

# ICEAA '05

International Conference  
on Electromagnetics  
in Advanced Applications

*and*

# EESC '05

European Electromagnetic  
Structures Conference

September 12-16, 2005  
Torino, Italy



# ICEAA-EESC '05

*Organized by*

POLITECNICO DI TORINO

IEIIT-CNR

COREP

*In cooperation with*

URSI, the International Union of Radio Science

IEEE Antennas and Propagation Society

IEEE Electromagnetic Compatibility Society

IEEE Electron Devices Society

IEEE North Italy Section

IEEE North Italy AP, ED, MTT Chapters

*Under the auspices of and supported by*  
Città di Torino

*Sponsored by*

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

Torino Wireless Foundation

Galileo Avionica - Avionics Systems

*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

**Marco Ajmone Marsan,** Director of IEIIT-CNR  
**Roberto D. Graglia,** Politecnico di Torino  
**Piergiorgio L.E. Uslenghi,** University of Illinois at Chicago,  
USA

## ICEAA ORGANIZING COMMITTEE

*Chairman:*

**Roberto D. Graglia,** Politecnico di Torino

*Members:*

**Andrea Delogu,** Galileo Avionica, EESC '05 liaison  
**Guido Lombardi,** Politecnico di Torino - Responsible for  
database management and web services  
**Patrizia Savi,** Politecnico di Torino - Responsible for  
tech. exhibition

*Secretariat:*

**Nadia Chiccoli,** 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  
**W.C. Chew,** USA  
**M. D'Amore,** Italy  
**L.B. Felsen,** USA  
**I.V. Lindell,** Finland  
**J.R. Mosig,** Switzerland  
**F. Olyslager,** Belgium  
**M. Orefice,** Italy  
**A.G. Roederer,** The Netherlands  
**W. Wiesbeck,** Germany  
**D.R. Wilton,** USA

## EESC PROGRAM COMMITTEE

**Andrea Delogu,** Galileo Avionica, Caselle T.se, Italy  
**Thierry Doux,** DGA/SMA/ALACP Div. Radômes et  
Composites, Cuers, France  
**Nick Savage,** Chelton Radomes Limited, Stevenage, UK  
**Herbert Zippold,** EADS Deutschland GmbH, Munchen,  
Germany

# WELCOME TO THE CONFERENCE

On behalf of the Organizing Committee, of the ICEAA Scientific Committee and of the EESC Program Committee, I am glad to welcome all participants to the ninth edition of ICEAA and to the eleventh edition of EESC. This is the second time that these two Conferences are jointly held, following the first joint edition of 1993.

These Conferences together have 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, Radomes and Electromagnetic Structures, from wave interactions with nano/micro structures to Metamaterials, from Computational Electromagnetics to Wireless Communications. This edition features 31 sessions including sixteen special sessions. More than 250 papers are scheduled, out of about the 440 submitted. As in previous editions invited papers will be presented, giving recent information on the state of the art and new technologies. A full-day short course on Modeling of Transient Electromagnetic Interactions in Multiscale Structures will also be held on Friday, following all the sessions, with renowned experts serving as instructors.

The Conference is organized by the National Research Council of Italy and by the Politecnico di Torino, a State University that is one of the major technical universities in Italy. Founded in 1859, 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-EESC Organizing Committee

# **GENERAL INFORMATION**

## **DATES AND LOCATION**

The conference will be held from 12th to 16th of September 2005, at the “Torino Incontra” Congress Center, Via Nino Costa 8, Torino (see map).

## **OFFICIAL LANGUAGE**

The official language will be 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 is required of all participants, 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 100,00 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 **Wednesday night, at 20:00**, at the **Castello di San Giorgio Canavese, via al Castello, San Giorgio Canavese (Torino)**.

Please visit: [www.castellosangiorgiocanavese.it](http://www.castellosangiorgiocanavese.it).

Buses depart at 19:00 from the Torino Incontra Congress Center. Participants are requested to confirm at the Conference registration desk for their bus transportation.

## **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 an overhead projector and a notebook. Other equipment will be available only upon written request to the Organizing Committee, to be received before September 5.

## **INTERNET CONNECTION**

Three Internet connections will be provided at the Conference Center.

## **MESSAGES**

During the Conference, messages may be directed to participants via Email ([info@iceaa.polito.it](mailto:info@iceaa.polito.it)) or by calling the Congress Center at +39-011-557-6846. 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 northwestern 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 have been booked for the period September 11 to 18: to make reservations, please use the form available on [www.iceaa.polito.it](http://www.iceaa.polito.it), and send it as soon as possible to:

### **CO.AL.PI.**

Via Gioberti 11,  
10128 Torino, Italy

**tel. +39 011 5613760, fax +39 011 5621738**

**e-mail: [hotelres@hotelres.it](mailto:hotelres@hotelres.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.polito.it](http://www.iceaa.polito.it), or refer to the Conference registration desk.

