multiband Fractal Antennas
- Radio Propagation in Confined Spaces for New Wireless Systems
- Antenna Theory and Design
- Inverse Scattering and Imaging Techniques
- Electronic Devices and Applications
- Antenna Near Fields
- Antenna Arrays: Beamforming and Direction of Arrival
- Array Antenna Radiation Pattern Synthesis and Control
- Reflectarrays and Other Space Fed Arrays
- Wideband Arrays
- Phased-Array Antennas
- Reflector Antennas
- Metamaterials and Guided Waves
- Slotted Waveguide Arrays
- Signal Analysis and Enhanced Algorithms for EM Metrology
- Metamaterials: Low Loss or High Absorption
- 15th Anniversary of J.-P. Berenger's Perfectly Matched Layer
- Multi Domain and Spectral Basis Functions for BEM and FEM
- Vehicular Antennas
- Wideband and Broadband Techniques for Antennas
- Microstrip Antennas with Novel Feeding Schemes
- Feeds for Aperture Antennas
- Simulations and Measurements for Indoor Propagation
- Remote Sensing of Land, Sea, Atmosphere: Measurements and Models
- Antenna System Elements
- Inverse Scattering
- Electromagnetic Bandgap Structures
- Metamaterial Designs and Applications
- Microstrip Antennas
- Miniaturized and Low-Profile Antennas

- Wideband Spirals, Helices and CP Antennas
- Domain Decomposition and Hybrid Circuit Techniques
- Scattering and Diffraction
- Multiphysics Electromagnetics
- Imaging
- Monopoles, Bow-Ties and Cone Designs
- Antenna and Field Measurement
- Composite Right/Left-Handed (CRLH) Transmission-Line Metamaterials
- Antennas in Complex Platforms
- Complex Media
- Propagation: Indoor, Outdoor, Land, and Sea
- Transformation Electromagnetics
- Metamaterial Structures
- Ultra Wide Band Systems
- Slot Antennas
- Transient and Frequency Domain Scattering Applications
- Antenna Applications
- Yagi-Uda Array Antenna
- IR/Optical Periodic and Nano Structures
- Material Characterization
- Radar Systems and Signal Processing
- Theoretical Electromagnetics
- Antenna Measurement for Wireless Applications
- Cavity and Aperture Coupling
- Mutual Coupling in Antennas
- Remote Sensing

4 Future Conferences

4.1 PIERS 2009 in Moscow

The 26th Progress In Electromagnetics Research Symposium

Date: 18–21 August, 2009

Location: Moscow, Russia

Web page: <http://piers.mit.edu/piers2k9Moscow/>

4.2 ISAP 2009

2009 International Symposium on Antennas and Propagation

Date: 20–23 October, 2009

Location: Bangkok, Thailand

Web page: <http://www.isap09.org/>

4.3 EuCAP2010

The 4th European Conference on Antennas and Propagation

Date: 12–16 April, 2010

Location: Barcelona, Spain Web page: <http://www.eucap2010.org/>

4.4 2010 IEEE AP-S & USNC/URSI

The 2010 IEEE International Symposium on Antennas and Propagation and the 2009 USNC/URSI (U.S. National Committee of the International Union of Radio Science) National Radio Science meeting

Date: 11–17 July, 2010

Venue: Sheraton Centre Hotel in Toronto, Ontario, Canada

Web page: <http://www.apsursi2010.org/>