

ICEAA '09

International Conference
on Electromagnetics
in Advanced Applications

September 14-18, 2009
Torino, Italy

ICEAA '09

Organized by

POLITECNICO DI TORINO

IEIIT-CNR

COREP

In cooperation with

URSI, the International Union of Radio Science

IEEE Antennas and Propagation Society

IEEE Electron Devices Society

IEEE Microwave Theory and Techniques Society

IEEE Italy Section

IEEE North Italy AP, ED, MTT Chapter

Sponsored by

Istituto Superiore Mario Boella
sulle Tecnologie dell'Informazione e delle
Telecomunicazioni

Torino Wireless Foundation

*Administrative support services
provided by COREP*

FINAL PROGRAM

ICEAA STEERING COMMITTEE

Rodolfo S. Zich	President of the Istituto Superiore Mario Boella President of the Torino Wireless Foundation
Roberto D. Graglia	Politecnico di Torino
Riccardo Tascone	Head of IEIIT-CNR
Piergiorgio L.E. Uslenghi	University of Illinois at Chicago, USA

ICEAA ORGANIZING COMMITTEE

Chairman:

Roberto D. Graglia Politecnico di Torino

Members:

Guido Lombardi Politecnico di Torino
Giusy Spinasantà COREP

Responsible of the technical exhibition:

Paola Pirinoli Politecnico di Torino

Secretariat:

Maria Teresa Canelli Politecnico di Torino

Engineer:

Augusto Olivieri IEIIT-CNR

Treasurer/administration:

COREP Politecnico di Torino

ICEAA SCIENTIFIC COMMITTEE

P.L.E. Uslenghi, USA, Chair

S. Benedetto, Italy

O. Biro, Austria

M. F. C tedra, Spain

W.C. Chew, USA

M. D'Amore, Italy

D. B. Davidson, South Africa

L. G rel, Turkey

E. Heyman, Israel

I.V. Lindell, Finland

M. A. Lyalinov, Russia

P. de Maagt, The Netherlands

F. Olyslager, Belgium (deceased)

M. Orefice, Italy

P. Russer, Germany

P.D. Smith, Australia

W. Wiesbeck, Germany

D.R. Wilton, USA

WELCOME TO THE CONFERENCE

On behalf of the ICEAA Steering Committee, of the ICEAA Organizing Committee and of the ICEAA Scientific Committee, I am glad to welcome all participants to the eleventh edition of ICEAA.

This Conference has a wide scope, which includes all kinds of advanced applications in Electromagnetics and new technology developments. Broad areas are covered, ranging from Electromagnetic Compatibility and Intentional Electromagnetic Interference to Antennas, Propagation, and Components Technologies, from Radar Cross Section and Asymptotic Techniques to Electromagnetic Applications to Biomedicine, from Computational Electromagnetics to Wireless Communications, from Metamaterials to New Horizons in Nano-magnetism. This edition features 30 sessions including seventeen special sessions; 289 papers are scheduled, out of the 411 submitted. As in previous editions invited papers will be presented, giving recent information on the state of the art and new technologies. A short course on "Transformation Electromagnetics and Cloaking Devices" will be held on Tuesday afternoon, September 15, by Prof. S. Maci of the University of Siena, Italy. Another half-day short course on "Virtual Drive - Optimization of Car Integrated Multiple Antenna Systems for Mobile Communications" will also be held on Friday, September 18, following all the sessions, by Profs. W. Wiesbeck and C. Sturm of the Karlsruhe University, Karlsruhe, Germany.

The Conference is organized by the Politecnico di Torino and by the National Research Council of Italy. The Politecnico di Torino, a State University founded in 1859, is one of the major technical universities in Italy. The Politecnico currently numbers 26000 students, with about one third of the 16000 students in Engineering that follow curricula in Information Engineering.

The Conference is held at the "Torino Incontra" Congress Center. This fully air-conditioned Congress Center is in Torino downtown, near important historical monuments, museums and parks. Don't miss the opportunity to visit so many interesting places in Torino and its surroundings: I am sure you will enjoy them.

We look forward to seeing you in Torino in September.

Roberto D. Graglia
Chairman of the ICEAA Organizing Committee

GENERAL INFORMATION

DATES AND LOCATION

The conference will be held from 14th to 18th of September 2009, at the “Torino Incontra” Congress Center, Via Nino Costa 8, Torino (see map).

OFFICIAL LANGUAGE

The official language is English. No simultaneous translation will be provided.

PROCEEDINGS

At the registration, each participant will receive a copy of the Conference Proceedings.

REGISTRATION FEE

The registration fee is 600,00 Euro per person, VAT included. Full registration of all participants is required, including members of the Conference Committees, Session Chairs and Authors.

A non-refundable registration for each paper has been required from the corresponding Author at the time of submission of the contribution in final form.

The registration fee includes attendance to all sessions, luncheons and coffee breaks, banquet, and participants' briefcase containing the Conference Proceedings and other material.

REGISTRATION AT THE CONFERENCE

A registration desk will be located in the Hall of the Congress Center. Accompanying persons and late registrants may register, or pre-registrants may pick up conference materials, at the following times: Monday: 8:00÷17:00, Tuesday through Thursday: 8:30÷17:00. The accompanying person fee is 120,00 Euro and includes only the banquet.

MEALS AND REFRESHMENTS

Coffee breaks and luncheons are included in the registration fee. Luncheons will be served in the Conference Center.

BANQUET

A banquet will be offered to the participants on **Thursday night, at 20:00**, at the **Castello di Pavone**, via Dietro Castello, Pavone Canavese (Torino).

Please visit: www.castellodipavone.com

Buses depart at 18:30 (**sharp**) from the Torino Incontra Congress Center. **Participants are requested to confirm**

at the Conference registration desk for their bus transportation.

The winner(s) of the ICEAA '09 Young Scientist Award will be announced at the Banquet.

PARKING

Unguarded parking facilities are available around the Congress Center area. However, to park in the centre of Torino, one has usually to buy a parking ticket at the vending machines located close to the parking area. In this part of town it is very difficult to find parking.

AUDIOVISUAL EQUIPMENT

Each meeting room will be equipped with a notebook. Other equipment will be available only upon written request to the Organizing Committee, to be received before September 5. The presenting authors will not be allowed to use their personal computer for presentation; only the computer of the meeting rooms can be used for presentation.

INTERNET CONNECTION

The Conference Centre features WI-FI Internet access. Pre-paid cards can be purchased to log in at the cost of 10 Euro, for unlimited access during the conference dates. We remind all participants that in order to buy an internet card from the Conference Center they are obliged by Italian regulations to provide a photocopy of their passport or of other valid ID documents.

MESSAGES

During the Conference, messages may be directed to participants via Email (iceaa09@iceaa.polito.it) or by calling the Congress Center at +39-011-557-6845. Messages will be posted in the main hall of the Congress Center.

TRANSPORTATION

Torino International Airport is located about 15 km from the center of the city, and may be reached by bus or taxi. It is conveniently connected to the main European airports (Amsterdam, Brussels, Frankfurt, London, Paris, Rome, Zurich and many others), through which intercontinental connections are available. Alternatively, the intercontinental airport of Milano-Malpensa (120 km from Torino) or the international airport of Milano-Linate (150 km from Torino) may be used. The "Torino Incontra" Congress Center is in the center of the city and is served by several buses and tramways from other parts of town. Tickets cannot be bought on the bus or tram; they must be purchased in advance, at newsstands, bars, tobacco shops, etc.

WEATHER

In mid-September, the weather in north-western Italy is usually fair, with temperatures ranging between 15°C to 25°C. Occasional showers are possible; therefore raincoats or umbrellas may be useful.

HOTEL ACCOMMODATIONS

A number of hotel rooms in different price categories has been booked for the period September 13 to 19: to make reservations, please use the form available on www.iceaa.net, and send it as soon as possible to:

EVENTI E TURISMO - Hotel Reservation Center

Corso Galileo Ferraris 98 - 10129 Torino

Tel. +39 011.561.37.60 Fax +39 011.509.12.90

E-mail: info@eventieturismo.it

It is advisable to make an early reservation because hotels are generally full. A credit card number must guarantee reservations.

ACCOMPANYING PERSON PROGRAMME

For the latest information on the Accompanying Person Programme and other Social Events please check www.iceaa.net, or refer to the Conference registration desk.

OTHER ACTIVITIES

In September there are a number of interesting events in Torino, such as the International Music Festival "MITO Settembre Musica", September 3-24, 2009, art exhibitions, etc. Detailed information will be available at the Conference registration desk.

USEFUL ADDRESSES

For technical and scientific aspects:

ICEAA Secretariat

Dipartimento di Elettronica, Politecnico di Torino

Corso Duca degli Abruzzi 24, 10129 Torino

Tel. +39-011-564-4000

(-4056, Prof. R.D. Graglia; -4012, Dr. G. Lombardi)

Fax +39-011-564-4015/-4099

E-mail: iceaa09@iceaa.polito.it

For logistics aspects:

COREP (Mrs. Giusy Spinasanta)

C.so Duca degli Abruzzi, 24 - 10129 Torino, Italy

Tel.: +39 011 19742433 - Fax: +39 011 19742429

E-mail: gspinasanta@corep.it

For hotel reservations:

EVENTI E TURISMO - Hotel Reservation Center
Corso Galileo Ferraris 98 - 10129 Torino
Tel. +39 011.561.37.60 Fax +39 011.509.12.90
E-mail: info@eventieturismo.it

TECHNICAL EXHIBITION

A technical exhibition will be held in the area near the Conference Rooms. Exhibitors and others requiring further information on this matter should contact:

COREP (Mrs. Giusy Spinasanta)
Tel.: +39 011 19742433 - Fax: +39 011 19742429

ICEAA'09 YOUNG SCIENTIST AWARD

A certificate and a prize of 900 Euro will be awarded to the young scientist who has authored the best ICEAA paper in terms of content and impact on Electromagnetics, either as a single author or as the first author of a team of no more than three authors. In case of eligible coauthors who are registered participants at ICEAA, each awardee will receive a certificate and the cash award will be shared equally among them. The winner(s) of the ICEAA'09 Young Scientist Award will be announced at the Conference Banquet on Thursday evening, September 17, 2009. Since the award announcement and presentation are made at the ICEAA Banquet, all candidates are expected to attend the Banquet.

Short Course on TRANSFORMATION ELECTROMAGNETICS AND CLOAKING DEVICES

Prof. Stefano Maci of the University of Siena, Italy, will hold a half-day short course on Transformation Electromagnetics and Cloaking Devices, on Tuesday, September 15. Participants may register for this short course at the conference registration desk. The cost of the short course is 120,00 Euro (VAT included).

Short Course on VIRTUAL DRIVE - OPTIMIZATION OF CAR INTEGRATED MULTIPLE ANTENNA SYSTEMS FOR MOBILE COMMUNICATIONS

Profs. Werner Wiesbeck and Christian Sturm of the Karlsruhe University, Karlsruhe, Germany, will hold a half-day short course on Virtual Drive-Optimization of Car Integrated Multiple Antenna Systems for Mobile Communications, on Friday, September 18, following all the sessions. Participants may register for this short course at the conference registration desk. The cost of the short course is 120,00 Euro (VAT included).

CONFERENCE SCHEDULE

(Please check the detailed program in the following pages)

MONDAY, SEPTEMBER 14

SALA GIOLITTI	SALA EINAUDI	SALA SELLA	SALA CAVOUR
Formal Opening 8:45 ÷ 10:00			
<p style="text-align: center;">Session 1</p> <p style="text-align: center;">Finite Methods</p> <p>Chairs: D. B. Davidson, L. C. Kempel, G. Lombardi</p> <p style="text-align: center;">10:20 ÷ 17:40</p>	<p style="text-align: center;">Session 3</p> <p style="text-align: center;">EMC/EMI/EMP</p> <p>Chairs: C.E. Baum, Z. Raida</p> <p style="text-align: center;">10:20 ÷ 12:40</p>	<p style="text-align: center;">Session 6</p> <p style="text-align: center;">Organized by G. Gerini and P. de Maagt</p> <p>Millimetre and Submillimetre Wave for Security Applications</p> <p>Chairs: G. Gerini, P. de Maagt</p> <p style="text-align: center;">10:20 ÷ 12:40</p>	<p style="text-align: center;">Session 8</p> <p style="text-align: center;">Organized by D. Erricolo, J. A. Sjogren, and M. C. Wicks</p> <p>Combining Geometric Propagation Models with Adaptive Waveform Technology: a Perspective for Emerging Communications, Radar and Navigation Paradigms</p> <p>Chairs: D. Erricolo, J.A. Sjogren</p> <p style="text-align: center;">10:20 ÷ 15:20</p>
<p style="text-align: center;">Session 2</p> <p style="text-align: center;">Radar Cross Section and Asymptotic Techniques</p> <p>Chairs: A. Boag, P.L.E. Uslenghi</p> <p style="text-align: center;">17:40 ÷ 19:00</p>	<p style="text-align: center;">Session 4</p> <p style="text-align: center;">Organized by G. L. Lazzi</p> <p>Advances in Bioelectromagnetics: Safety Assessment and Medical Applications</p> <p>Chairs: G. Lazzi, E. Topsakal</p> <p style="text-align: center;">14:00 ÷ 17:40</p> <hr/> <p style="text-align: center;">Session 5</p> <p style="text-align: center;">Electromagnetic Applications to Biomedicine</p> <p>Chairs: G. Lazzi, E. Topsakal</p> <p style="text-align: center;">17:40 ÷ 19:00</p>	<p style="text-align: center;">Session 7</p> <p style="text-align: center;">Organized by V. Metlushko</p> <p>New Horizons in Nano-magnetism: Experiment, Theory, Simulations and Applications</p> <p>Chairs: V. Metlushko, P. Vavassori</p> <p style="text-align: center;">14:00 ÷ 18:40</p>	<p style="text-align: center;">Session 9</p> <p style="text-align: center;">Organized by D. T. Trinchero</p> <p>Wireless Propagation in Confined Areas</p> <p>Chairs: R. Stefanelli, D. Trinchero</p> <p style="text-align: center;">15:20 ÷ 18:40</p>
<p>Coffee break 10:00 ÷ 10:20</p> <p>Lunch break 12:40 ÷ 14:00</p> <p>Coffee break 16:00 ÷ 16:20</p>			