## **OTHER ACTIVITIES**

In September there are a number of interesting events in Torino, such as the music festival “Settembre Musica”, 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: [info@iceaa.polito.it](mailto:info@iceaa.polito.it)

*For logistics aspects:*

### **COREP** (Mrs. Giusy Spinasanta)

Tel. +39-011-564-5103

Fax: +39-011-564-5199

E-mail: [gspinasanta@corep.it](mailto:gspinasanta@corep.it)

*For hotel reservations:*

### **CO.AL.PI.**

Via Gioberti 11,

10128 Torino, Italy

**tel. +39 011 5613760, fax +39 011 5621738**

**e-mail: [hotelres@hotelres.it](mailto:hotelres@hotelres.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. +39-011-564-5103 - Fax: +39-011-564-5199

## **Short Course on MODELING OF TRANSIENT ELECTROMAGNETIC INTERACTIONS IN MULTISCALE STRUCTURES**

Prof. Andreas Cangellaris and Eric Michielssen of the University of Illinois at Urbana-Champaign, U.S.A., will hold a full-day short course on Modeling of Transient Electromagnetic Interactions in Multiscale Structures, on Friday, September 16. Participants may register for this short course at the conference registration desk. The cost of the short course is 65,00 Euro (VAT included).

# CONFERENCE SCHEDULE

(Please check the detailed program in the following pages)

<b>MONDAY, SEPTEMBER 12</b>			
<b>SALA CAVOUR</b>	<b>SALA GIOLITTI</b>	<b>SALA EINAUDI</b>	<b>SALA SELLA</b>
	<b>Formal Opening</b> <i>9:00 ÷ 10:00</i>		
<b>Session 1</b> <b>Organized by</b> <b>C.E. Baum</b>	<b>Session 2</b> <b>Organized by</b> <b>N. Engheta and</b> <b>R.W. Ziolkowski</b>	<b>Session 3</b>	<b>Session 4</b>
Intentional EMI	Metamaterials, Nanostructured Electromagnetics and Plasmonic Effects: Part 1	Electromagnetic modelling of devices and circuits	Radar cross section and asymptotic techniques
Chairs: C.E. Baum, R. Gardner	Chairs: N. Engheta, R.W. Ziolkowski	Chairs: G. Macchiarella, R. Tascone	Chairs: P.E. Hussar, G. Manara
<i>10:40 ÷ 17:20</i>	<i>10:40 ÷ 15:20</i>	<i>10:40 ÷ 12:20</i>	<i>10:40 ÷ 12:20</i>
	<b>Session 5</b> <b>Organized by</b> <b>N. Engheta and</b> <b>R.W. Ziolkowski</b>	<b>Session 6</b>	<b>Session 7</b>
	Metamaterials, Nanostructured Electromagnetics and Plasmonic Effects: Part 2	Electromagnetic measurements	Miscellaneous techniques and applications
	Chairs: R.W. Ziolkowski, N. Engheta	Chairs: R. Orta, I. Pinto	Chairs: M. Franceschetti, H. Schippers
	<i>15:20 ÷ 17:20</i>	<i>14:00 ÷ 17:20</i>	<i>14:00 ÷ 16:00</i>
			<b>Session 8</b> Radar imaging Chairs: N.V. Budko, M. Sabbadini <i>16:20 ÷ 17:40</i>
	Coffee break Lunch break Coffee break	<i>10:00 ÷ 10:40</i> <i>12:20 ÷ 14:00</i> <i>16:00 ÷ 16:20</i>	

