

**B01 - Electromagnetic theory (I,C,P)**

Monday 24/10/2005 09:00 - 12:40 / Oral Session / 10 papers / Room MC-R

Convener: Paul Smith(Australia) / email: [pdsmith@maths.mq.edu.au](mailto:pdsmith@maths.mq.edu.au)

Co-convener: Yahia Antar(Canada)/ email: [antar-y@rmc.ca](mailto:antar-y@rmc.ca)

*Summary*

This session focuses on the fundamental aspects of electromagnetic theory in a broad sense. It includes new solution methods and approaches for problems in electromagnetics, as well as other theoretical aspects of electromagnetic theory. Advances in mathematical methods, solutions to canonical problems and electromagnetism in micro-and nano-technologies are of interest. Optimization and design for EM applications, as well as, mathematical modeling of nonlinear phenomena, EM problems of complex and nonlinear materials and new approaches for solving wave propagation problems in these materials are especially welcome.

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**B02 - Scattering and diffraction (I,C,P)**

Thursday 27/10/2005 09:00 - 12:40 / Oral Session / 10 papers / Room MC-R

Convener: Piergiorgio Uslenghi(USA)/ email: [uslenghi@uic.edu](mailto:uslenghi@uic.edu)

Co-conveners: Roberto Tiberio(Italy)/ email: [tiberio@diu.unisi.it](mailto:tiberio@diu.unisi.it)

Ludger Klinkenbusch/ email: [lbk@tf.uni-kiel.de](mailto:lbk@tf.uni-kiel.de)

*Summary*

The Session will review topics covering a wide range of scattering and diffraction problems, including edge diffraction, high frequency methods, hybridization with high frequency methods, use of artificial structures for optimal control of wave propagation, scattering from disordered media and potential applications. Study of scattering from non-linear/anisotropic media as well as mathematical problems will also be emphasized.

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**B03 - Inverse scattering and imaging (I,C,P)**

Wednesday 26/10/2005 09:00 - 12:40 / Oral Session / 10 papers / Room MC-R

Convener: Karl langenberg(Germany) / email: [langenberg@uni.kassel.de](mailto:langenberg@uni.kassel.de)

Co-convener(s): Jurgen Detlefsen(Germany)/ email: [detlefsen@tum.de](mailto:detlefsen@tum.de)

Mitsuo Tateiba(Japan)/ email: [tateiba@csce.kyushu-u.ac.jp](mailto:tateiba@csce.kyushu-u.ac.jp)

*Summary*

This session covers contributions that detail new advances in the theory, their methods and applications. This includes the development of efficient and rapid algorithms for solving linear and nonlinear inverse scattering problems in areas such as geophysical probing, remote sensing, non-destructive testing, medical imaging, target identification, etc. Radio frequency, microwave tomography and applications, iterative nonlinear inverse scattering techniques and electromagnetic techniques for nondestructive testing and evaluation are also of interest.

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**B04 - Antennas and arrays (I,C,P)**

Friday 28/10/2005 09:00 - 12:40 / Oral Session / 10 papers / Room MC-R  
Convener: - Yahia Rahmat-Samii(USA)/ email: [Rahmat@ee.ucla.edu](mailto:Rahmat@ee.ucla.edu)  
Co-convener: John Volakis(USA)/ email: [volakis.1@osu.edu](mailto:volakis.1@osu.edu)

*Summary*

This session will concentrate on methods for the design, analysis and synthesis of antennas and arrays with a particular emphasis on electromagnetics aspects. It will include wideband and multiband antennas, mutual coupling, conformal structures, interference mitigation, scan blindness and wave interaction effects, efficient methods for large or sparse arrays, array synthesis, numerical and hybrid methods for arrays, and efficient electromagnetic formulations for array antennas.