TUESDAY, SEPTEMBER 15

SALA GIOLITTI	SALA EINAUDI	SALA SELLA
<p style="text-align: center;"><i>Session 10</i></p> <p style="text-align: center;">Microwave Antennas and Arrays</p> <p style="text-align: center;">Chairs: A. Neto, R. Tascone, G. Vecchi</p> <p style="text-align: center;"><i>8:00 ÷ 15:40</i></p>	<p style="text-align: center;"><i>Session 12</i></p> <p style="text-align: center;">Electromagnetic Modeling of Devices and Circuits</p> <p style="text-align: center;">Chairs: A.P.J. van Deursen, G. Virone, R.E. Zich</p> <p style="text-align: center;"><i>8:00 ÷ 15:00</i></p>	<p style="text-align: center;"><i>Session 14</i></p> <p style="text-align: center;">Organized by A. Buffa and J.-F. Lee</p> <p style="text-align: center;">Numerical Methods for Solving Maxwell Equations in the Frequency Domain</p> <p style="text-align: center;">Chairs: A. Buffa, J.-F. Lee</p> <p style="text-align: center;"><i>8:00 ÷ 9:40</i></p>
<p style="text-align: center;"><i>Session 11</i></p> <p style="text-align: center;">Wireless Communications</p> <p style="text-align: center;">Chairs: F. Saez de Adana, W. Wiesbeck</p> <p style="text-align: center;"><i>16:20 ÷ 19:00</i></p>	<p style="text-align: center;"><i>Session 13</i></p> <p style="text-align: center;">Organized by R. Mittra</p> <p style="text-align: center;">Modeling of Periodic Structures Including EBGs and Metamaterials</p> <p style="text-align: center;">Chairs: C. Delgado R. Mittra</p> <p style="text-align: center;"><i>15:00 ÷ 18:40</i></p>	<p style="text-align: center;"><i>Session 15</i></p> <p style="text-align: center;">Organized by S. Maci</p> <p style="text-align: center;">Cloaking Phenomena and Devices</p> <p style="text-align: center;">Chairs: S. Maci, A.D. Yaghjian</p> <p style="text-align: center;"><i>9:40 ÷ 12:20</i></p>
		<p style="text-align: center;"><i>Session 16</i></p> <p style="text-align: center;">Organized by P. D. Smith</p> <p style="text-align: center;">Advances in Analytic and Semi-analytic Methods in Electromagnetics</p> <p style="text-align: center;">Chairs: J.M. Arnold, P.D. Smith</p> <p style="text-align: center;"><i>14:00 ÷ 18:40</i></p>
<p>Coffee break <i>10:00 ÷ 10:20</i></p> <p>Lunch break <i>12:20 ÷ 14:00</i></p> <p>Coffee break <i>16:00 ÷ 16:20</i></p>		

TUESDAY, SEPTEMBER 15

SALA MOLLINO

S. Maci

Short Course on

**Transformation Electromagnetics and
Cloaking Devices**

14:00 ÷ 18:00

WEDNESDAY, SEPTEMBER 16

SALA GIOLITTI	SALA EINAUDI	SALA SELLA
<p style="text-align: center;"><i>Session 17</i></p> <p style="text-align: center;">Organized by P. Russer</p> <p style="text-align: center;">Network Methods Applied to Electromagnetic Field Computation</p> <p>Chairs: A.C. Cangellaris, P. Russer</p> <p style="text-align: center;"><i>8:00 ÷ 12:20</i></p>	<p style="text-align: center;"><i>Session 19</i></p> <p style="text-align: center;">Electromagnetic Measurements</p> <p>Chairs: B. Audone, F.G. Canavero</p> <p style="text-align: center;"><i>8:00 ÷ 12:20</i></p>	<p style="text-align: center;"><i>Session 21</i></p> <p style="text-align: center;">Organized by F. Capolino and V. Galdi</p> <p style="text-align: center;">Metamaterials</p> <p>Chairs: F. Capolino, S. Tretyakov</p> <p style="text-align: center;"><i>8:00 ÷ 11:00</i></p>
<p style="text-align: center;"><i>Session 18</i></p> <p style="text-align: center;">Organized by R. D. Graglia and D. R. Wilton</p> <p style="text-align: center;">Numerical Methods in Electromagnetics - I</p> <p>Chairs: R.D. Graglia D.R. Wilton</p> <p style="text-align: center;"><i>14:00 ÷ 18:40</i></p>	<p style="text-align: center;"><i>Session 20</i></p> <p style="text-align: center;">Organized by C. E. Baum</p> <p style="text-align: center;">Intentional EMI</p> <p>Chairs: C.E. Baum, R.L. Gardner</p> <p style="text-align: center;"><i>14:00 ÷ 18:20</i></p>	<p style="text-align: center;"><i>Session 22</i></p> <p style="text-align: center;">Metamaterials</p> <p>Chairs: F. Capolino, S. Tretyakov</p> <p style="text-align: center;"><i>11:00 ÷ 12:20</i></p>
		<p style="text-align: center;"><i>Session 23</i></p> <p style="text-align: center;">Electromagnetic Theory</p> <p>Chairs: G. Manara A.G. Tijhuis</p> <p style="text-align: center;"><i>14:00 ÷ 18:40</i></p>
<p>Coffee break <i>10:00 ÷ 10:20</i></p> <p>Lunch break <i>12:20 ÷ 14:00</i></p> <p>Coffee break <i>16:00 ÷ 16:20</i></p>		

THURSDAY, SEPTEMBER 17

SALA GIOLITTI	SALA EINAUDI	SALA SELLA
<p style="text-align: center;"><i>Session 24</i></p> <p style="text-align: center;">Organized by W. Wiesbeck</p> <p>Electromagnetics in UWB</p> <p>Chairs: B. Uguen W. Wiesbeck</p> <p style="text-align: center;"><i>8:20 ÷ 11:40</i></p>	<p style="text-align: center;"><i>Session 26</i></p> <p style="text-align: center;">Organized by R. D. Graglia and D. R. Wilton</p> <p>Numerical Methods in Electromagnetics - II</p> <p>Chairs: R.D. Graglia D. R. Wilton</p> <p style="text-align: center;"><i>8:20 ÷ 12:20</i></p>	<p style="text-align: center;"><i>Session 28</i></p> <p style="text-align: center;">Organized by K.-J. Langenberg</p> <p>Inverse Scattering and Remote Sensing</p> <p>Chairs: E. Heyman, K.-J. Langenberg</p> <p style="text-align: center;"><i>8:20 ÷ 11:40</i></p>
<p style="text-align: center;"><i>Session 25</i></p> <p style="text-align: center;">Organized by H. Nakano</p> <p>Modern Antenna Technologies</p> <p>Chairs: P.-S. Kildal, H. Nakano</p> <p style="text-align: center;"><i>14:00 ÷ 17:20</i></p>	<p style="text-align: center;"><i>Session 27</i></p> <p style="text-align: center;">Organized by P.H. Pathak and G. Manara</p> <p>Analytical, Numerical and Hybrid Methods in EM</p> <p>Chairs: G. Manara P.H. Pathak</p> <p style="text-align: center;"><i>14:00 ÷ 17:40</i></p>	<p style="text-align: center;"><i>Session 29</i></p> <p>Inverse Scattering and Remote Sensing</p> <p>Chairs: D.G. Johnson, R. Solimene</p> <p style="text-align: center;"><i>11:40 ÷ 16:00</i></p>
		<p style="text-align: center;"><i>Session 30</i></p> <p>Printed and Conformal Antennas</p> <p>Chairs: Y.M.M. Antar, P. Pirinoli</p> <p style="text-align: center;"><i>16:20 ÷ 17:20</i></p>
<p>Coffee break <i>10:00 ÷ 10:20</i></p> <p>Lunch break <i>12:20 ÷ 14:00</i></p> <p>Coffee break <i>16:00 ÷ 16:20</i></p>		
<p>Banquet (20:00) - Buses depart at 18:30</p>		

FRIDAY, SEPTEMBER 18

SALA MOLLINO

W. Wiesbeck and C. Sturm

Short Course on

**Virtual Drive Optimization
of Car Integrated Multiple
Antenna Systems for
Mobile Communications**

8:20 ÷ 12:20

FINAL PROGRAM

Monday, September 14, 2009, Sala Giolitti

Session 1

FINITE METHODS

Chairs: D. B. Davidson, L. C. Kempel, G. Lombardi

10:20 AM

I. Bogaert, F. Olyslager, Ghent University, Belgium

A BROADBAND MLFMA USING PSEUDOSPHERICAL HARMONICS

10:40 AM

E. Simsek, Bahcesehir University, Turkey;

Q. H. Liu, Duke University, United States

INTEGRAL EQUATION SOLVERS AND THEIR APPLICATIONS IN THE OPTICAL REGIME

11:00 AM

E. Lezar, D.B. Davidson, University of Stellenbosch, South Africa

GPU-BASED ARNOLDI FACTORISATION FOR ACCELERATING FINITE ELEMENT EIGENANALYSIS

11:20 AM

Z. Sheng, P. Dewilde, Circuits and Systems, EEMCS, Delft University of Technology, Netherlands;

R. Remis, Laboratory of Electromagnetic Research Faculty of Electrical Engineering, Mathematics and Computer Science Delft University of Technology, Netherlands

SURFACE INTEGRATED FIELD EQUATIONS METHOD FOR COMPUTING 3D STATIC AND STATIONARY ELECTRIC AND MAGNETIC FIELDS

11:40 AM

D. J. Ludick, D. B. Davidson, Dept. Electrical Electronic Engineering, Univ. Stellenbosch, South Africa

INVESTIGATING EFFICIENT PARALLELIZATION TECHNIQUES FOR THE CHARACTERISTIC BASIS FUNCTION METHOD (CBFM)

12:00 PM

D. Bogusevschi, E. Degirmenci, C. Brennan, P. Landais, Dublin City University, Ireland

DESIGN OF 2D TERAHERTZ BAND-GAP PHOTONIC WAVEGUIDES USING AN ACCELERATED INTEGRAL EQUATION TECHNIQUE

12:20 PM

K. Cools, Ghent University, Belgium;

F. P. Andriulli, Politecnico di Torino, Italy;

F. Olyslager, Ghent University, Belgium

A CALDERON PRECONDITIONED PMCHWT EQUATION

2:00 PM

Y. Wu, R. Liu, M. Lin, I. J. Wassell, University of Cambridge, United Kingdom

FREQUENCY DIVERSITY EVALUATION USING MODIFIED 2D FINITE-DIFFERENCE TIME-DOMAIN TECHNIQUE FOR TUNNELS AND FIRE HYDRANT PATH LOSS MODELS

2:20 PM

G. Angiulli, P. Quattrone, S. Tringali, DIMET, Università degli Studi "Mediterranea" di Reggio Calabria, Reggio Calabria, Italy

AN ALGEBRAIC PRECONDITIONER BASED ON PROPERTIES OF THE SKEW HERMITIAN PART OF THE LINEAR SYSTEMS ARISING FROM THE DISCRETIZATION OF THE E-FIELD INTEGRAL EQUATION

2:40 PM

T. Herzberg, CST AG, Germany;

T. Weiland, Technische Universität Darmstadt, Germany

TIME-DOMAIN S-PARAMETER EXTRACTION FOR WAVEGUIDES CONTAINING LOW LOSS DIELECTRICS

3:00 PM

J. Lacik, Z. Lukes, Z. Raida, Brno University of Technology, Czech Republic

SIGNAL PROCESSING TECHNIQUES FOR STABILIZATION OF MARCHING-ON-IN-TIME METHOD

3:20 PM

A. G. Schuchinsky, C. S. Talalaev, Queen's University Belfast, United Kingdom;

T. L. Zinenko, Institute of Radiophysics & Electronics, National Academy of Sciences of Ukraine, Ukraine;

A. I. Nosich, Université Européenne de Bretagne, France

NOVEL APPROACH TO MODELLING OF LOSSY STRIP GRATINGS

3:40 PM

S. Schild, Foundation for Research on Information Technologies in Society, Switzerland

N. Chavannes, N. Kuster, Schmid & Patner Engineering, Switzerland

CHALLENGES AND SOLUTIONS FOR THE MODELING OF LINEAR AND NONLINEAR DISPERSION EFFECTS WITH FDTD

4:20 PM

C. Pflaum, University Erlangen-Nuremberg, Germany;

Z. Rahimi, Fraunhofer Institute IISB, Germany

A FINITE DIFFERENCE FREQUENCY DOMAIN (FDFD) METHOD FOR MATERIALS WITH NEGATIVE PERMITTIVITY

4:40 PM

*Z. Rahimi, A. Erdmann, Fraunhofer IISB, Germany;
C. Pflaum, Informatik department, Germany*

**FINITE INTEGRATION (FI) METHOD FOR MODELING
OPTICAL WAVES IN LITHOGRAPHY MASKS**

5:00 PM

F. Freschi, M. Repetto, M. Tartaglia, Politecnico di Torino, Italy

**ANALYSIS OF THE LIGHTNING BEHAVIOUR OF AN
EARTH ELECTRODE SYSTEM INCLUDING
IONIZATION VIA THE CELL METHOD**

5:20 PM

F. P. Andriulli, G. Vecchi, Politecnico di Torino, Italy

**A NEW FAST AND RAPIDLY CONVERGING
METHOD FOR THE SOLUTION OF THE ELECTRIC
FIELD INTEGRAL EQUATION**

Monday, September 14, 2009, Sala Giolitti

Session 2

**RADAR CROSS SECTION AND
ASYMPTOTIC TECHNIQUES**

Chairs: A. Boag, P.L.E. Uslenghi

5:40 PM

*I Fuks, Zel Technologies, LLC and NOAA/Earth System
Research Laboratory, United States*

**DIFFRACTION CORRECTIONS TO THE
KIRCHHOFF APPROXIMATION IN THE PROBLEM
OF ROUGH SURFACE SCATTERING**

6:00 PM

*A. Motevasselian, B. L. G. Jonsson, Royal Institute of
Technology, Sweden*

**RADAR CROSS SECTION REDUCTION
OF AIRCRAFT WING FRONT END**

6:20 PM

*R. Fernandez-Recio, A. Jurado-Lucena, B. Errasti-Alcala, D.
Poyatos-Martinez, D. Escot-Bocanegra, I. Montiel-Sanchez,
INTA, Spain*

**RCS MEASUREMENTS AND PREDICTIONS OF
DIFFERENT TARGETS FOR RADAR BENCHMARK
PURPOSE**

6:40 PM

*A. Büyükaksoy, G. Çinar, Gebze Institute of Technology,
Turkey*

**HIGH FREQUENCY SCATTERING BY A
CYLINDRICALLY CURVED SURFACE WITH
SECOND-ORDER GENERALIZED IMPEDANCE
BOUNDARY CONDITION**

Monday, September 14, 2009, Sala Einaudi

Session 3
EMC/EMI/EMP

Chairs: C.E. Baum, Z. Raida

10:20 AM

D.-U. Sim, J.-H. Kwon, S.-I. Kwak, J.-H. Yun, Electronics and Telecommunications Research Institute (ETRI), Korea, South
DESIGN OF A NOVEL BROADBAND MICROWAVE ABSORBER USING A EBG STRUCTURE

10:40 AM

C. Bona, ISMB, Italy;
F. Fiori, Politecnico di Torino, Italy
EMI-INDUCED FAILURES IN MOS POWER TRANSISTORS

11:00 AM

Z. Reznicek, Z Raida, Brno University of Technology, Czech Republic
SIMPLIFICATION METHODOLOGY OF COMPLEX EM MODELS OF SMALL AIRPLANES