## TUESDAY, SEPTEMBER 13

SALA GIOLITTI	SALA EINAUDI	SALA SELLA
<p style="text-align: center;"><i>Session 9</i></p> <p style="text-align: center;">Integral equation methods: Part 1</p> <p style="text-align: center;">Chairs: Z. Raida, J.M. Rius</p> <p style="text-align: center;"><i>8:40 ÷ 12:20</i></p>	<p style="text-align: center;"><i>Session 10</i></p> <p style="text-align: center;"><b>Organized by D. Erricolo and M.F. Iskander</b></p> <p style="text-align: center;">Wireless Communications: Antennas, Propagation, and Components Technologies: Part 1</p> <p style="text-align: center;">Chairs: C. Christodoulou M. Iskander</p> <p style="text-align: center;"><i>8:00 ÷ 12:20</i></p>	<p style="text-align: center;"><i>Session 11</i></p> <p style="text-align: center;"><b>Organized by F. Canavero</b></p> <p style="text-align: center;">The electromagnetic facets of EMC</p> <p style="text-align: center;">Chairs: F. Canavero R. Vahldieck</p> <p style="text-align: center;"><i>8:00 ÷ 11:00</i></p>
		<p style="text-align: center;"><i>Session 12</i></p> <p style="text-align: center;">Inverse scattering and remote sensing</p> <p style="text-align: center;">Chairs: A. Franchois D. Smith</p> <p style="text-align: center;"><i>11:20 ÷ 15:40</i></p>
<p style="text-align: center;"><i>Session 13</i></p> <p style="text-align: center;">Integral equation methods: Part 2</p> <p style="text-align: center;">Chairs: G. Di Massa, J.R.Mosig</p> <p style="text-align: center;"><i>14:00 ÷ 15:40</i></p>	<p style="text-align: center;"><i>Session 14</i></p> <p style="text-align: center;"><b>Organized by D. Erricolo and M.F. Iskander</b></p> <p style="text-align: center;">Wireless Communications: Antennas, Propagation, and Components Technologies: Part 2</p> <p style="text-align: center;">Chairs: C. Balanis, D. Erricolo</p> <p style="text-align: center;"><i>14:00 ÷ 15:40</i></p>	
<p style="text-align: center;"><i>Session 15</i></p> <p style="text-align: center;">Finite methods and hybrid methods</p> <p style="text-align: center;">Chairs: D. B. Davidson, P. Russer</p> <p style="text-align: center;"><i>16:20 ÷ 18:20</i></p>		<p style="text-align: center;"><i>Session 16</i></p> <p style="text-align: center;">EMC/EMI/EMP</p> <p style="text-align: center;">Chairs: C. Christopoulos L. Vegni</p> <p style="text-align: center;"><i>16:20 ÷ 18:20</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>15:40 ÷ 16:20</i></p>		

## WEDNESDAY, SEPTEMBER 14

SALA CAVOUR	SALA GIOLITTI	SALA EINAUDI	SALA SELLA
<i>Session 17</i>	<i>Session 18</i>	<i>Session 19</i>	<i>Session 20</i>
	<b>Organized by A. Sihvola and S. Tretyakov</b>	<b>Organized by W. Wiesbeck</b>	<b>Organized by L.B. Felsen and V. Galdi</b>
Radomes and Electromagnetic structures	Metamaterials/ Metamorphose network	RF Aspects of Ultra Wideband Technology	Wave interactions with aperiodic order
Chairs: A. Delogu, N. Savage	Chairs: A. Sihvola, S. Tretyakov	Chairs: J. Kunisch, W. Wiesbeck	Chairs: L.B. Felsen, V. Galdi
<i>8:00 ÷ 12:20</i>	<i>8:50 ÷ 12:20</i>	<i>8:40 ÷ 12:00</i>	<i>8:40 ÷ 12:00</i>
Coffee break <i>10:00 ÷ 10:20</i> Lunch break <i>12:20 ÷ 14:00</i> Coffee break <i>16:00 ÷ 16:20</i>			
<i>Session 21</i>	<i>Session 22</i>	<i>Session 23</i>	<i>Session 24</i>
	<b>Organized in memory of Roberto Tiberio by P.H. Pathak and P.L.E. Uslenghi</b>		
Frequency selective surfaces	Direct and Inverse Scattering	Electromagnetic properties of materials	Microwave antennas
Chairs: P. Savi, R. Tascone	Chairs: P.H. Pathak, P.L.E. Uslenghi	Chairs: B. Munk, H. Zippold	Chairs: A. Neto, R.E. Zich
<i>14:00 ÷ 16:00</i>	<i>14:00 ÷ 17:40</i>	<i>14:20 ÷ 17:00</i>	<i>14:20 ÷ 17:00</i>
<b>Banquet (20:00) - Buses depart at 19:00</b>			