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**B05 - Numerical, asymptotic and hybrid methods (I,C,P)**

Thursday 27/10/2005 14:00 - 16:20 / Oral Session / 7 papers / Room MC-R  
Convener: Prabhakar Pathak(USA)/ email [pathak.2@osu.edu](mailto:pathak.2@osu.edu)  
Co—convener: Giuliano Manara(Italy)/ email: [g.manara@iet.unipi.it](mailto:g.manara@iet.unipi.it)

*Summary*

This session will address the developments in the construction of integral and differential equation methods, as well as, hybrid and asymptotic techniques for efficient solution of radiation and scattering problems. Special interest will be also on solvers for large problems, and application of model based parameter estimation techniques to speed up field computations in time and frequency domains.

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**B06 - Transient fields and ultra wide band Antennas (I,C,P)**

Saturday 29/10/2005 09:00 - 11:40 / Oral Session / 7 papers / Room MC-R  
Convener: Scott Tyo(USA)/ email: [tyo@ece.unm.edu](mailto:tyo@ece.unm.edu)  
Co-convener: Mats Gustafsson(Sweden)/ email: [mats.gustafsson@es.lth.se](mailto:mats.gustafsson@es.lth.se)

*Summary*

True time domain radiation and reception has become important in applications ranging from impulse radar to ultra wideband radio to electronic warfare. This session will explore the theory that relates these varied applications and the systems that have been built to realize true pulsed radiation. Invited presentations will cover transient radiation and propagation theory and the relationship to frequency domain theory; methods and hardware for true time domain measurements; antennas and systems for UWB radio; impulse radar, target ID, and ground penetrating radar; and timed/UWB arrays, UWB SAR, and time reversal imaging. Papers are encouraged that explore true transient radiation physics, not just time domain numerical modeling

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**B07 - Guided waves, radiation and interference in open planar structures (I,C,P)**

Tuesday 25/10/2005 14:00 - 16:20 / Oral Session / 7 papers / Room MC-R  
 Convener: David Jackson(USA)/ email: [djackson@uh.edu](mailto:djackson@uh.edu)  
 Coconvener: Arthur Oliner(USA)/ email: [aao@merrimacind.com](mailto:aao@merrimacind.com)

*Summary*

This session will address guided wave, radiation, and high-frequency effect issues in planar structures or other guiding structures. This includes high-frequency effects in microwave and millimeter-wave circuits, novel antennas employing metamaterials, radiation from traveling or leaky-wave antennas, and propagation on guiding structures including metamaterials, periodic structures, planar structures, fibers, or beams. Modeling and solution techniques for guided-wave and radiation problems, and well as novel effects are included.

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**B08 - Educational issues in Electromagnetic Theory and Applications (I,P)**

Monday 24/10/2005 16:40 - 18:00 / Oral Session / 4 papers / Room MC-E  
 Convener: Makoto Ando(Japan)/ email: [mando@antenna.ee.titech.ac.jp](mailto:mando@antenna.ee.titech.ac.jp)  
 Co-convener: Ari Sihvola(Finland)/ email: [ari.sihvola@hut.fi](mailto:ari.sihvola@hut.fi)

*Summary*

Educational issues and challenges related to learning of the electromagnetic theory and applications will be the focus of this session. To be emphasized are the influence of modern multi media technology in electromagnetic education and the interpretative opportunity that certain modeling methods can offer with respect to the basic electromagnetic physics and phenomena.

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**BC - Antennas for wireless systems and mobile - 1 (I,C,P)**

Friday 28/10/2005 15:20 - 18:00 / Oral Session / 7 papers / Room MC-R  
 Convener: Amir Zaghloul(USA)/ email: [zaghloul@vt.edu](mailto:zaghloul@vt.edu)  
 Co-conveners: Jorgen Bach Andersen(Denmark)/ email: [jba@cpc.auc.dk](mailto:jba@cpc.auc.dk)  
 H Arai(Japan)/ email : [arai@ynu.ac.jp](mailto:arai@ynu.ac.jp)

*Summary*

Wireless systems, especially mobiles, require antennas with system-dependent requirements. They include operation near the human body, operation in a multi-path environment, extremely small size, space, beam and polarization diversity, dual-frequency operation, pattern reconfiguration, smart antennas and adaptive techniques. Unique quality factors, in contrast to the classical ones, are also introduced such as mean effective gain, correlation factor and efficiency in terms of volume. design techniques for antennas featured for mobile wireless systems, implementation of new concepts, cost-effective realization of antennas and field-test results are of special interest. Introduction of latest projects such as ACE are introduced.