11:20 AM

O. Aiello, ISMB, Italy;
F. Fiori, Politecnico di Torino, Italy
A NEW CURRENT SENSOR BASED ON MAGFET HIGHLY IMMUNE TO EMI

11:40 AM

D.W.P. Thomas, C. Christopoulos, The University of Nottingham, United Kingdom;
F. Leferink, H. Bergsma, Thales, Netherlands
PRACTICAL MEASURE OF CABLE COUPLING

12:00 PM

G. Bargboer, A.P.J. van Deursen, Eindhoven University of Technology, Netherlands
LIGHTNING PROTECTION OF A PHARMACEUTICAL PLANT, MEASUREMENTS AND MODELLING

12:20 PM

L. Patier, V. Gobin, ONERA, France;
P. Bonnet, F. Paladian, LASMEA, France
APERTURE MODELS IN DOMAIN DECOMPOSITION METHOD FOR COUPLED-CAVITY SYSTEMS

Monday, September 14, 2005, Sala Einaudi

Session 4
ADVANCES IN BIOELECTROMAGNETICS: SAFETY ASSESSMENT AND MEDICAL APPLICATIONS
organized by **G. Lazzi**

Chairs: G. Lazzi, E. Topsakal

2:00 PM

G. Lazzi, NC State University, United States
COMPUTATIONAL AND EXPERIMENTAL BIOELECTROMAGNETICS FOR A RETINAL PROSTHESIS

2:20 PM

P. M. Meaney, M. W. Fanning, T. Zhou, A. Golnabi, S. D. Geimer, K. D. Paulsen, Dartmouth College, United States
CLINICAL MICROWAVE BREAST IMAGING - 2D RESULTS AND THE EVOLUTION TO 3D

2:40 PM

E. Neufeld, IT'IS Foundation / ETH Zurich, Switzerland;
M. Paulides, Erasmus MC Daniel den Hoed Cancer Center, Netherlands;
M. Capstick, IT'IS Foundation / ETH Zurich, Switzerland;
G. C. Van Rhoon, Erasmus MC Daniel den Hoed Cancer Center, Netherlands;
N. Kuster, IT'IS Foundation / ETH Zurich, Switzerland
LATEST ADVANCES IN EM HYPERTHERMIA CANCER TREATMENTS

3:00 PM

E. Topsakal, Mississippi State University, USA
ANTENNAS FOR MEDICAL APPLICATIONS: ONGOING RESEARCH AND FUTURE CHALLENGES

3:20 PM

G. McFeetors, M. Okoniewski, University of Calgary, Canada
CMOS-MEMS FORCE MICROSENSOR FOR MAGNETIC RESONANCE DETECTION

3:40 PM

M. Johansson, Y. Hamnerius, M. Persson, Chalmers University of Technology, Sweden
WORK EXPOSURE TO ELECTROMAGNETIC FIELDS

4:20 PM

A. Peyman, Health protection Agency UK, United Kingdom
DIELECTRIC PROPERTIES OF TISSUE; VARIATION WITH STRUCTURE AND COMPOSITION

4:40 PM

P. Bernardi, M. Cavagnaro, S. Pisa, E. Piuze, Dipartimento di Ingegneria Elettronica, Sapienza Università di Roma, Italy
SAFETY ASPECTS OF MAGNETIC RESONANCE IMAGING FOR PACEMAKER HOLDERS

5:00 PM

C. Merla, XLIM, CNRS-University of Limoges, France;
A. Paffi, M. Liberti, F. Apollonio, F. Danei, ICEmB at 'Sapienza' University of Rome, Italy;
P. Leveque, XLIM, CNRS-University of Limoges, France;
G. d'Inzeo, ICEmB at 'Sapienza' University of Rome, Italy
NANOSECOND PULSED ELECTRIC FIELD (NSPEF): A MICRODOSIMETRY STUDY AT SINGLE CELL LEVEL

5:20 PM

A. Sani, Y. Hao, Queen Mary University of London, United Kingdom
MODELING OF PATH LOSS FOR ULTRAWIDE BAND BODY-CENTRIC WIRELESS COMMUNICATIONS

Monday, September 14, 2009, Sala Einaudi

Session 5
**ELECTROMAGNETIC APPLICATIONS TO
BIOMEDICINE**

Chairs: G. Lazzi, E. Topsakal

5:40 PM

H. Zhang, S.Y. Tan, H.S. Tan, Nanyang Technological University, Singapore

**MICROWAVE BREAST CANCER DETECTION VIA
FLANGED PARALLEL-PLATE DIELECTRIC
WAVEGUIDE PROBE**

6:00 PM

N.P. Asimakis, I.S. Karanasiou, N.K. Uzunoglu, National Technical University of Athens-ICCS, Greece

**CONFORMAL L-NOTCH PATCH ANTENNAS FOR
HUMAN BRAIN MONITORING USING THE SAM
HEAD MODEL**

6:20 PM

*L. Liu, Université catholique de Louvain (UCL), Belgium;
S. Van Roy, P. De Doncker, OPERA Department, Université
Libre de Bruxelles (ULB), Belgium;*

C. Oestges, Université catholique de Louvain (UCL), Belgium
**AZIMUTH RADIATION PATTERN
CHARACTERIZATION OF OMNIDIRECTIONAL
ANTENNAS NEAR A HUMAN BODY**

6:40 PM

*P.F. Maccarini, K. Arunachalam, T. Juang, V. De Luca,
S. Rangarao, D. Neumann, C.D. Martins, O. Craciunescu,
P.R. Stauffer, Dept. of Radiation Oncology - Duke University,
United States*

**SHAPING AND RESIZING OF MULTIFED SLOT
RADIATORS USED IN CONFORMAL MICROWAVE
ANTENNA ARRAYS FOR HYPERTHERMIA
TREATMENT OF LARGE SUPERFICIAL DISEASES**

Monday, September 14, 2009, Sala Sella

Session 6
**MILLIMETRE AND SUBMILLIMETRE WAVE FOR
SECURITY APPLICATIONS**

organized by G. Gerini and P. de Maagt

Chairs: G. Gerini, P. de Maagt

10:20 AM

C. Mann, Thruvision LTD, United Kingdom

**REAL TIME PASSIVE IMAGING AT 250GHZ FOR
SECURITY: TECHNOLOGY AND PHENOMENOLOGY**

10:40 AM

*M. Herrmann, C. Wiegand, S. Wohnsiedler, J. Jonuscheit, R.
Beigang, Fraunhofer Institute for Physical Measurement
Techniques IPM, Germany*

TERAHERTZ STANDOFF IDENTIFICATION UNDER REAL WORLD CONDITIONS

11:00 AM

R. Doyle, Smiths Detection, Ireland

PEOPLE SCREENING USING MILLIMETRE-WAVES - TECHNOLOGIES AND APPLICATIONS

11:20 AM

H. Quast, T Löffler, SynView GmbH, Germany

TOWARDS REAL-TIME ACTIVE THZ RANGE IMAGING FOR SECURITY APPLICATIONS

11:40 AM

N.E. Alexander, C. Callejero, Alfa Imaging S.A., Spain;

F. Fiore, NATO C3 Agency, Netherlands;

I. Gomez, Alfa Imaging S.A., Spain;

R. Gonzalo, Universidad Pública de Navarra, Spain;

A. Enriquez de Luna, Spanish Navy Research and Development Centre, Spain;

I. Ederra, I. Palacios, Universidad Pública de Navarra, Spain

MM-WAVE STAND-OFF SCREENING AND DETECTION

12:00 PM

K.B. Cooper, N. Llombart, R.J. Dengler, P.H. Siegel, JPL, United States

BEAM WIDTH ROBUSTNESS OF A 670 GHZ IMAGING RADAR

12:20 PM

E.N. Grossman, C.R. Dietlein, NIST, United States;

M. Leivo, A. Rautiainen, A. Luukanen, VTT, Finland

MULTISPECTRAL TERAHERTZ CAMERA

Monday, September 14, 2009, Sala Sella

Session 7

NEW HORIZONS IN NANO-MAGNETISM: EXPERIMENT, THEORY, SIMULATIONS AND APPLICATIONS

organized by V. Metlushko

Chairs: V. Metluskho, P. Vavassori

2:00 PM

C.J. Olson Reichhardt, Los Alamos National Laboratory, United States;

A. Libal, Universiteit Antwerpen, Belgium;

C. Reichhardt, Los Alamos National Laboratory, United States

REALIZING ARTIFICIAL ICE IN SUPERCONDUCTING AND COLLOIDAL SYSTEMS

2:20 PM

A. N. Slavin, V. S. Tiberkevich, Oakland University, United States

NON-AUTONOMOUS DYNAMICS OF A NONLINEAR SPIN-TORQUE NANO-OSCILLATORS

2:40 PM

P. Vavassori, CIC nanoGUNE Consolider, Spain;

M. Gobbi, M. Donolato, LNESS, Politecnico di Milano, Italy;

V. Metlushko, University of Illinois at Chicago, United States;
B. Ilic, Cornell University, United States;
M. Cantoni, D. Petti, S. Brivio, R. Bertacco, LNESS,
Politecnico di Milano, Italy

**MANIPULATION AT THE NANO-SCALE OF SINGLE
MAGNETIC PARTICLES VIA DOMAIN WALLS CONDUITS**

3:00 PM

A.O Adeyeye, D Tripathy, National University of Singapore,
Singapore

**PATTERNED FERROMAGNETIC AND EXCHANGE
BIASED NANOSTRUCTURES**

3:20 PM

D. Keavney, X.M. Cheng, Argonne National Laboratory,
United States;

K. Buchanan, Colorado State University, United States;
R. Divan, Argonne National Laboratory, United States;

K. Guslienko, University of the Basque Country, Spain;

**NON-LINEAR MAGNETIZATION DYNAMICS AND
TRANSIENT DOMAINS IN FERROMAGNETIC DISKS**

3:40 PM

O. Boulle, J.S. Kim, Universität Konstanz, Germany;

K. Bouzehouane, UMP CNRS/Thales, France;

R. Mattheis, Institut für Photonische Technologien, Germany;

G. Faini, LPN/CNRS, France;

M. Kläui, Universität Konstanz, Germany

**DETECTION OF VORTEX CORE POLARITIES BY A
HOMODYNE DETECTION SCHEME**

4:20 PM

L. E. De Long, L. Shlyk, G. Cao, University of Kentucky,
United States

NEW MATERIALS FOR SPINTRONICS

4:40 PM

J. Sautner, J. Fields, UIC ECE, United States;

P. Vavassori, CIC nanoGUNE Consolider, Spain;

J. Unguris, NIST, United States;

V. Metlushko, UIC ECE, United States

**THE CHALLENGE OF INTEGRATING MAGNETIC
NANOSTRUCTURES INTO FUNCTIONAL 3-D DEVICES**

5:00 PM

R. Cowburn, Imperial College London, United Kingdom
**DOMAIN WALLS IN NANOWIRES FOR DIGITAL
LOGIC AND MEMORY**

5:20 PM

S.H. Lin, University of Notre Dame, United States;

T.G. Rappoport, Universidade Federal do Rio de Janeiro,
Brazil;

M.I Berciu, University of British Columbia, Canada;

B. Janko, University of Notre Dame, United States

**THE EFFECT OF IMPURITIES ON SPIN POLARIZED
ZEEMAN BOUND STATES IN SUPERCONDUCTOR -
DILUTE MAGNETIC SEMICONDUCTOR HYBRIDS**

5:40 PM

G.T. Zimanyi, University of California, Davis CA, United States;

M. Winklhofer, Ludwig-Maximilians-Universitat, Munchen, Germany

THE FORC.ALPHA.M2.S METHOD AND ITS APPLICATIONS

6:00 PM

K. S. Buchanan, Colorado State University, United States;

M. Grimsditch, F. Y. Fradin, S. D. Bader, V. Novosad, Argonne National Laboratory, United States

VORTEX DYNAMICS IN PATTERNED NANOMAGNETS

6:20 PM

I. V. Roshchin, Texas A&M University, United States;

C.-P. Li, University of Michigan, United States;

H. Suhl, University of California - San Diego, United States;

X. Batlle, Universitat de Barcelona, Spain;

S. Roy, Advanced Light Source, LBNL, United States;

S. K. Sinha, University of California - San Diego, United States;

S. Park, Pusan National University, Korea, South;

R. Pynn, University of Indiana, United States;

M.R. Fitzsimmons, Los Alamos National Laboratory, United States;

J. Mejía-López, Pontificia Universidad Católica de Chile, Chile;

D. Altbir, Universidad de Santiago de Chile, Chile;

A. H. Romero, CINVESTAV, Mexico;

R. Dumas, K. Liu, University of California, Davis, United States

I. K. Schuller, University of California - San Diego, United States

MAGNETIC VORTICES IN SUB-100 NM MAGNETS

Monday, September 14, 2009, Sala Cavour

Session 8

COMBINING GEOMETRIC PROPAGATION MODELS WITH ADAPTIVE WAVEFORM TECHNOLOGY: A PERSPECTIVE FOR EMERGING COMMUNICATIONS, RADAR AND NAVIGATION PARADIGMS

organized by D. Erricolo, J. A. Sjogren, M.C. Wicks

Chairs: D. Erricolo, J. A. Sjogren

10:20 AM

T. Kürner, M. Jacob, TU Braunschweig, Germany

APPLICATION OF RAY TRACING TO DERIVE CHANNEL MODELS FOR FUTURE MULTI-GIGABIT SYSTEMS

10:40 AM

R. Sato, Niigata University, Japan;

H. Shirai, Chuo Univeristy, Japan

EFFICIENT RAY-LAUNCHING ANALYSIS FOR INDOOR PROPAGATION INCLUDING MULTIPLE REFLECTION EFFECT INSIDE WALLS

11:00 AM

E. M. Vitucci, University of Bologna, Italy;
V.M. Kolmonen, TKK Helsinki University of Technology, Finland;
V. Degli-Esposti, University of Bologna, Italy;
P. Vainikainen, TKK Helsinki University of Technology, Finland

**ANALYSIS OF X-POL PROPAGATION IN
MICROCELLULAR ENVIRONMENT**

11:20 AM

*C. Sturm, S. Knoerzer, T. Zwick, W. Wiesbeck, Universitaet
Karlsruhe, Germany*

**VIRTUAL PERFORMANCE EVALUATION OF
AUTOMOTIVE RADAR CONCEPTS IN REALISTIC
TRAFFIC ENVIRONMENTS**

11:40 AM

M. Franceschetti, University of California, San Diego, United States;
M. D. Migliore, University of Cassino, Italy;
P. Minero, University of California, San Diego, United States;
F. Schettino, University of Cassino, Italy

**THE DEGREES OF FREEDOM OF WIRELESS
NETWORKS**

12:00 PM

Y. Wu, Princeton University, United States;
T. Jia, The MathWorks, United States;
R. Calderbank, Princeton University, United States;
*A. Duel-Hallen, H. Hallen, North Carolina State University,
United States*

**INTEGRATION OF CODE DIVERSITY AND
LONG-RANGE CHANNEL PREDICTION IN
WIRELESS COMMUNICATION**

12:20 PM

*G.T. Capraro, I. Bradaric, Capraro Technologies, Inc., United
States;*
M.C. Wicks, USAF, United States