## THURSDAY, SEPTEMBER 15

SALA CAVOUR	SALA GIOLITTI	SALA EINAUDI	SALA SELLA
<p style="text-align: center;"><i>Session 25</i></p> <p style="text-align: center;"><b>Antennas, systems and arrays</b></p> <p>Chairs: S. Maci, W. Wiesbeck</p> <p style="text-align: center;"><i>8:40 ÷ 12:20</i></p>	<p style="text-align: center;"><i>Session 26</i></p> <p style="text-align: center;"><b>Organized by R.D. Graglia and D.R. Wilton</b></p> <p style="text-align: center;">Computational Electromagnetics</p> <p>Chairs: R.D. Graglia, D.R. Wilton</p> <p style="text-align: center;"><i>8:40 ÷ 17:00</i></p>	<p style="text-align: center;"><i>Session 27</i></p> <p style="text-align: center;"><b>Organized by P. Smith</b></p> <p style="text-align: center;">Fundamental EM theory advances</p> <p>Chairs: D. Erricolo, P. Smith</p> <p style="text-align: center;"><i>8:40 ÷ 12:20</i></p>	<p style="text-align: center;"><i>Session 28</i></p> <p style="text-align: center;"><b>Organized by N.G. Alexopoulos</b></p> <p style="text-align: center;">Interaction of Electromagnetic Waves with Nano/ Micro Structures</p> <p>Chairs: N.G. Alexopoulos, R. Diaz</p> <p style="text-align: center;"><i>8:40 ÷ 12:00</i></p>
<p style="text-align: center;"><i>Session 29</i></p> <p style="text-align: center;"><b>Organized by A. Cangellaris and E. Michielssen</b></p> <p style="text-align: center;">Electromagnetic modelling in Time Domain</p> <p>Chairs: A. Cangellaris, E. Michielssen</p> <p style="text-align: center;"><i>14:00 ÷ 17:00</i></p>		<p style="text-align: center;"><i>Session 30</i></p> <p style="text-align: center;"><b>Organized by R. Sorrentino</b></p> <p style="text-align: center;">RF-MEMS components, technology and materials: a European perspective</p> <p>Chairs: W. De Raedt, R. Sorrentino</p> <p style="text-align: center;"><i>14:00 ÷ 17:20</i></p>	<p style="text-align: center;"><i>Session 31</i></p> <p style="text-align: center;"><b>Organized by R. Mittra</b></p> <p style="text-align: center;">Innovative techniques for solving multi-scale, large and complex radiation and scattering problems</p> <p>Chairs: R. Mittra, G. Vecchi</p> <p style="text-align: center;"><i>14:00 ÷ 17:00</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>			

## FRIDAY, SEPTEMBER 16

### SALA SELLA

**A. Cangellaris and E. Michielssen**

Short Course on

**Modeling of Transient  
Electromagnetic Interactions in  
Multiscale Structures**

*8:30 ÷ 16:00*

# FINAL PROGRAM

Monday, September 12, 2005, Sala Cavour

## Session 1

### INTENTIONAL EMI

organized by C.E. Baum

Chairs: C.E. Baum, R. Gardner

#### Part A. Sources (Interfering Environments)

10:40 AM

*C.E. Baum - Air Force Research Laboratory - Kirtland AFB, Albuquerque, New Mexico, United States*

#### **HIGH-POWER SCANNING WAVEGUIDE ARRAY**

11:00 AM

*C.E. Baum - Air Force Research Laboratory - Kirtland AFB, Albuquerque, New Mexico, United States*

#### **COMPACT, LOW-IMPEDANCE MAGNETIC ANTENNAS**

11:20 AM

*J. Lawrence, C.E. Baum, W.D. Prather, R.J. Torres,*

*J. MacGilvray - AFRL, Directed Energy Directorate, KAFB, NM, USA*

*M.D. Abdalla, M.C. Skipper - ASR Corporation, Albuquerque, NM, USA*

*D.V. Giri - Pro-Tech, Alamo, CA, USA*

#### **HIGH POWER MESOBAND SOURCES**

11:40 AM

*I. Kohlberg - Institute for Defense Analyses, Alexandria, VA, USA*

*C.E. Baum - Air Force Research Laboratory, Albuquerque, NM, USA*

#### **ON THE MATHEMATICAL STRUCTURE OF FREQUENCY AND TIME DEPENDENT ELECTROMAGNETIC FIELDS OF AN IMPULSE RADIATING ANTENNA**

12:00 PM

*G.H. Baker, J.D. Rudmin, N.L. Olive, J.M. Darragh -  
Department of Integrated Science & Technology - James  
Madison University, Harrisonburg, VA, USA*

#### **THE FEASIBILITY AND EFFECTIVENESS OF A COMMON CONSUMER DEVICE AS AN ELECTROMAGNETIC INTERFERENCE (EMI) SOURCE**

2:00 PM

*C.C. Courtney, D.E. Voss, T. McVeety - Voss Scientific,  
Albuquerque, New Mexico, USA.*

#### **ANTENNA BEAM STEERING CONCEPTS FOR HIGH POWER APPLICATIONS**

2:20 PM

*R. Gardner - Consultant to the Directed Energy Technology  
Office - Naval Surface Warfare Center Dahlgren Division,  
Alexandria, VA, USA*

## **ANALYTIC ESTIMATES FOR PERTURBATIONS TO THE TRANSMISSION LINE MODEL FOR THE LIGHTNING RETURN STROKE**

### **Part B. Interaction of Fields with Complex Systems**

2:40 PM

*J. Nitsch, S. Tkachenko - Institute for Fundamental Electrical Engineering and Electromagnetic Compatibility, Magdeburg, Germany*