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**BCD - Metamaterials, plasmonic structures and their applications (I,C,P)**

Tuesday 25/10/2005 09:00 - 12:40 / Oral Session / 10 papers / Room MC-R

Convener: Nader Engheta(USA) / email: : [engheta@ee.upenn.edu](mailto:engheta@ee.upenn.edu)

Co-convener(s): Richard Ziolkowski(USA)/ email: [ziolkowski@ece.arizona.edu](mailto:ziolkowski@ece.arizona.edu)

*Summary*

In the past few years, there has been a significant interest in exploring electromagnetic properties of artificially structured composite media in order to develop materials that mimic either known material responses or that quantitatively have new, physically realizable response functions that do not occur, or may not be readily available, in nature. Examples of these metamaterials include double negative (DNG) or left-handed (LH) materials, in which the real parts of effective permittivity and permeability can be simultaneously negative in a given band of frequency; "single-negative" (SNG) media where one of the two parameters may be negative, such as plasmonic materials in the optical and IR regimes (e.g., noble metals); electromagnetic band gap (EBG) (which in the optical domain are called photonic band gap (PBG)) structured materials; and textured or complex surfaces such as high-impedance ground planes. These metamaterials and plasmonic media exhibit exciting features in guidance, radiation, and scattering of RF and optical waves. Nano-electromagnetism and nano-fabrication issues of these materials are also of paramount importance in the future applications of these metamaterials and plasmonic structures. The qualitatively new response functions of these engineered materials are often generated by artificially fabricated inclusions embedded in host media or connected to or embedded on host surfaces. This session, which will consist of invited, contributed, and poster presentations, is intended to present recent research advances in the theoretical, computational, and experimental aspects of the metamaterials and plasmonic structures and their potential applications.

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**BCF – Propagation models and Maxwellian approach to Smart antennas (I, C, P)**

Wednesday 26/10/2005 15:20 - 18:00 / Oral Session / 7 papers / Room MC-R

Convener: Tapan Sarkar(USA) / email: [tk Sarkar@syr.edu](mailto:tk Sarkar@syr.edu)

Co-convener(s): Takashi Ohira (Japan)/ email: [ohira@acr.atr.co.jp](mailto:ohira@acr.atr.co.jp)

Werner Wiesbeck(Germany)/ email: [Werner.wiesbeck@ihe.uka.dg](mailto:Werner.wiesbeck@ihe.uka.dg)

*Summary*

This session will deal with the electromagnetic modeling aspects of phased arrays merging the signal processing methodology with a fundamental physics based analysis. This will involve all aspects of wireless communication and will connect the Shannon Channel capacity with the Maxwellian group velocity.

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**BP - GENERAL POSTER SESSION COMMISSION B (P)**

- / Poster Session / Room HNG

Convener: Ahmed Kishk(USA)/ email: [ahmed@olemiss.edu](mailto:ahmed@olemiss.edu)

D.R.Wilton(USA)/ email: [wilton@uh.edu](mailto:wilton@uh.edu)

*Summary*

Contributed results related to the terms of reference of the Commission

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**BT - TUTORIAL**

**B(a) – Computational Electromagnetics and Antenna Applications**

Lecturer: Anja Skrivervik, Juan Mosig

**B(b) – Metamaterials and Plasmonic Structures**

Lecturer: Nader Engheta

Monday 24/10/2005 15:20 - 16:20 / Lecture Session / Room MC-E

Convener: M. Ando (Commission Chair) / email: [mando@antenna.ee.titech.ac.jp](mailto:mando@antenna.ee.titech.ac.jp)

Co-convener(s): L. Shafai (Commission Vice-chair)/email: [shafai@ee.umanitoba.ca](mailto:shafai@ee.umanitoba.ca)

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