WAVEFORM DIVERSITY IN DISTRIBUTED RADAR

2:00 PM

*W.-J. Chen, R.M. Narayanan, The Pennsylvania State
University, United States*

**TAPPED-DELAY LINE BEAMFORMING IN SPATIAL
DIVERSITY MIMO NOISE RADAR USING CONDITIONAL
GENERALIZED LIKELIHOOD RATIO TEST**

2:20 PM

S.D. Blunt, J.G. Metcalf, University of Kansas, United States

**ESTIMATING TEMPORAL MULTIPATH VIA SPA-
TIAL SELECTIVITY: BUILDING ENVIRONMENTAL
KNOWLEDGE INTO WAVEFORM DESIGN FOR
RADAR-EMBEDDED COMMUNICATIONS**

2:40 PM

*L. Lo Monte, General Dynamics Information Technology,
United States;*
*D. Erricolo, R. Ansari, University of Illinois at Chicago,
United States;*
F. Soldovieri, Consiglio Nazionale Ricerche - IREA, Italy;

M. C. Wicks, Air Force Research Laboratory, United States
**UNDERGROUND IMAGING USING
RF TOMOGRAPHY: THE EFFECT OF LATERAL WAVES**

3:00 PM

M. C. Wicks, AFRL/RY, United States;
Y. Zhang, R. Schneible, Stiefvater Consultants Inc., United States
**DETECTION OF SPATIALLY EXTENDED OBJECTS
IN CLUTTER**

Monday, September 14, 2009, Sala Cavour

Session 9

WIRELESS PROPAGATION IN CONFINED AREAS

organized by D.T. Trinchero

Chairs: R. Stefanelli, D. Trinchero

3:20 PM

D. Trinchero, R. Stefanelli, iXem Labs - Politecnico di Torino, Italy

**REVIEW ANALYSIS OF ELECTROMAGNETIC
MODELLING METHODS IN CONFINED
ENVIRONMENTS. PART 1: COMMUNICATIONS IN
DISSIPATIVE MEDIA**

3:40 PM

D. Trinchero, R. Stefanelli, iXem Labs - Politecnico di Torino, Italy

**REVIEW ANALYSIS OF ELECTROMAGNETIC
MODELLING METHODS IN CONFINED
ENVIRONMENTS. PART 2: INDOOR
COMMUNICATIONS**

4:20 PM

N. Ayuso, J.A. Cuchí, A. Muñoz, F. Lera, J.L. Villarroel, University of Zaragoza, Spain

**THROUGH-THE-EARTH MAGNETIC FIELD
PROPAGATION: MODELLING FOR UNDERGROUND
APPLICATIONS**

4:40 PM

Y. Wu, M. Lin, I.J. Wassell, University of Cambridge, United Kingdom

**PATH LOSS PREDICTION USING A MODIFIED 2D
FINITE-DIFFERENCE TIME-DOMAIN APPROACH
FOR A BELOW TO ABOVE GROUND CHANNEL**

5:00 PM

S. Lambot, Université catholique de Louvain (Belgium) and Forschungszentrum Jülich (Germany), Belgium;
D. Moghadas, F. André, Forschungszentrum Jülich, Germany;
E. Slob, Delft University of Technology, Netherlands;
H. Vereecken, Forschungszentrum Jülich, Germany

**A UNIFIED FULL-WAVEFORM METHOD FOR
MODELING GROUND PENETRATING RADAR AND
ELECTROMAGNETIC INDUCTION DATA FOR
NON-DESTRUCTIVE CHARACTERIZATION OF SOIL
AND MATERIALS**

5:20 PM

M.M. Moutairou, Underground Communications Research Laboratory (LRTCS), Canada;

G. Y. Delisle, Technopole Defense and Security, Quebec City, Canada;

H. Aniss, Underground Communications Research Laboratory (LRTCS), Canada

EXPERIMENTALLY EVALUATED PROPAGATION MODEL FOR UNDERGROUND MESH NETWORKS

5:40 PM

L. Talbi, Y. Rissafi, A. Lakhssassi, University of Quebec in Outaouais, Canada

UWB MEASUREMENT INVESTIGATION FOR REMOTE SENSING IN UNDERGROUND MINING ENVIRONMENT

6:00 PM

H. Khaleel, Politecnico di Torino, Italy;

C. Pastrone, Istituto Superiore Mario Boella, Italy;

F. Penna, Politecnico di Torino, Italy;

M.A. Spirito, Istituto Superiore Mario Boella, Italy;

R. Garelo, Politecnico di Torino, Italy

IMPACT OF WI-FI TRAFFIC ON THE IEEE 802.15.4 CHANNELS OCCUPATION IN INDOOR ENVIRONMENTS

6:20 PM

S. Trincherio, S. Adda, L. Anglesio, M. Mantovan, G. d'Amore, ARPA Piemonte, Italy

RADIOFREQUENCY MEASUREMENTS FOR HUMAN EXPOSURE ASSESSMENT IN INDOOR ENVIRONMENT

Tuesday, September 15, 2009, Sala Giolitti

Session 10

MICROWAVE ANTENNAS AND ARRAYS

Chairs: A. Neto, R. Tascone, G. Vecchi

8:00 AM

O.A. Peverini, R. Tascone, G. Virone, G. Addamo, A. Olivieri, IEIIT-CNR, Italy;

R. Orta, Dip. Elettronica, Politecnico di Torino, Italy

C-BAND DUAL-POLARIZATION RECEIVER FOR THE SARDINIA RADIO-TELESCOPE

8:20 AM

M. Comisso, R. Vescovo, DEEI - University of Trieste, Italy

FAST 3D POWER SYNTHESIS FOR ANTENNA ARRAYS WITH DYNAMIC RANGE RATIO REDUCTION

8:40 AM

M.A. Forman, Sandia National Laboratories, United States

MEASUREMENT AND ANALYSIS OF HORN ANTENNAS WITH INTEGRATED HIGH IMPEDANCE SURFACES

9:00 AM

G. Buttazzoni, R. Vescovo, DEEI, Italy

RECONFIGURABLE ARRAY SYNTHESIS WITH CONSTRAINTS ON NEAR FIELD, FAR FIELD AND DYNAMIC RANGE RATIO

9:20 AM

S. Sadek, Z. Katbay, Lebanese University, Lebanon

ULTRA WIDEBAND CPW BOW-TIE ANTENNA

9:40 AM

R. C. Filho, J. H. Araújo, M. F. Ginani, A. G. d'Assunção, L. M. Mendonça, UFRN, Brazil

EXPERIMENTAL INVESTIGATION OF MICROSTRIP PATCH ANTENNAS ON CERAMIC SUBSTRATES

10:20 AM

L. Baggen, IMST, Germany;

R. Malmqvist, FOI, Sweden;

P. Frijlink, OMMIC, France;

T. Vähä-Heikkilä, VTT, Finland;

A. Gustafsson, FOI, Sweden

MEMS-4-MMIC: INNOVATIVE RF-MEMS MMIC COMPONENTS FOR AGILE RF-FRONTENDS

10:40 AM

K. Kagoshima, S. Obote, A. Kagaya, Ibaraki University, Japan

DESIGN AND ANALYSIS OF TRANSMITTING AND RECEIVING CHARACTERISTICS OF A SMALL MIMO ARRAY ANTENNA WITH A MATCHED LOAD

11:00 AM

B. Errasti, D. Escot, D. Poyatos, I. Montiel, INTA - National Institute of Aerospace Technology, Spain

PERFORMANCE ANALYSIS OF THE PARTICLE SWARM OPTIMIZATION ALGORITHM WHEN APPLIED TO DIRECTION OF ARRIVAL ESTIMATION

11:20 AM

G. Sener, Cankaya University, Turkey;

L. Alatan, M. Kuzuoglu, Middle East Technical University, Turkey

USE OF MATRIX PADE APPROXIMATION IN THE ANALYSIS OF IRREGULARLY SHAPED PATCH ANTENNAS WITH MULTI-PORT NETWORK MODEL

11:40 AM

D. Piazza, M. Capacchione, Politecnico di Milano, Italy;

J. Kountouriotis, Drexel University, United States;

M. D'Amico, Politecnico di Milano, Italy;

K.R. Dandekar, Drexel University, United States

STACKED RECONFIGURABLE CIRCULAR PATCH ANTENNA FOR ADAPTIVE MIMO SYSTEMS

12:00 PM

J.P. Jacobs, University of Pretoria, South Africa

LOW-PROFILE CPW-FED SLOT ANTENNA WITH PARASITIC SLOT ON CONDUCTOR-BACKED TWO-LAYER SUBSTRATE

2:00 PM

Z. Lukes, J. Lacik, Z. Raida, DREL, VUT , Brno, Czech Republic

**NOVEL ULTRA-WIDEBAND SLOTLINE ANTENNAS
DESIGNED BY ADAPTIVE REAL CODED GENETIC
ALGORITHM**

2:20 PM

S. Caylar, 3rd ASMC, Turkey

**A NEW NEURAL NETWORK DOA ESTIMATION
TECHNIQUE BASED ON SUBARRAY
BEAMFORMING**

2:40 PM

G. Addamo, G. Virone, O. A. Peverini, R. Tascone, IEIIT-CNR, Italy;

P. Cecchini, Thales-Alenia Space, Italy;

R. Orta, Politecnico di Torino, Italy

**ANALYSIS AND DESIGN OF WIDEBAND COMPACT
CORRUGATED HORN**

3:00 PM

N.C. Dao, V.K. Nguyen, S.X. Ta, Hanoi University of Technology, Vietnam;

T.N. Nguyen, Quy Nhon University, Vietnam

**A COMPACT WLAN BAND REJECTED MONOPOLE
ANTENNA FOR UWB MOBILE TERMINALS**

3:20 PM

P. Pirinoli, P.T. Cong, M. Mussetta, M. Orefice, Politecnico di Torino, Italy

**DUAL-BAND REFLECTARRAY ANTENNA: DESIGN
AND EXPERIMENTAL VALIDATION**

Tuesday, September 15, 2009, Sala Giolitti

Session 11

WIRELESS COMMUNICATIONS

Chairs: F. Saez de Adana, W. Wiesbeck

4:20 PM

Y.K. Lee, J.P. Kim, J.C. Ha, J.M. Choi, Hanyang University, Korea, South;

S.U. Seo, Y.B. Lee, W.M. Seong, E.M.W. Antenna Co.Ltd., Korea, South

**DESIGN OF A MICROSTRIP PATCH ARRAY
ANTENNA FOR WCDMA INDOOR REPEATER SYSTEM**

4:40 PM

F. Bellens, F. Quitin, F. Horlin, P. De Doncker, Université Libre de Bruxelles, Belgium

**CHANNEL MEASUREMENTS AND MB-OFDM
PERFORMANCE INSIDE A DRIVING CAR**

5:00 PM

A. Tayebi, J. Gomez, F. Saez de Adana, O. Gutierrez, Universidad de Alcala, Spain

**RAY-TRACING APPLICATION TO MOBILE
LOCALIZATION IN MULTIPATH INDOOR
ENVIRONMENTS**

5:20 PM

Z. Nemeč, R. Doleček, University of Pardubice, Czech Republic
**OFDM CHANNEL MODELING FOR USER
LOCALIZATION OF WIRELESS DEVICES**

5:40 PM

I. Landa, A. Arrinda, I. Eizmendi, I. Fernández, J. Morgade, G. Prieto, M.M^a Vélez, University of the Basque Country UPV/EHU, Spain
**RADIO NOISE MEASUREMENTS IN MEDIUM WAVE
BAND**

6:00 PM

A.V. Bosisio, CNR IEIIT, Italy
**RSSI- BASED LOCALIZATION AND TRACKING
ALGORITHM FOR INDOOR ENVIRONMENTS**

6:20 PM

E. Plouhinec, Centre de Recherche des Ecoles de Coëtquidan, France;
B. Uguen, IETR UMR CNRS 6164, France
**RAY-TRACING AND MULTIPLE REFLECTIONS INSIDE
MATERIALS APPLIED TO UWB LOCALIZATION**

6:40 PM

M. Barbiroli, DEIS University of Bologna, Italy;
C. Carciofi, D. Guiducci, FUB Pontecchio Marconi (Bologna), Italy;
S. Violanti, ARPA Emilia Romagna Sezione di Piacenza, Italy
**EVALUATION OF EXPOSURE LEVELS GENERATED
BY WIMAX SYSTEM**

Tuesday, September 15, 2009, Sala Einaudi

Session 12

**ELECTROMAGNETIC MODELING OF DEVICES AND
CIRCUITS**

Chairs: A.P.J. van Deursen, G. Virone, R.E. Zich

8:00 AM

A. Siadatan, Islamic Azad University (West Tehran Branch), Iran;
M.S. Toulabi, Shahid Beheshti University G.C., Iran;
E. Afjei, Shahid Beheshti University G.C., Iran
**MAGNETOSTATIC ANALYSIS OF A FIELD ASSISTED
SWITCHED RELUCTANCE GENERATOR**

8:20 AM

P.G. van Leuven, M.C. van Beurden, A.G. Tijhuis, Eindhoven University of Technology, Netherlands
**ACCURATE FULL-WAVE ANALYSIS OF
MICROMACHINED COPLANAR WAVEGUIDES**

8:40 AM

R. Mäkinen, H. Sillanpää, K. Ostman, Tampere University of

Technology, Finland;
V. Palukuru, University of Oulu, Finland;
V. Pynntari, T. Kanerva, Tampere University of Technology,
Finland;
J. Hagberg, University of Oulu, Finland;
T. Lepisto, Tampere University of Technology, Finland;
H. Jantunen, University of Oulu, Finland

**APPLICATION OF JACOBI-DAVIDSON ALGORITHM
TO 2-D EIGENMODE PROBLEMS IN PRINTABLE
ELECTRONICS**

9:00 AM

A. Toscano, L. Vegni, Università 'Roma Tre', Italy
OPTICAL CIRCUITS AND NANOFILTERS DESIGN

9:20 AM

T. Demeester, D. De Zutter, Ghent University, Belgium
**MODELING THE BROADBAND RESISTIVE AND
INDUCTIVE BEHAVIOR OF POLYGONAL
CONDUCTORS**

9:40 AM

M. Petronio, Università degli Studi di Trieste, Italy;
P. Craievich, Sincrotrone Trieste S.C.p.A., Italy;
R. Vescovo, Università degli Studi di Trieste, Italy
**MICROWAVE DEFLECTORS FOR HIGH ENERGY
BEAM DIAGNOSTIC**

10:20 AM

G. Virone, R. Tascone, O. A. Peverini, G. Addamo, R. Orta,
IEIT-CNR, Italy
SYNTHESIS OF WIDEBAND WAVEGUIDE DIPLEXERS

10:40 AM

G. De Pasquale, Politecnico di Torino, Italy;
C. Siyambalapitiya, University of South Florida, United States;
A. Soma', Politecnico di Torino, Italy;
J. Wang, University of South Florida, United States
**PERFORMANCES IMPROVEMENT OF MEMS
SENSORS AND ENERGY SCAVENGERS BY
DIAMAGNETIC LEVITATION**