#### **PROPAGATION OF CURRENT WAVES ALONG PERIODICAL THIN-WIRE STRUCTURES**

3:00 PM

*S.J. Yakura - Air Force Research Laboratory - Directed Energy Directorate, Kirtland, NM, USA*  
*N.E. Islam, P. Kirawanich, D. Gleason - Department of Electrical and Computer Engineering - University of Missouri - Columbia, Columbia, MU, USA*

#### **APPLICATION OF TRANSMISSION LINE MATRIX METHODOLOGY TO ELECTROMAGNETIC TOPOLOGY SIMULATIONS FOR EMP PENETRATION THROUGH APERTURES**

3:20 PM

*E. Schamiloglu, C. Christodoulou, S. Tyo, J. Gaudet, C.J. Buchenauer, S. Altunc, P. Cravens, C. Lambrinos - Institute for Infrastructure Surety - Department of Electrical & Computer Engineering, University of New Mexico, NM, USA*  
*R.P. Jedlicka - Klipsch School of Electrical & Computer Engineering, New Mexico State University, NM, USA*  
*B. Blevins - Physical Science Laboratory, New Mexico State University, NM, USA*  
*D.V. Giri - Pro-Tech, Alamo, CA, USA*  
*F.M. Tesche - EM Consultant, Saluda, NC, USA*

#### **MODELING THE INTERACTION OF HIGH POWER MICROWAVES WITH NETWORKED INFRASTRUCTURE**

3:40 PM

*R. Boling, S. Numrich - Institute for Defense Analyses, Alexandria, VA, USA*  
*J. Cole - Institute for Information Science and Electronics - University of Tsukuba, Tsukuba, Japan*  
*I. Kohlberg - Institute for Defense Analyses, Alexandria, VA, USA*

#### **A MODEL FOR PREDICTION OF POTENTIAL IEMI EFFECTS WITHIN AN ARBITRARY ENCLOSURE**

### **Part C. Effects**

4:20 PM

*C. Ropiak - Envisioneering Inc., King George VA, USA*  
*R. Gardner - Consultant to the Directed Energy Technology Office - Naval Surface Warfare Center, Alexandria, VA, USA*  
*D. Stoudt - Directed Energy Technology Office - Naval Surface Warfare Center Dahlgren Division, Dahlgren, VA, USA*

#### **TECHNIQUES RELEVANT TO THE ANALYSIS OF**

## **ELECTROMAGNETIC INTERFERENCE EFFECTS ON ELECTRONIC SYSTEMS**

4:40 PM

*P.J. Morrison - Science Applications International  
Corporation, McLean, VA, USA*

*D. Ambrose - Power System Consulting, Inc.*

*I. Kohlberg - Institute for Defense Analyses, Alexandria, VA, USA*

### **INTERACTIONS OF TELECOMMUNICATIONS AND ELECTRICAL POWER INFRASTRUCTURES IN THE EVENT OF AN EMP**

5:00 PM

*F. Sonnemann - DIEHL-BGT-Defence GmbH & Co. KG,  
Röthenbach, Germany*

*W. Zappe - WTD, Greding, Germany*

### **SUSCEPTIBILITY INVESTIGATION OF ELECTRICALLY INITIATED ORDNANCE IN A HPEM-ENVIRONMENT**

---

**Monday, September 12, 2005, Sala Giolitti**

---

#### **Session 2**

### **METAMATERIALS, NANOSTRUCTURED ELECTROMAGNETICS AND PLASMONIC EFFECTS: PART I**

**organized by N. Engheta and R.W. Ziolkowski**

Chairs: N. Engheta, R.W. Ziolkowski

---

10:40 AM

*M.I. Stockman - Department of Physics and Astronomy -  
Georgia State University, Atlanta, GA, USA*

### **COHERENT, NONLINEAR, AND ACTIVE NANOPLASMONICS**

11:00 AM

*R.W. Ziolkowski - Department of Electrical and Computer  
Engineering - University of Arizona, Tucson, AZ, USA*

### **PLASMONIC NANO-CYLINDER ARRAYS TO ACHIEVE SUBWAVELENGTH LOCALIZATION OF OPTICAL FIELDS**

11:20 AM

*M.S. Sarto, M. D'Amore, A. Tamburrano - Dipartimento di  
Ingegneria Elettrica - Università di Roma "La Sapienza",  
Roma, Italy*

### **SIGNAL CARRYING CAPABILITY OF NANO-TRANSMISSION LINES**

11:40 AM

*A. Alù - Department of Electrical and Systems Engineering -  
University of Pennsylvania, Philadelphia, PA, USA*

*F. Bilotti - Department of Applied Electronics - University of  
Roma Tre, Roma, Italy*

*N. Engheta - Department of Electrical and Systems Engineering  
- University of Pennsylvania, Philadelphia, PA, USA*