11:00 AM

Y. S.E. Abdo, Royal Military College of Canada, Canada;
*M.R. Chaharmir, J. Shaker, Communications Research
Centre, Canada;*
Y.M.M. Antar, Royal Military College of Canada, Canada;
**DIFFERENT TECHNIQUES TO CHARACTERIZE
EBG STRUCTURES FOR MM WAVE APPLICATIONS**

11:20 AM

M.R. Pereira, H.M. Salgado, INESC Porto/FEUP, Portugal;
J.R. Pereira, Universidade de Aveiro, Portugal
**A NOVEL LAYER PEELING ALGORITHM FOR THE
SYNTHESIS OF MICROWAVE MICROSTRIP FILTERS**

11:40 AM

T. Ciamulski, University of Bergen, Norway

**ACCURACY OF ELECTROMAGNETIC ANALYSIS
FOR A MMIC LANGE COUPLER**

12:00 PM

*H Yarmohammadi, Gh Moradi, A Abdipour, M Ahadi,
Amirkabir University of Technology (Tehran Polytechnic), Iran*
**USING BEST NEURAL NETWORKS STRUCTURES IN
MODELING MICROWAVE LOW NOISE TRANSISTOR**

2:00 PM

B. Ma, A. Chousseaud, S. Toutain, IREENA, France
**A NEW DESIGN OF COMPACT PLANAR MICROSTRIP
FILTER**

2:20 PM

*A.P.J. van Deursen, Eindhoven University of Technology,
Netherlands;
V. Stelmashuk, Institute of Plasma Physics, Czech Republic*
**DESIGN OF SENSORS FOR IN-FLIGHT LIGHTNING
DETECTION ON AIRCRAFTS**

2:40 PM

*M. Mussetta, Politecnico di Torino, Italy;
D. Caputo, A. Pirisi, F. Grimaccia, L. Valbonesi, R.E. Zich,
Politecnico di Milano, Italy*
**NEURAL NETWORKS AND EVOLUTIONARY
ALGORITHM APPLICATION TO COMPLEX EM
STRUCTURES MODELING**

Tuesday, September 15, 2009, Sala Einaudi

Session 13

**MODELING OF PERIODIC STRUCTURES
INCLUDING EBGs AND METAMATERIALS**

organized by R. Mittra

Chairs: C. Delgado, R. Mittra

3:00 PM

*R. Marqués, F. Mesa, L. Jelinek, F. Medina, Universidad de
Sevilla, Spain*
**ANALYTICAL THEORY OF STACKED FISH-NET
STRUCTURES**

3:20 PM

*V. Rawat, Z. Peng, J. -F. Lee, The Ohio State University,
United States*
**DOMAIN DECOMPOSITION METHODS WITH
SECOND ORDER TRANSMISSION CONDITIONS
FOR SOLVING MULTISCALE ELECTROMAGNETIC
WAVE PROBLEMS**

3:40 PM

*F. Catedra, E. García, I. González, C. Delgado, Universidad
de Alcalá, Spain*
**NEW FORMULATIONS OF THE CHARACTERISTIC
BASIS FUNCTION METHOD FOR THE ANALYSIS OF
METAMATERIALS**

4:20 PM

M. Bozzi, M. Montagna, L. Perregrini, University of Pavia, Italy
**MOM/BI-RME MODELING OF FREQUENCY
SELECTIVE SURFACES WITH THICK METAL
PATCHES**

4:40 PM

*R. Mittra, PSU, United States;
L.C. Ma, Foxconn, United States;
Y. Li, CUC, China*

**MODELING TRUNCATED METAMATERIAL
STRUCTURES WITH FINE FEATURES USING GEMS:
A PARALLELIZED GENERAL PURPOSE
ELECTROMAGNETIC FIELD SOLVER**

5:00 PM

*C.R. Simovski, S. Tretyakov, A. Sihvola, Helsinki University of
Technology, Finland*

**REVIEW OF THE ECONAM PROJECT ACTIVITIES
IN THE AREA OF ELECTROMAGNETIC
CHARACTERIZATION OF METAMATERIALS**

5:20 PM

M. G. Silveirinha, University of Coimbra, Portugal

**ANALYTICAL MODELING OF BROADBAND
NEGATIVE REFRACTION WITH A CROSSED WIRE MESH**

5:40 PM

*N.A. Ozdemir, C. Craeye, Université catholique de Louvain,
Belgium*

**EFFICIENT ANALYSIS OF PERIODIC STRUCTURES
INVOLVING FINITE DIELECTRIC MATERIAL
BASED ON THE ARRAY SCANNING METHOD**

6:00 PM

F. Costa, A. Monorchio, G. Manara, University of Pisa, Italy

**AN EQUIVALENT-CIRCUIT MODELING OF HIGH
IMPEDANCE SURFACES EMPLOYING
ARBITRARILY SHAPED FSS**

6:20 PM

*Y. Zhao, Y. Hao, Queen Mary University of London, United
Kingdom*

**PARALLEL DISPERSIVE FINITE-DIFFERENCE TIME-
DOMAIN MODELING OF THREE-DIMENSIONAL
ELECTROMAGNETIC CLOAKING STRUCTURES**

Tuesday, September 15, 2009, Sala Sella

Session 14

**NUMERICAL METHODS FOR SOLVING MAXWELL
EQUATIONS IN THE FREQUENCY DOMAIN**

organized by A. Buffa and J.-F. Lee

Chairs: A. Buffa, J.-F. Lee

8:00 AM

R. Vázquez, A. Buffa, IMATI-CNR, Italy

**NUMERICAL SOLUTION OF MAXWELL
EQUATIONS USING B-SPLINES**

8:20 AM

M.S. Tong, Z.G. Qian, W.C. Chew, University of Illinois at Urbana-Champaign, United States

AN EFFICIENT NYSTRÖM SCHEME FOR SOLVING VOLUME INTEGRAL EQUATIONS

8:40 AM

T. Peng, K. Sertel, J.L. Volakis, The Ohio State University, United States

FULLY OVERLAPPING DOMAIN DECOMPOSITION METHOD FOR MODELING FINE STRUCTURES EMBEDDED IN HOST MEDIA

9:00 AM

C. Carstensen, Humboldt University, Germany;

R.H.W. Hoppe, University of Houston, United States

UNIFIED FRAMEWORK FOR AN A POSTERIORI ERROR ANALYSIS OF NON-STANDARD FINITE ELEMENT APPROXIMATIONS OF H(CURL)-ELLIPTIC PROBLEMS

9:20 AM

J.-F. Lee, M. B. Stephanson, The Ohio State University, United States

SOME PRACTICAL AND THEORETICAL ASPECTS OF THE CALDERON-PRECONDITIONED EFIE

Tuesday, September 15, 2009, Sala Sella

Session 15

CLOAKING PHENOMENA AND DEVICES

organized by S. Maci

Chairs: S. Maci, A.D. Yaghjian

9:40 AM

P.-S. Kildal, Chalmers University of Technology, Sweden

FUNDAMENTAL PROPERTIES OF CANONICAL SOFT AND HARD SURFACES, PERFECT MAGNETIC CONDUCTORS AND THE NEWLY INTRODUCED DB SURFACE AND THEIR RELATION TO DIFFERENT PRACTICAL APPLICATIONS INCLUDING CLOAKING

10:20 AM

S. Maci, University of Siena, Italy;

A.D. Yaghjian, research consultant, United States;

E. Martini, University of Siena, Italy

CLOAKING FORMULATED IN TERMS OF EQUIVALENT VOLUMETRIC SOURCES

10:40 AM

E. Kallouf, C. Argyropoulos, Y. Hao, Queen Mary University of London, United Kingdom

SIMPLIFIED DIRECTIONAL GROUND-PLANE CLOAKS

11:00 AM

A. Alu, University of Texas at Austin, United States;

N. Engheta, University of Pennsylvania, United States

PECULIAR AND ANOMALOUS CLOAKING FEATURES OF PLASMONIC MATERIALS

11:20 AM

F Bilotti, L Vegni, University 'Roma Tre', Italy

**SCATTERING CANCELLATION APPROACH TO
CLOAKING: OPEN PROBLEMS, POSSIBLE
SOLUTIONS, AND NEW APPLICATIONS**

11:40 AM

G. Castaldi, I. Gallina, V. Galdi, University of Sannio, Italy;

A. Alù, University of Texas at Austin, United States;

N. Engheta, University of Pennsylvania, United States

**INTERACTIONS BETWEEN INVISIBILITY CLOAKS
AND ANTI-CLOAKS**

12:00 PM

A.D. Yaghjian, Research Consultant, United States;

S. Maci, E. Martini, University of Siena, Italy

**DISCREPANCY BETWEEN GROUP AND ENERGY
TRANSPORT VELOCITIES IN SPHERICAL
ELECTROMAGNETIC CLOAKS**

Tuesday, September 15, 2009, Sala Sella

Session 16

**ADVANCES IN ANALYTIC AND SEMI-ANALYTIC
METHODS IN ELECTROMAGNETICS**

organized by P.D. Smith

Chairs: J.M. Arnold, P.D. Smith

2:00 PM

*O. Akgol, D. Erricolo, P. L. E. Uslenghi, University of Illinois at
Chicago, United States;*

D. Monopoli, R.E. Zich, Politecnico di Milano, Italy

**ELECTROMAGNETIC SCATTERING BY AN
ELLIPTIC DNG METAMATERIAL CYLINDER**

2:20 PM

*L. Knockaert, D. Vande Ginste, D. De Zutter, Ghent
University, Dept. INTEC, Belgium*

**SOME ANALYTIC RESULTS ON SOMMERFELD
INTEGRALS WITH BRANCH POINTS**

2:40 PM

J. M. Arnold, University of Glasgow, United Kingdom

**TIME-DOMAIN GREEN'S FUNCTIONS FOR WAVES
ON SIMPLICIAL COMPLEXES**

3:00 PM

M. Gustafsson, G. Kristensson, Lund University, Sweden;

S. Nordebo, Växjö University, Sweden;

C. Larsson, A. Bernland, D. Sjöberg, Lund University, Sweden

**PHYSICAL BOUNDS AND SUM RULES IN
SCATTERING AND ANTENNA THEORY**

3:20 PM

*G. Fikioris, I. Psarros, National Technical University of
Athens, Greece, Greece*

**CONVERGENCE AND OSCILLATIONS IN THE
METHOD OF AUXILIARY SOURCES**

3:40 PM

V. Daniele, G. Lombardi, Politecnico di Torino, Torino, Italy
**THE WIENER-HOPF METHOD APPLIED TO
DIELECTRIC ANGULAR REGIONS: THE WEDGE**

4:20 PM

R. F. Remis, DELFT University of Technology, Netherlands
**SIMULATING THE TRANSIENT RESPONSE OF A
MULTICONDUCTOR TRANSMISSION LINE BY AN
EXTENDED KRYLOV METHOD**

4:40 PM

*P.D. Smith, S.B. Panin, E.D. Vinogradova, Macquarie
University, Australia;
Yu.A. Tuchkin, Institute of Radiophysics and Electronics,
Ukraine;
S.S. Vinogradov, CSIRO, Australia*
**COUPLING AND SCATTERING FROM
AXISYMMETRIC BODIES, OPEN AND CLOSED:
REGULARISATION METHODS**

5:00 PM

*E.D. Vinogradova, Macquarie University, Australia;
S.B. Panin, A.Ye. Poyedinchuk, S.I. Tarapov, Institute of
Radiophysics and Electronics, Ukraine*
**RESONANT DIFFRACTION FROM A GRATING ON A
PARAMAGNETIC LAYER WITH FREQUENCY
DISPERSION**

5:20 PM

*V. L. Lancellotti, B. P. H. de Hon, A G T Tjihuis, Eindhoven
University of Technology, Netherlands*
**A TOTAL INVERSE SCATTERING OPERATOR
FORMULATION FOR SOLVING LARGE STRUCTU-
RES WITH LEGO**

5:40 PM

B.P. de Hon, Eindhoven University of Technology, Netherlands
**WHITTAKER AND WEYL REPRESENTATIONS FOR
TIME-DOMAIN MODES**

6:00 PM

Yu. A. Tuchkin, GYTE, Turkey
**ANALYTICAL REGULARIZATION METHOD FOR
HOLLOW WAVEGUIDES MODELLING**

6:20 PM

*O. Akgol, D. Erricolo, P. L. E. Uslenghi, University of Illinois at
Chicago, United States*
**ELECTROMAGNETIC SCATTERING BY A
SEMIELLIPTICAL TRENCH FILLED WITH DNG
METAMATERIAL**

Session 17

**NETWORK METHODS APPLIED TO
ELECTROMAGNETIC FIELD COMPUTATION**

organized by P. Russer

Chairs: A.C. Cangellaris, P. Russer

8:00 AM

P. Russer, Technische Universitaet Muenchen, Germany

**OVERVIEW OVER NETWORK METHODS APPLIED
TO ELECTROMAGNETIC FIELD COMPUTATION**

8:20 AM

D. Bajon, T. Caillet, ISAE-Université Toulouse, France;

S. Wane, NXP-Semiconductors, France;

R. Plana, LAAS Université Toulouse, France

**EIGEN-STATE APPROACH FOR THE ANALYSIS AND
CIRCUIT REPRESENTATION OF RESONATOR
SYSTEMS. TOWARDS A SYNTHESIS
METHODOLOGY**

8:40 AM

N. Fichtner, P. Russer, TU München, Germany;

S. Wane, NXP Semiconductors, France;

*D. Bajon, Institute Supérieur de l'Aéronautique et de l'Espace
SUPAERO, France;*

**NETWORK BASED HYBRIDIZATION OF THE TLM
AND THE TWF METHOD**

9:00 AM

A. Rong, A. C. Cangellaris, University of Illinois, United States

**A NETWORK-BASED APPROACH TO THE HYBRID
ELECTROMAGNETIC/CIRCUIT MODELING OF THE
POWER GRID OF MULTI-FUNCTIONAL PLANAR
INTEGRATED CIRCUITS**

9:20 AM

Z. Chen, Y. Yu, Dalhousie University, Canada;

M.M. Ney, TELECOM Institute, France

**THE TIME-DOMAIN METHOD OF WEIGHTED
RESIDUALS (MWR): MOVING FROM GRID-BASED
METHODS TO NODE-BASED MESHLESS
TECHNIQUES**

9:40 AM

*Y. Kuznetsov, A. Baev, T. Shevgunov, Moscow Aviation
Institute (State Technical University), Russia;*