*L. Vegni - Department of Applied Electronics - University of*

*Roma Tre, Roma, Italy*

**A THIN ABSORBING SCREEN USING  
METAMATERIAL COMPLEMENTARY PAIRS**

12:00 PM

*S.F. Mahmoud - EE Department - Kuwait University, Safat,  
Kuwait*

*A.J. Viitanen - Department of Electrical and Communications  
Engineering - Helsinki University of Technology, Helsinki,  
Finland*

**SURFACE WAVE PROPAGATION ON A CIRCULAR  
ROD WITH NEGATIVE PERMITTIVITY OR  
NEGATIVE PERMEABILITY**

2:00 PM

*P. Burghignoli, G. Lovat - Department of Electronic  
Engineering - "La Sapienza" University of Rome, Rome, Italy  
D.R. Jackson - Department of Electrical and Computer  
Engineering - University of Houston, Houston, TX, USA*

**AN INVESTIGATION OF RADIATION AT BROADSIDE  
FROM LEAKY PLASMON WAVES ON PERIODIC  
STRUCTURES**

2:20 PM

*P. Baccarelli, P. Burghignoli, F. Frezza, A. Galli, P.  
Lampariello, G. Lovat, S. Paulotto - Department of Electronic  
Engineering - "La Sapienza" University of Rome, Rome, Italy*

**MODAL PROPERTIES, RADIATION FEATURES, AND  
APPLICATIONS OF SURFACE AND LEAKY WAVES  
EXCITED IN METAMATERIAL GROUNDED SLABS**

2:40 PM

*A.P. Feresidis, S. Wang, G.K. Palikaras, G. Goussetis,  
J.C. Vardaxoglou - Department of Electronic and Electrical  
Engineering - Loughborough University, Loughborough, UK*

**METAMATERIALS-BASED PLANAR AND  
CYLINDRICAL DIRECTIVE ANTENNAS**

3:00 PM

*J.L. Volakis, G. Mumcu, K. Sertel - ElectroScience Laboratory  
- Department of Electrical and Computer Engineering -  
The Ohio State Univ., Columbus, OH, USA*

**MINIATURE ANTENNAS WITHIN DEGENERATE  
BAND EDGE CRYSTALS**

---

**Monday, September 12, 2005, Sala Einaudi**

---

**Session 3**

**ELECTROMAGNETIC MODELING OF  
DEVICES AND CIRCUITS**

Chairs: G. Macchiarella, R. Tascone

---

10:40 AM

*N. Kovac, I. Sarajcev, D. Poljak, B. Jajac - Split University,  
Split, Croatia*

**AN OPTIMIZATION PROCEDURE FOR CABLE  
SYSTEM DESIGN**

11:00 AM

*R. Ataieseresht, F. Derogarian - Telecommunication Research Center - Telecommunication Company of West Azarbaijan, Iran*  
**ANALYSIS AND DESIGN OF FABRY-PEROT FILTERS USING GENETIC ALGORITHM**

11:20 AM

*O.A. Peverini, R. Tascone, G. Virone - IEIIT-CNR c/o Politecnico di Torino, Torino, Italy*  
*R. Orta - Dipartimento di Elettronica, Politecnico di Torino, Torino, Italy*  
**WIDEBAND WAVEGUIDE FILTER SYNTHESIS BY SYSTEM IDENTIFICATION**

11:40 AM

*F. Núñez, A.K. Skrivervik - Laboratoire d'Electromagnetisme et d'Acoustique - Ecole Polytechnique Federal de Lausanne, Lausanne, Suisse*  
**ANALYSIS OF DIELECTRIC AND CONDUCTOR STRUCTURES EMBEDDED IN A MULTILAYERED MEDIUM**

12:00 PM

*G. Macchiarella, G.G. Gentili - Politecnico di Milano, Dipartimento di Elettronica e Informazione, Milano, Italy*  
**DESIGN OF INLINE COMB FILTERS WITH QUASI-ELLIPTIC RESPONSE**

---

**Monday, September 12, 2005, Sala Sella**

---

**Session 4**

**RADAR CROSS SECTION AND ASYMPTOTIC TECHNIQUES**

Chairs: P.E. Hussar, G. Manara

---

10:40 AM

*I. Fuks - Zel Technologies - LLC and NOAA/Environmental Technology Laboratory, Boulder, CO, USA*  
**BACKSCATTERING BY SMOOTH 2D SURFACES: HIGH-FREQUENCY ASYMPTOTIC EXPANSIONS**

11:00 AM

*P. Grandi - Professional woman, Torino, Italy.*  
**SCATTERING FROM A FINITE PLANAR ARRAY OF PERFECTLY CONDUCTING PATCHES IN CASE OF POINT SOURCE INCIDENCE**

11:20 AM

*A.G. Voronovich, V.U. Zavorotny - NOAA/Environmental Technology Laboratory, Boulder, CO, USA*  
**SCATTERING OF ELECTROMAGNETIC WAVES FROM BREAKING SURFACE GRAVITY WAVES**

11:40 AM

*P.E. Hussar - Alion Science and Technology, Annapolis, MD, USA*  
*R. Larson, M. Williams, S. Thai - Joint Spectrum Center, Annapolis, MD, USA*

**FOCK CURRENTS FOR THE SHADOW REGION OF  
AN ARBITRARY CONVEX MULTILAYER-COATED  
CONDUCTING SURFACE**

12:00 PM

*S. Genovesi - Consiglio Nazionale delle Ricerche (CNR) -  
ISTI, Pisa, Italy*

*U. Serra, A. Monorchio, G. Manara - Dipartimento di  
Ingegneria dell'Informazione - Università di Pisa, Pisa, Italy*

**DESIGN OF RADAR ABSORBING COATINGS BY  
USING GENETIC ALGORITHMS**

---

**Monday, September 12, 2005, Sala Giolitti**

---

**Session 5**

**METAMATERIALS, NANOSTRUCTURED  
ELECTROMAGNETICS AND PLASMONIC EFFECTS:  
PART 2**

**organized by N. Engheta and R.W. Ziolkowski**

Chairs: R.W. Ziolkowski, N. Engheta

---

3:20 PM

*J. McVay - Department of Electrical and Computer  
Engineering - Villanova University, Villanova, PA, USA*

*N. Engheta - Department of Electrical and Systems Engineering  
- University of Pennsylvania, Philadelphia, PA, USA*

*A. Hoorfar - Department of Electrical and Computer  
Engineering - Villanova University, Villanova, PA, USA*

**NUMERICAL STUDY OF PHASE VARIATION  
THROUGH DOUBLE-NEGATIVE AND SINGLE-  
NEGATIVE MEDIA FORMED BY SPACE-FILLING  
CURVE INCLUSIONS**

3:40 PM

*N. Engheta - Department of Electrical and Systems Engineering  
- University of Pennsylvania, Philadelphia, PA, USA*

*M.G. Silveirinha - Dept. of Electrical Engineering, University  
of Coimbra, Coimbra, Portugal*

*A. Alù, A. Salandrino - Dept. of Electrical and Systems  
Engineering - University of Pennsylvania, Philadelphia, PA,  
USA*

**SCATTERING AND REFLECTION PROPERTIES OF  
LOW-EPSILON METAMATERIALS SHELLS AND  
BENDS**

4:20 PM

*K.W. Whites, T. Amert, B. Glover - Department of Electrical  
and Computer Engineering - South Dakota School of Mines  
and Technology, Rapid City, SD, USA*

**FABRICATION OF TEXTURED ELECTROMAGNETIC  
SURFACES USING THE M3DTM PROCESS**

4:40 PM

*M. Nannetti, F. Caminita, A. Cucini, M. Caiazzo, S. Maci -  
Dipartimento di Ingegneria dell'Informazione - Università  
degli Studi di Siena, Siena, Italy*

**A POLE-ZERO MATCHING METHOD FOR THE  
ANALYSIS OF METAMATERIAL SURFACES**

5:00 PM

**PANEL DISCUSSION**

**Monday, September 12, 2005, Sala Einaudi**

---

**Session 6**

**ELECTROMAGNETIC MEASUREMENTS**

Chairs: R. Orta, I. Pinto

---

2:00 AM

*G. Virone, R. Tascone, A. Olivieri, O.A. Peverini - IEIIT-CNR  
Politecnico di Torino, Torino, Italy*

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

**OVERMODED OPEN CAVITY FOR  
MOLTEN-STEEL-LEVEL MEASUREMENT IN  
CONTINUOUS CASTING MACHINES**

2:20 PM

*S. Van Damme, A. Franchois - Dept. of Information  
Technology Ghent University, Gent, Belgium*

*P. De Pauw, L. Taerwe - Dept. of Structural Engineering  
Ghent University, Gent, Belgium*

**COMPARISON OF TWO COAXIAL PROBES FOR  
MEASURING THE STEEL FIBER CONTENT IN  
FIBER REINFORCED CONCRETE SLABS**

2:40 PM

*S. Schulteis, C. Waldschmidt, W. Sorgel, W. Wiesbeck - Institut  
für Hochfrequenztechnik und Elektronik (IHE) Universität  
Karlsruhe (TH), Karlsruhe, Germany*

**MEASUREMENT TECHNIQUES FOR DIVERSITY  
AND MIMO ANTENNA QUALIFICATION**

3:00 PM

*L. Infante, S. Mosca - Alenia Marconi Systems, Rome, Italy*

*E. Martini, A. Peluso, S. Maci - Dept. Of Information  
Engineering University of Siena, Siena, Italy*