*U. Siart, H. Yordanov, P. Russer, Technische Universität
München, Germany;*

**GENERATION OF NETWORK MODELS FOR
PLANAR MICROWAVE CIRCUITS BY SYSTEM
IDENTIFICATION METHODS**

10:20 AM

*W. Mathis, S. Ludwig, J. Xiong, Leibniz Universität Hannover,
Germany*

NETWORK MODELLING OF ELECTROMAGNETIC

FIELD DISTRIBUTIONS USING A STATISTICAL MECHANICAL APPROACH

10:40 AM

*M. Dionigi, M. Mongiardo, R. Sorrentino, C. Tomassoni,
Univ. of Perugia, Italy*

NETWORKS METHODS FOR WIRELESS RESONANT ENERGY LINKS (WREL) COMPUTATIONS

11:00 AM

J. A. Nossek, M. T. Ivrlac, TUM, Germany

TOWARDS A CIRCUIT THEORY OF COMMUNICATION

11:20 AM

F. Rossi, P.P.M. So, University of Victoria, Canada

ACCELERATED SYMMETRICAL CONDENSED NODE TLM ALGORITHMS FOR NVIDIA CUDA ENABLED GRAPHICS PROCESSING UNITS

11:40 AM

*M. Zedler, Dept. of Electrical and Computer Engineering,
University of Toronto, Ontario, Canada;*

P. Russer, Lehrstuhl f. HF-Technik, TU Munich, Germany

CIRCUIT THEORY APPROACH TO THE DESIGN OF METAMATERIALS

12:00 PM

S. Wane, NXP - Semiconductor, France;

D. Bajon, ISAE, Université de Toulouse, France

ATTEMPTS FOR BRIDGING CIRCUITS GEOMETRICAL TOPOLOGIES WITH EQUIVALENT NETWORK ARCHITECTURE SYNTHESIS

Wednesday, September 16, 2009, Sala Giolitti

Session 18

NUMERICAL METHODS IN ELECTROMAGNETICS-I

Organized by R.D. Graglia and D.R. Wilton

Chairs:R.D. Graglia, D.R. Wilton

2:00 PM

*L. Gurel, O. Ergul, Computational Electromagnetics Research
Center (BiLCEM), Bilkent University, Turkey*

RIGOROUS SOLUTIONS OF LARGE-SCALE SCATTERING PROBLEMS DISCRETIZED WITH HUNDREDS OF MILLIONS OF UNKNOWNNS

2:20 PM

*O. Ergul, L. Gurel, Computational Electromagnetics Research
Center (BiLCEM), Bilkent University, Turkey*

FAST AND ACCURATE ANALYSIS OF COMPLICATED METAMATERIAL STRUCTURES USING A LOW-FREQUENCY MULTILEVEL FAST MULTIPOLE ALGORITHM

2:40 PM

J.M. Tamayo, A. Heldring, J.M. Rius, Universitat Politecnica

de Catalunya, Spain

APPLICATION OF MULTILEVEL ADAPTIVE CROSS APPROXIMATION (MLACA) TO ELECTROMAGNETIC SCATTERING AND RADIATION PROBLEMS

3:00 PM

E. Winebrand, A. Boag, Tel Aviv University, Israel

A MULTILEVEL FAST DIRECT SOLVER FOR EM SCATTERING FROM QUASI-PLANAR OBJECTS

3:20 PM

V. Jandhyala, A.V. Sathanur, R. Chakraborty, University of Washington, United States

TOWARDS AUTOMATED OPTIMIZATION, MULTIDIMENSIONAL PARAMETRIZATION, AND SYNTHESIS WITH ELECTROMAGNETIC SOLVERS IN ELECTRONIC PACKAGING AND RF CIRCUIT DESIGN

3:40 PM

T. Weiland, Technische Universitaet Darmstadt, Germany

THE ONE-AND-ONLY ALGORITHM FOR EM-FIELD COMPUTATIONS DOES NOT EXIST

4:20 PM

G. Lombardi, R.D. Graglia, Politecnico di Torino, Torino, Italy

SINGULAR HIGHER ORDER VECTOR BASES FOR WEDGE-STRUCTURE MOM-MODELS: THE SIMPLE RECIPE

4:40 PM

P. Ylä-Oijala, M. Taskinen, S. Järvenpää, Helsinki University of Technology, Finland

ADVANCED SURFACE INTEGRAL EQUATION METHODS IN COMPUTATIONAL ELECTROMAGNETICS

5:00 PM

L. Codecasa, Politecnico di Milano, Italy;

R. Specogna, F. Trevisan, Università di Udine, Italy

THE DISCRETE GEOMETRIC APPROACH FOR WAVE PROPAGATION PROBLEMS

5:20 PM

B. M. Kolundzija, University of Belgrade, Serbia;

M.M. Kostic, B. Lj. Mrdakovic, D. S. Sumic, WIPL-D d.o.o., Serbia

EFFICIENT EM MODELING BASED ON CONVERSION OF TRIANGULAR MESH INTO QUADRILATERAL MESH

5:40 PM

G. Valerio, Sapienza University of Rome, Italy;

D.R. Wilton, D.R. Jackson, University of Houston, United States;

A. Galli, Sapienza University of Rome, Italy;

EFFICIENT COMPUTATION OF MIXED POTENTIAL DYADIC GREEN'S FUNCTIONS FOR A 1D PERIODIC ARRAY OF LINE SOURCES IN LAYERED MEDIA

6:00 PM

M.I. Aksun, Koc University, Turkey;
A. Alparslan, ETH - Zurich, Switzerland;
K. A. Michalski, Texas A&M University, United States
**CURRENT STATUS OF CLOSED-FORM GREEN'S
FUNCTIONS IN LAYERED MEDIA COMPOSED OF
NATURAL AND ARTIFICIAL MATERIALS**

6:20 PM

G. Bianconi, S. Genovesi, A. Monorchio, University of Pisa, Italy;
R. Mittra, K. Du, Penn State University, United States
**NEW TECHNIQUE FOR EFFICIENT EVALUATION OF
GREEN'S FUNCTIONS FOR MULTILAYERED MEDIA**

Wednesday, September 16, 2009, Sala Einaudi

Session 19

ELECTROMAGNETIC MEASUREMENTS

Chairs: B. Audone, F. G. Canavero

8:00 AM

*C. Munteanu, V. Topa, A. Racasan, Technical University of
Cluj-Napoca, Romania;*
*G. Visan, I.T. Pop, Power Grid Company Transelectrica SA,
Romania*
**COMPUTATION METHODS AND EXPERIMENTAL
MEASUREMENTS OF THE ELECTRIC AND
MAGNETIC FIELD DISTRIBUTION INSIDE HIGH
VOLTAGE SUBSTATIONS**

8:20 AM

T. Pilsak, Hamburg University of Technology, Germany;
J.L. ter Haseborg, Hamburg University of Technology, Germany
**MEASUREMENT OF THE E-FIELD DISTRIBUTION
OF A WLAN TRANSMITTER INSIDE AND OUTSIDE A
CONTROL CONSOL**

8:40 AM

*O. Lauer, D. Barras, M. Zahner, R. Vahldiek, H. Jäckel, J.
Fröhlich, ETH, Switzerland*
**INTERFERENCE CHARACTERIZATION AND UWB
CHANNEL MEASUREMENTS FOR WIRELESS
INTENSIVE CARE PATIENT MONITORING**

9:00 AM

S. Van Roy, Université Libre de Bruxelles, Belgium;
L. Liu, C. Oestges, Université catholique de Louvain, Belgium;
P. De Doncker, Université Libre de Bruxelles, Belgium;
**AN ULTRA-WIDEBAND SAGE ALGORITHM FOR
BODY AREA NETWORKS**

9:20 AM

P. Pinho, A. Lopes, J. Leite, J. Casaleiro, ISEL, Portugal
**SAR DETERMINATION AND INFLUENCE OF THE
HUMAN HEAD IN THE RADIATION OF A MOBILE
ANTENNA FOR TWO DIFFERENT FREQUENCIES**

9:40 AM

C. Larsson, M. Gustafsson, G. Kristensson, Lund University, Sweden

POLARIMETRIC MEASUREMENTS OF THE EXTINCTION CROSS SECTION

10:20 AM

J. Puskely, Z. Nováček, Department of Radioelectronics, BUT, Czech Republic

RECONSTRUCTING RADIATION PATTERNS USING AMPLITUDE MEASUREMENTS ON CYLINDRICAL SURFACES

10:40 AM

R. Dolecek, O. Cerny, Z. Nemeč, University of Pardubice, Czech Republic

EMC OF TRACTION DRIVE WITH PERMANENT MAGNET SYNCHRONOUS MOTOR

11:00 AM

Y. Sakemoto, A. Harada, K. Wakino, Ritsumeikan University, Japan;

Y.D. Lin, National Chiao Tung University, Taiwan;

T. Kitazawa, Ritsumeikan University, Japan;

EVALUATION OF COMPLEX PERMITTIVITY OF MATERIALS WITH DEFORMED CROSS-SECTION IN COAXIAL LINE

11:20 AM

M. Satoru Nakano, P. Savi, Politecnico di Torino, Italy

DIELECTRIC PERMITTIVITY ESTIMATION VIA TDR MEASUREMENTS

11:40 AM

B. Audone, Consultant, Italy;

A. Gaggelli, S. Guidi, P. Masini, S. Neri, Trenitalia, Italy

A NOVEL POLICY FOR EMC ANTENNA CALIBRATION

12:00 PM

R. Serra, Politecnico di Torino, Italy / Thales Netherlands;

M. Bozzetti, Alenia Aeronautica, Italy;

F.G. Canavero, Politecnico di Torino, Italy

MISLEADING ISSUES THAT CAME UP WHEN CALIBRATING THE ALENIA AERONAUTICA REVERBERATION CHAMBER

Session 20

INTENTIONAL EMI

Organized by C.E. Baum

Chairs: C.E. Baum, R.L. Gardner

Sources

2:00 PM

C.E. Baum, University of New Mexico, United States

**COMBINED ELECTRIC AND MAGNETIC DIPOLES
FOR MESOBAND RADIATION**

2:40 PM

*S. Altunc, C.E. Baum, C.G. Christodoulou, E. Schamiloglu,
University of New Mexico, United States*

**DESIGN OF A UNIFORM ELECTROMAGNETIC
DIELECTRIC LENS FOR LAUNCHING AN
APPROXIMATE SPHERICAL TEM WAVE**

3:00 PM

*K.H. Schoenbach, S. Xiao, J.T. Camp, M. Migliaccio, S.J.
Beebe, Old Dominion University, United States;*

C.E. Baum, University of New Mexico, United States
**WIDEBAND, HIGH-AMPLITUDE, PULSED
ANTENNAS FOR MEDICAL THERAPIES AND
MEDICAL IMAGING**

3:20 PM

*F. Vega, F. Rachidi, Swiss Federal Institute of Technology of
Lausanne (EPFL), Switzerland;*

N. Mora, National University of Colombia, Colombia

N. Peña, Los Andes University, Colombia;

F. Roman, National University of Colombia, Colombia

**DESIGN AND SIMULATION OF AN
ELECTROMAGNETIC LENS FOR A HALF IMPULSE
RADIATING ANTENNA**

Interaction

3:40 PM

*S. Tkachenko, H.G. Krauthäuser, F. Gronwald, J. Nitsch,
Otto-von-Guericke University Magdeburg, Germany*

**HIGH FREQUENCY ELECTROMAGNETIC FIELDS
COUPLING TO SMALL ANTENNAS IN
RECTANGULAR RESONATOR**

4:20 PM

C.A. Ropiak, SAQ Consulting Ltd, United States;

M. McQuage, W. Padilla-Vargas, NSWCCD, United States

**ELECTROMAGNETIC FIELD DISTRIBUTION AS A
FUNCTION OF BUILDING MATERIALS -
REVISITING THE STANDARD DEFINITION OF
SHIELDING EFFECTIVENESS**

4:40 PM

I. Kohlberg, Kohlberg Associates, United States;

*R.W. McMillan, US Army Space and Missile Defense
Command, United States;*

S.A. von Laven, Amtec Corporation, United States

**COMPUTATION OF IEMI FIELDS THROUGH LAYERED
MEDIA USING THE RADIATION PRINCIPLE**

Effects

5:00 PM

*R. Kanyou Nana, S. Dickmann, B. Schetelig, J. Keghie,
Helmut-Schmidt-University /University of the Federal Armed
Forces Hamburg, Germany;*

*F. Sabath, Bundeswehr Research Institute for Protective
Technologies and NBC-Protection, Germany*

**ESTIMATION OF THE THREAT OF IEMI TO MARINE
EQUIPMENT AND EM HARDENING SOLUTIONS**

5:20 PM

D. C. Stoudt, Naval Surface Warfare Center, United States;

R. L. Gardner, Consultant to NSWC, United States;

I. Kohlberg, Kohlberg Associates, United States

**THE ROLE OF HYBRID MODELS IN UNDERSTANDING
FAILURE MECHANISMS OF INFRASTRUCTURE
ELECTRONICS TO HIGH-POWER MICROWAVE
ILLUMINATION**

5:40 PM

*F. Sonnemann, J. Mirschberger, Diehl-BGT-Defence GmbH &
Co. KG., Germany*

**SUSCEPTIBILITY OF A GENERIC CAN-BUS
NETWORK AGAINST HIGH-POWER
ELECTROMAGNETICS (HPEM)**

Lightning

6:00 PM

R. L. Gardner, Consultant, United States

**LEADER DERIVED INITIAL CONDITIONS FOR A
LIGHTNING RETURN STROKE**

Wednesday, September 16, 2009, Sala Sella

Session 21

METAMATERIALS

organized by F. Capolino and V. Galdi

Chairs: F. Capolino, S. Tretyakov

8:00 AM

J. S. Gómez-Díaz, Technical University of Cartagena, Spain;

S. Gupta, École Polytechnique de Montréal, Canada;

A. Álvarez-Melcón, Technical University of Cartagena, Spain;

C. Caloz, École Polytechnique de Montréal, Canada;

**NUMERICAL ANALYSIS OF IMPULSE REGIME
PHENOMENA IN LINEAR AND NON-LINEAR
METAMATERIAL TRANSMISSION LINES**

8:20 AM

*J. Courtial, A. C. Hamilton, University of Glasgow, United
Kingdom*

**MIMICKING VISUAL PROPERTIES OF
METAMATERIALS WITH METATOYS**

8:40 AM

Y. Lai, J. Ng, H.Y. Chen, D.Z. Han, J.J. Xiao, Z.Q. Zhang,

*C.T. Chan, Hong Kong University of Science and Technology,
Hong Kong, China*

**OPTICAL ILLUSION EFFECTS CREATED BY USING
METAMATERIALS**

9:00 AM

C.R. Simovski, TKK, Finland

ANALYTICAL MODELLING OF BULK DOUBLE-NEGATIVE METAMATERIALS

9:20 AM

M. Qiu, M. Yan, J.M. Hao, W. Yan, J. Wang, KTH, Sweden

TRANSFORMATION OPTICS FOR DESIGNING SUPERLENSES

9:40 AM

M.H. Belyamoun, S. Zouhdi, LGEP, France

ELECTROMAGNETIC MODELING OF BIANISOTROPIC DEBYE MATERIALS

10:20 AM

A.G. Schuchinsky, Queen's University Belfast, United Kingdom;

F. Capolino, University of California, Irvine, United States;

A. Vallecchi, University of Siena, Italy

TIGHTLY COUPLED RESONANT PAIRS AS METAMATERIAL CONSTITUENTS

10:40 AM

A. Vellecchi, F. Capolino, J.R. De Luis, F. De Flaviis,

University of California Irvine, United States

A LOW PROFILE FOLDED DIPOLE ANTENNA ON A REACTIVE HIGH IMPEDANCE SUBSTRATE

Wednesday, September 16, 2009, Sala Sella

Session 22

METAMATERIALS

Chairs: F. Capolino, S. Tretyakov

11:00 AM

P. Kovacs, Z. Raida, Dept. of Radio Electronics, Brno

University of Technology, Czech Republic

AUTOMATED DESIGN OF SINGLE- AND DUAL-BAND ELECTROMAGNETIC BAND GAP SURFACES BY GENETIC ALGORITHMS

11:20 AM

S. Tricarico, F. Bilotti, L. Vegni, University Roma Tre, Italy

OPTICAL CLOAKING WITH CYLINDRICAL PLASMONIC IMPLANTS

11:40 AM

A.-K. Hamid, University of Sharjah, United Arab Emirates;

F.R. Cooray, CSIRO ICT Centre, Australia

SCATTERING OF A PLANE WAVE BY A PERFECT ELECTROMAGNETIC CONDUCTING ELLIPTIC CYLINDER

12:00 PM

L. Scorrano, F. Bilotti, L. Vegni, Università Roma Tre, Italy

DESIGN OF COMPLEX SURFACES FOR POWER TRANSMISSION ENHANCEMENT THROUGH ELECTRICALLY SMALL APERTURES

Session 23

ELECTROMAGNETIC THEORY

Chairs: G. Manara, A.G. Tijhuis

2:00 PM

T. Melamed, Ben-Gurion University of the Negev, Israel

BEAM DECOMPOSITION OF TIME-HARMONIC ELECTROMAGNETIC WAVES

2:20 PM

I.Yu. Sergeev, IZMIRAN, Russia

THEORETICAL MODEL OF THE ELECTROMAGNETIC DISTURBANCES CAUSED BY EXPLOSIONS IN THE IONOSPHERE

2:40 PM

*I. Marziali, D. Boschetti, P. Elia, Thales Alenia Space, Italy;
B. Audone, EMC Consultant, Italy*

STATISTICAL STUDY OF THE DEGRADATION OF THE SHIELDING EFFECTIVENESS OF A STRUCTURE IN THE PRESENCE OF AN APERTURE

3:00 PM

K. A. Owusu, TUHN, Germany

J.R. Ojha, EM Software and Systems, GmbH, Germany

B. K. Shah, Eurocopter, Germany

A REDUCED NUMERICAL TECHNIQUE FOR THE DETERMINATION OF INPUT AND TRANSFER IMPEDANCE

3:20 PM

M. J. Havrilla, M. W. Hyde, Air Force Institute of Technology, United States

SENSITIVITY OF DUAL WAVEGUIDE PROBE COMPLEX PERMITTIVITY AND PERMEABILITY MEASUREMENT TO PROBE LIFT-OFF ERROR

3:40 PM

A.A. Lutman, R. Vescovo, Università degli Studi di Trieste, Italy

GREEN FUNCTION FOR A SEEDED ENERGY CHIRPED FREE ELECTRON LASER

4:20 PM

C.A. Jeffery, LANL, United States;

R. Roussel-Dupre, SciTech Solutions, LLC, United States;

P.L. Colestock, LANL, United States;

PATH LENGTH OF CURVED RF TRAJECTORIES THROUGH VERTICALLY STRATIFIED AND ISOTROPIC IONOSPHERES

4:40 PM

C. Kamacioglu, S. A. Arpali, Y. Baykal, Cankaya University, Turkey;

E. Yazgan, Hacettepe University, Turkey

PROPAGATION OF OPTICAL FLAT-TOPPED GAUSSIAN BEAMS IN SATELLITE LINKS

5:00 PM

O.O. Sy, M.C. van Beurden, Eindhoven University of Technology, Netherlands;

B.L. Michielsen, ONERA - DEMR, France;

A.G. Tijhuis, Eindhoven University of Technology, Netherlands;

SEMI-INTRUSIVE QUANTIFICATION OF UNCERTAINTIES IN FULLY STOCHASTIC ELECTROMAGNETIC INTERACTIONS: ANALYSIS OF A SPECTRAL FORMULATION

5:20 PM

S. Gona, V. Kresalek, FAI UTB Zlin, Czech Republic

ACCURACY OF MULTILAYER EQUIVALENT MODELS FOR COMPOSITE LAMINATED MATERIALS

5:40 PM

B Sundar, A. C. Hamilton, J. Courtial, University of Glasgow, United Kingdom

METATOYS AS OPTICAL ELEMENTS PERFORMING LIGHT-RAY TRANSFORMATIONS WITHOUT WAVE-OPTICAL ANALOG

6:00 PM

A. Dziedzic, P. Slobodzian, Wroclaw University of Technology, Poland

ELECTROMAGNETIC PROPERTIES OF MATERIALS USED FOR PAPER PRINTED RFID TAG ANTENNAS

6:20 PM

G.N. Georgiev, University of Veliko Tirnovo, Bulgaria;

M.N. Georgieva-Grosse, Gerlingen, Germany

AN APPLICATION OF THE COMPLEX TRICOMI FUNCTION

Thursday, September 17, 2009, Sala Giolitti

Session 24

ELECTROMAGNETICS IN UWB

organized by W. Wiesbeck

Chairs: B. Uguen , W. Wiesbeck

8:20 AM

W. Wiesbeck, E. Pancera, C. Sturm, University Karlsruhe (TH), Germany

TIME DOMAIN VERSUS FREQUENCY DOMAIN IN ULTRA WIDEBAND

8:40 AM

J. Kunisch, IMST GmbH, Germany

LORENTZ RECIPROCITY AND THE APPARENT PHASE CENTRE OF ULTRA-WIDEBAND ANTENNAS

9:00 AM

A. Neto, TNO, Netherlands

PLANAR IMPLEMENTATION OF THE UWB LEAKY LENS ANTENNA

9:20 AM

M. Guardiola, S. Capdevila, S. Blanch, J. Romeu, L. Jofre, UPC, Spain

UWB HIGH-CONTRAST ROBUST TOMOGRAPHIC IMAGING FOR MEDICAL APPLICATIONS

9:40 AM

P.-S. Kildal, J. Yang, Y. Karandikar, N. Wadefalk, M. Pantaleev, L. Helldner, Chalmers University of Technology, Sweden;

DEVELOPMENT OF A COOLABLE 2-14 GHZ ELEVEN FEED FOR FUTURE RADIO TELESCOPES FOR SKA AND VLBI 2010

10:20 AM

B. Sewiolo, G. Vinci, G. Fischer, R. Weigel, Institute for Electronics Engineering, Germany

MIXED-MODE S-PARAMETER DESIGN OF ULTRA-WIDEBAND COUPLED-LINE BALUNS

10:40 AM

R. Burghelca, S. Avrillon, B. Uguen, IETR, France

VECTOR SPHERICAL HARMONICS ANTENNA DESCRIPTION FOR IR-UWB RAY TRACING SIMULATOR

11:00 AM

E. Pancera, W. Wiesbeck, IHE-Universitaet Karlsruhe (TH), Germany

CORRELATION PROPERTIES OF THE PULSE TRANSMITTED BY UWB ANTENNAS

11:20 AM

D. Cavallo, A. Neto, G. Gerini, TNO, Netherlands

COMMON MODE RESONANCES IN UWB CONNECTED ARRAYS OF DIPOLES: MEASUREMENTS FROM THE DEMONSTRATOR AND EXIT STRATEGY

Thursday, September 17, 2009, Sala Giolitti

Session 25

MODERN ANTENNA TECHNOLOGIES

organized by H. Nakano

Chairs: P.-S. Kildal, H. Nakano

2:00 PM

H. Nakano, H. Oyanagi, T. Igarashi, Y. Iitsuka, J. Yamauchi, Hosei University, Japan

EXTREMELY LOW-PROFILE SPIRAL ANTENNA WITH PEC AND EBG REFLECTORS

2:20 PM

J. Shaker, R. Chaharmir, A. Petosa, A. Ittipiboon, M. Cuhaci, Communications Research Centre Canada, Canada

APPLICATIONS OF PERIODIC STRUCTURES TO MODERN ANTENNA DESIGNS

2:40 PM

A.I. Zaghloul, Virginia Tech and Army Research Laboratory, United States;

W.M. Dorsey, Naval Research Laboratory, United States

**EVOLUTIONARY DEVELOPMENT OF A
DUAL-BAND, DUAL-POLARIZATION,
LOW-PROFILE PRINTED CIRCUIT ANTENNA**

3:00 PM

H. F. AbuTarboush, R. Nilavalan, H. Al-Raweshidy, Brunel University, United Kingdom;

D. Budimir, Westminster University, United Kingdom;

**DESIGN OF PLANAR INVERTED-F ANTENNAS
(PIFA) FOR MULTIBAND WIRELESS APPLICATIONS**

3:20 PM

S. Kahng, E. Shin, University of Incheon, Korea, South;

J. Choi, Hanyang University, Korea, South

**DESIGN OF A MODIFIED MONOPOLE ANTENNA
FOR THE QUAD BAND COMMUNICATION**

3:40 PM

A. K. Skrivervik, J. R. Mosig, EPFL, Switzerland

**SMALL TERMINAL ANTENNAS: ANALYSIS, DESIGN
AND PERFORMANCE LIMITATIONS**

4:20 PM

P.-S. Kildal, Chalmers University of Technology, Sweden;

E. Rajo-Iglesias, Carlos III University of Madrid, Spain;

E. Alfonso, A. Valero, Technical University of Valencia, Spain;

A. U. Zaman, Chalmers University of Technology, Sweden;

**WIDEBAND, LOWLOSS, LOW-COST, QUASI-TEM
METAMATERIAL-BASED LOCAL WAVEGUIDES IN
AIR GAPS BETWEEN PARALLEL METAL PLATES**

4:40 PM

V. Fusco, O. Malyuskin, Queens University Belfast, United Kingdom

**WIRE LENS ANTENNAS WITH NEAR/FAR FIELD
CONJUGATION PROPERTIES**

5:00 PM

D.V. Thiel, A. Galehdar, Griffith University, Australia

**RECENT INNOVATIONS IN ANTENNA DESIGN FOR
WIRELESS SENSOR NETWORKS**

Session 26

NUMERICAL METHODS IN ELECTROMAGNETICS-II
organized by **R.D. Graglia and D.R. Wilton**

Chairs: R.D. Graglia, D.R. Wilton

8:20 AM

S. Sauter, Universitaet Zuerich, Institut fuer Mathematik, Switzerland;
L. Banjai, Max-Planck-Institut, Mathematik in den Naturwissenschaften, Germany

FAST SOLUTION TECHNIQUES FOR THE WAVE EQUATION IN UNBOUNDED DOMAINS

8:40 AM

C.V.G. Craeye, Université catholique de Louvain, Belgium

ON THE CONNECTION BETWEEN MULTIPLE-SCATTERING BASED MACRO BASIS FUNCTIONS AND KRYLOV SUBSPACE METHODS

9:00 AM

F. Krämer, ETH, Switzerland;
M. Bebendorf, Univ. Bonn, Germany;
J. Ostrowski, ABB, Switzerland;
R. Hiptmair, ETH, Switzerland;

HIERARCHICAL MATRIX PRECONDITIONERS FOR EDDY CURRENT PROBLEMS

9:20 AM

N. Cinosi, S.P. Walker, M.J. Bluck, Imperial College, United Kingdom

INTEGRAL EQUATION TRANSIENT ANALYSIS OF EXPERIMENTS ON ELECTROMAGNETIC SCATTERING FROM SUB-WAVELENGTH APERTURES

9:40 AM

Z.G. Qian, M.S. Tong, W.C. Chew, University of Illinois at Urbana-Champaign, United States

AGIBC FORMULATION FOR LOSSY CONDUCTOR MODELING

10:20 AM

R.D. Graglia, F.P. Andriulli, Politecnico di Torino, Torino, Italy;
A.F. Peterson, Georgia Institute of Technology, Atlanta, GA, USA;

HIERARCHICAL POLYNOMIALS AND VECTOR ELEMENTS FOR FINITE METHODS

10:40 AM

T. Bertuch, FGAN e.V., Germany;
G. Vecchi, Politecnico di Torino, Italy

EFFICIENT SPACE-DOMAIN FORMULATION FOR INTEGRAL EQUATION MODELLING OF PRINTED METALLIZATIONS ON COATED CYLINDERS

11:00 AM

S. Alfonzetti, Università di Catania, Italy;
G. Borzi, Università di Messina, Italy

ITERATIVE SOLUTIONS TO HYBRID ELECTROMAGNETIC PROBLEMS

11:20 AM

C. Gardner, C. Jarmillo-Heano, L.C. Kempel, Michigan State University, United States;

FINITE ELEMENT ANALYSIS OF CONFORMAL ANTENNAS

11:40 AM

N. Marais, D.B. Davidson, Stellenbosch University, South Africa

VALIDATING A HIGH-ORDER TIME DOMAIN HYBRID IMPLICIT/EXPLICIT FEM IMPLEMENTATION

12:00 PM

F. Vipiana, Antenna and EMC Lab (LACE), Istituto Superiore Mario Boella, Torino, Italy;

G. Vecchi, Antenna and EMC Lab (LACE), Politecnico di Torino, Torino, Italy;

D. R. Wilton, Dept. of Electrical and Computer Engineering, University of Houston, Houston (TX), United States

RECENT ENHANCEMENT IN THE ANALYSIS OF WIRE-SURFACE STRUCTURES WITH THE METHOD OF MOMENTS

Thursday, September 17, 2009, Sala Einaudi

Session 27

ANALYTICAL, NUMERICAL AND HYBRID METHODS IN EM

organized by P.H. Pathak and G. Manara

Chairs: G. Manara, P.H. Pathak

2:00 PM

P.H. Pathak, Y. Kim, R.J. Burkholder, ElectroScience Lab. The Ohio State University, United States

A UNIFORM GEOMETRICAL THEORY OF DIFFRACTION AND ITS EXTENSIONS FOR A CURVED EDGE ILLUMINATED BY A COMPLEX SOURCE POINT BEAM

2:20 PM

F.A. Molinet, MOTHEM, France

DIFFRACTION OF A CREEPING WAVE ON AN ELONGATED PERFECTLY CONDUCTING OR COATED OBJECT BY A SHARP EDGE

2:40 PM

G. Carluccio, M. Albani, Università degli Studi di Siena, Italy;
P.H. Pathak, ElectroScience Laboratory, The Ohio State University, United States

AN ASYMPTOTIC EVALUATION OF RADIATION SURFACE INTEGRALS FOR HIGH FREQUENCY WAVE PROBLEMS WHICH REDUCES TO THE UTD RAY FORMAT

3:00 PM

R. J. Burkholder, Ohio State University, United States
**ELECTROMAGNETIC MODELS FOR EXPLOITING
MULTI-PATH PROPAGATION IN THROUGH-WALL
RADAR IMAGING**

3:20 PM

R. Martelly, R. Janaswamy, UMass-Amherst, United States
**PROPAGATION PREDICTION IN ROUGH AND
BRANCHED TUNNELS BY THE ADI-PE TECHNIQUE**

3:40 PM

*R. W. Kindt, Radar Division, Naval Research Laboratory,
Washington, DC, United States;*
*M. N. Vouvakis, Center for Advanced Sensor and
Communication Antennas, University of Massachusetts
Amherst, MA, United States*
**ANALYSIS OF WAVELENGTH-SCALED ARRAY
ARCHITECTURES VIA DOMAIN DECOMPOSITION
TECHNIQUES FOR FINITE ARRAYS**

4:20 PM

R. Cetin, O. A. Civi, Middle East Technical University, Turkey;
P. Nepa, G. Manara, University of Pisa, Italy
**ELECTROMAGNETIC SCATTERING FROM
OBSTACLES IN THE NEAR FIELD REGION OF
ELECTRICALLY LARGE ARRAYS**

4:40 PM

H.-T. Chou, F.-Y. Kuo, H.-T. Hsu, Yuan Ze University, Taiwan
**CONVERGENCE ANALYSIS OF CURRENT
SAMPLING PROFILES ANTENNA DESIGN IN THE
PRESENCE OF ELECTRICALLY LARGE AND
COMPLEX PLATFORMS**

5:00 PM

S. Karan, V. B. Erturk, Bilkent University, Turkey
**CLOSED-FORM GREEN'S FUNCTIONS IN
CYLINDRICALLY STRATIFIED MEDIA FOR
METHOD OF MOMENTS APPLICATIONS**

5:20 PM

J.P. Zheng, Panasonic R&D Center China Co., Ltd., China;
K. Kobayashi, Chuo University, Japan
**DIFFRACTION BY A SEMI-INFINITE
PARALLEL-PLATE WAVEGUIDE WITH SINUSOIDAL
WALL CORRUGATION**

Session 28

INVERSE SCATTERING AND REMOTE SENSING

organized by K.-J. Langenberg

Chairs: E. Heyman, K.-J. Langenberg

8:20 AM

L. Klinkenbusch, Christian-Ahlbrechts-Universaet zu Kiel, Germany

ON THE UNIQUENESS OF ELECTROMAGNETIC FIELDS AND CONSEQUENCES FOR INVERSE-SCATTERING PROBLEMS

8:40 AM

E. A. Marengo, Northeastern University, United States

A NEW APPROACH TO THE GENERALIZED OPTICAL CROSS-SECTION THEOREM IN ELECTROMAGNETICS

9:00 AM

W. Ackermann, T. Weiland, TU Darmstadt, Germany

APPLICATION OF FAST ALGORITHMS TO THE SOLUTION OF THE FORWARD ELECTROMAGNETIC SCATTERING PROBLEMS IN THREE DIMENSIONS

9:20 AM

W.-K. Park, D. Lesselier, Laboratoire des Signaux et Systèmes, France

IMAGING OF SCATTERING SCREENS VIA FAST METHODS

9:40 AM

K. Belkebir, Institut Fresnel, France;

L. Bellomo, S. Pioch, M. Saillard, LSEET, France;

P. C. Chaumet, Institut Fresnel, France;

MICROWAVE IMAGING USING A TIME-REVERSAL RADAR SYSTEM

10:20 AM

G. Greving, NAVCOM Consult, Germany

HYBRID NUMERICAL SCATTERING FIELD ANALYSIS EMBEDDED INTO SIMULATIONS OF COMPLEX RADIO BASED SYSTEMS - EXAMPLES, CAPABILITIES AND LIMITATIONS

10:40 AM

T. Heilpern, School of Electrical Engineering, Tel Aviv University, Israel;

A. Shlivinski, Ben-Gurion University of the Negev, Israel;

E. Heyman, School of Electrical Engineering, Tel Aviv University, Israel;

BEAM-BASED BACK-PROPAGATION IMAGING

11:00 AM

P.M. van den Berg, Delft University of Technology, Netherlands;

A. Abubakar, T.M. Habashy, Schlumberger-Doll Research, United States

**INTEGRAL AND FINITE-DIFFERENCE
FORMULATIONS OF THE CONTRAST SOURCE
INVERSION METHOD**

11:20 AM

*K.J. Langenberg, University of Kassel, Germany;
A. Zimmer, Saarschmiede, Germany*

**UTILIZATION OF ELASTIC WAVE MODE
CONVERSION IN ELECTROMAGNETIC
DIFFRACTION TOMOGRAPHIC IMAGING SCHEMES**

Thursday, September 17, 2009, Sala Sella

Session 29

INVERSE SCATTERING AND REMOTE SENSING

Chairs: D.G. Johnson, R. Solimene

11:40 AM

T. Ziani, M. Laour, EMP, Algeria;

X. Dérobert, LCPC, France;

M. Benslama, Constantine University, Algeria;

**2-D SIMULATION WITH FDTD METHOD OF GPR
MODELING APPLIED TO DETECTION IN
STRATIFIED LOSSY MEDIUM USING THE
FREQUENCY EFFECT PULSE**

12:00 PM

S. Van den Bulcke, A. Franchois, Ghent University, Belgium

**QUANTITATIVE MILLIMETER WAVE IMAGING OF
2.5D INHOMOGENEOUS OBJECTS**

2:00 PM

*D.G. Johnson, Australian Centre for Field Robotics,
University of Sydney, Australia*

**COMPLEX SCATTERER RECONSTRUCTION USING
MULTISTATIC SPHERICAL WAVE ISAR FOURIER
TEMPLATE MATCHING**

2:20 PM

R. Solimene, Seconda Università di Napoli, Italy;

A. Buonanno, Selex Sistemi Integrati, Italy;

*F. Soldovieri, Istituto per il Rilevamento Elettromagnetico
dell'Ambiente (IREA-CNR), Italy;*

R. Pierri, Seconda Università di Napoli, Italy;

**3D SHAPE RECONSTRUCTION OF PEC
SCATTERERS BY PO VECTORIAL FORMULATION**

2:40 PM

*M. Parise, S. Cristina, University Campus Bio-Medico of
Rome, Italy*

**A NEW METHOD FOR COMPUTING
ELECTROMAGNETIC INDUCTION SOUNDING
RESPONSE CURVES**

3:00 PM

B. Jannier, O. Dubrunfaut, F. Ossart, LGEP, France

**APPLICATION OF MICROWAVE REFLECTOMETRY
TO TRIPHASIC FLOW CHARACTERIZATION**

3:20 PM

A. Brancaccio, C. Di Dio, G. Leone, Seconda Università di Napoli, Italy

**MULTIMONOSTATIC SHAPE RECONSTRUCTION
OF DIELECTRIC CYLINDERS BY A LINEAR
INVERSION APPROACH**

3:40 PM

R. Pierri, C. Mola, R. Solimene, Seconda Università di Napoli, Italy;

F. Soldovieri, IREA-CNR, Italy

ANTENNA DIAGNOSTICS FROM NEAR FIELD MEASUREMENTS OVER MULTIPLE PLANES

Thursday, September 17, 2009, Sala Sella

Session 30

PRINTED AND CONFORMAL ANTENNAS

Chairs: Y. M. M. Antar, P. Pirinoli

4:20 PM

S.K. Podilchak, A.P. Freundorfer, Queen's Univeristy, Canada;
Y.M.M. Antar, Royal Military College of Canada, Canada

**NEW LEAKY-WAVE ANTENNAS USING
SURFACE-WAVE LAUNCHERS AND PLANAR
METALLIC GRATING LENSES**

4:40 PM

I. Hertl, M. Strycek, VOP-026 Sternberk, Czech Republic

**BROADBAND, CIRCULARLY POLARIZED PATCH
ANTENNA ARRAYS**

5:00 PM

L. Feng, T. T. Ye, Hong Kong R&D Center for Logistics and Supply Chain Management, China

**3-D AND PACKAGE-CONFORMAL UHF RFID
ANTENNAS WITH ENHANCED PERFORMANCE**

Tuesday, September 15, 2009, Sala Mollino
Short Course on
TRANSFORMATION ELECTROMAGNETICS
AND CLOAKING DEVICES
14:00-18:00

Instructor

Stefano Maci

Department of Information Engineering, University of Siena, Italy

Recently, the new concept of *Transformation Optics* (TO) has been introduced, that establishes criteria to achieving control on optical ray-paths within optically anisotropic metamaterials via coordinate transformation and relevant interpretation in terms of the constitutive metamaterial electric and magnetic tensors. This methodology has been, for instance, applied to find possible designs of *metamaterial cloaks*: shells of anisotropic inhomogeneous metamaterials capable of rendering any object within their interior cavities invisible to detection from outside. A more general objective is to find ways of transforming an incident electromagnetic field in a different configuration of fields with desired properties by appropriate synthesis of the metamaterial constituent tensors and, finally, synthesizing the required metamaterial. The emphasis is not only on broadening the class of employable transformations but also on extending the concept with pioneering investigations on active and bianisotropic metamaterials.

In this course, the attention is first focused on a perfect cloak, defined as a device that for any incident field, ensures vanishment of the *scattered* field in the free space external to the cloak, and vanishment of the *total* field inside the free-space cavity of the cloak; thus, any object placed in the cavity does not perturb the electromagnetic field outside the cloak and to an external observer it appears as if the object and cloak were absent. The difference between imperfect invisibility (stealth objects and radar absorbing materials) are clarified. Single-frequency conditions are derived on the constitutive dyads of a bianisotropic linear metamaterial that are sufficient to ensure cloaking for arbitrary shapes and arbitrary illumination. Transformations based on linear combinations of electric and magnetic fields are introduced that lead to cloaking without transforming the spatial coordinates. Other transformation electromagnetic metamaterial devices like field concentrators and flattening devices are presented. Theoretical issues like group velocity, phase velocity, energy transport velocity, causality, losses and frequency dispersion are discussed to analyze limitations and practical applicability of the concept.

Copies of presentation slides will be provided.

Friday, September 18, 2009, Sala Mollino

**Short Course on
VIRTUAL DRIVE - OPTIMIZATION OF CAR
INTEGRATED MULTIPLE ANTENNA
SYSTEMS FOR MOBILE COMMUNICATIONS
8:20-12:20**

Instructor

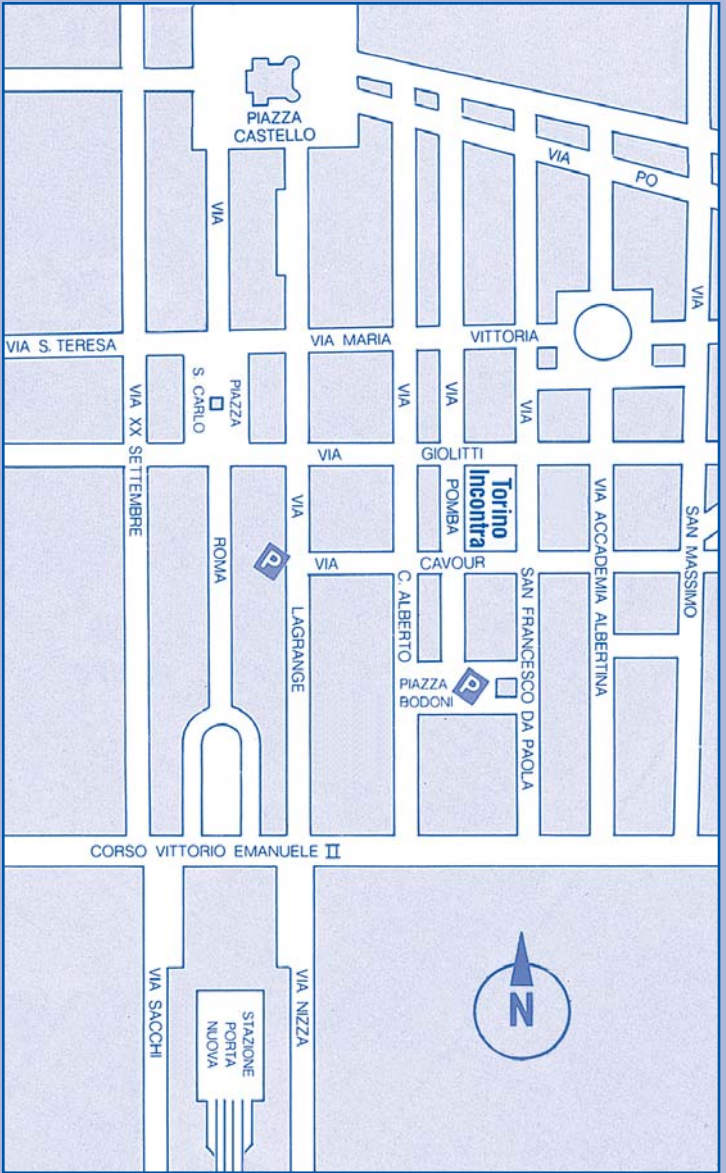
*Werner Wiesbeck and Christian Sturm
University of Karlsruhe (TH), Germany*

Mobile automotive communications, including broadcast, is one of the fastest growing areas in communications. Mobile phone, Wireless LAN, data transfer, radio, TV, in the future mobile to mobile (C2C, C2X ...) and many other candidates require the installation of numerous antennas on the vehicles. To overcome the fading most services require multiple antennas for Diversity or MIMO operation, which multiplies the number of antennas by a factor of 2 to 4. This runs the number of antennas on a car easily up to 12 to 15. The design, placement and test of these antennas require enormous efforts in manpower, time and cost. Presently the required antenna installations are tested by road side driving, a time and money consuming adventure. The solution to overcome this is *Virtual Drive*. The idea is very simple and intends to model the complete communication systems electromagnetically. This procedure has the following steps:

- model the complex, vehicle integrated RF front-end including the antennas
- model the environment where to drive the vehicle
- model the complex, polarimetric wave propagation
- let the vehicle drive in the covered area and sample the received signals of all antennas

The modeling of the vehicle-integrated antennas requires the knowledge of the vehicle structure and material composition. The antennas have to be integrated in their intended positions. The calculation of the complex antenna characteristics may be by standard EM tools or better by hybrid tools, because of the vehicle size. The vehicle motion and the traffic are required to be modeled microscopic, while the environment (buildings, trees ...) is usually modeled statistically. Any of the different environments of interest (urban, rural, freeway.....) may be integrated. The wave propagation from the transmitter to the receiver is modeled complex and polarimetric by ray-tracing. The received signals are then statistically evaluated for the intended communications air interface. Different results can be achieved, for example the channel statistics or communications quality. This *Virtual Drive* tool is extremely powerful and outperforms any real mobile measurements in flexibility, time, cost and quality.

Copies of presentation slides will be provided.



ICEAA '09

Geda Srl - Nichelino (Torino)