**THE SHADOW BOUNDARY INTEGRAL FOR THE  
REDUCTION OF TRUNCATION ERROR IN  
NEAR-FIELD TO FAR-FIELD TRANSFORMATIONS**

3:20 PM

*V. Fiumara - D.I3.E. University of Salerno, Fisciano (SA), Italy*

*A. Fusco - Waves Group DING University of Sannio,  
Benevento, Italy*

*V. Matta - D.I3.E. University of Salerno, Fisciano (SA), Italy*

*I.M. Pinto - Waves Group DING University of Sannio,  
Benevento, Italy*

**ANTENNA PATTERN MEASUREMENT IN A  
REVERBERATION ENCLOSURE**

3:40 PM

*A. Capozzoli, G. D'Elia - Dipartimento di Ingegneria Elettronica  
e delle Telecomunicazioni Università Federico II, Napoli, Italy*

*M. Iodice, I. Rendina - Istituto per la Microelettronica e i*

*Microsistemi - Consiglio Nazionale delle Ricerche, Napoli, Italy*  
*P. Vinetti*

**A PHOTONIC PROBE FOR ANTENNA  
MEASUREMENTS**

4:20 PM

*B. Widenberg - Chelton Applied Composites AB, Linköping,  
Sweden*

**ADVANCED COMPACT TEST RANGE FOR BOTH  
RADOME AND ANTENNA MEASUREMENT**

4:40 PM

*P. Savi, I. Maio - Dip. Elettronica, Politecnico di Torino, Italy*

**TDR MEASUREMENTS FOR SOIL APPLICATIONS**

5:00 PM

*F. D'Agostino, F. Ferrara, C. Gennarelli, R. Guerriero, G.  
Riccio - D.I.I.I.E. - University of Salerno, Fisciano (SA), Italy*  
*C. Rizzo - M.I. Technologies (Europe) - Southbourne  
Emsworth, UK*

**EVALUATION OF ANTENNA DIRECTIVITY FROM  
NEAR-FIELD DATA ACQUIRED THROUGH A  
HELICOIDAL SCAN**

---

**Monday, September 12, 2005, Sala Sella**

---

**Session 7**

**MISCELLANEOUS TECHNIQUES AND APPLICATIONS**

Chairs: M. Franceschetti, H. Schippers

---

2:00 PM

*A. Martini - Department of Information and Communication  
Technology - University of Trento, Trento, Italy*  
*M. Franceschetti - Department of Electrical and Computer  
Engineering - University of California at San Diego, La Jolla,  
CA, USA*

*A. Massa - Department of Information and Communication  
Technology - University of Trento, Trento, Italy*

**A PERCOLATION MODEL FOR THE WAVE  
PROPAGATION IN NON-UNIFORM RANDOM MEDIA**

2:20 PM

*Z. Raida, P. Smid, J. Lacik, Z. Lukes - Dept. of Radio Electronics  
- Brno University of Technology, Brno, Czech Republic*

**BROADBAND CHARACTERIZATION OF ANTENNAS:  
SUPPRESSION OF ANALYSIS INACCURACIES IN  
THE TIME DOMAIN**

2:40 PM

*A. Sanchis - Departamento de Física Aplicada III  
Universidad Complutense, Madrid, Spain*  
*C. Martín - Departamento de Informática y Automática. ETS  
de Ingeniería Informática. UNED, Madrid, Spain*  
*M. Sancho, G. Martínez - Departamento de Física Aplicada  
III Universidad Complutense, Madrid, Spain*

**NUMERICAL DESIGN OF MICROELECTRODES FOR  
CELL ELECTROKINETICS APPLICATIONS**

3:00 PM

*J.F. Bakker - Daniel den Hoed Cancer Center - Erasmus Medical Center, Rotterdam, The Netherlands*

*M.M. Paulides, G.C. van Rhoon, H. Schippers - Avionics Systems department - National Aerospace Laboratory NLR, Amsterdam, The Netherlands*

*T.A. ter Meer - Avionics Development and Qualification department - National Aerospace Laboratory NLR, Amsterdam, The Netherlands*

**DEVELOPMENT OF A GAIN & PHASE DETECTOR FOR A HEAD & NECK ELECTROMAGNETIC HYPERHERMIA APPLICATOR**

3:20 PM

*P. Smid, Z. Raida, J. Lacik, Z. Lukes - Dept. of Radio Electronics - Brno University of Technology, Brno, Czech Republic*

**HIGH-SPEED HIGH-ACCURACY NEURAL NETWORKS FOR AUTOMATED MODELING OF ELECTROMAGNETIC STRUCTURES**

3:40 PM

*R. Lopez, F. Hoëppe - EADS CCR - Applications for Electromagnetism, Blagnac, France*

**STATISTICAL ENERGY ANALYSIS APPLIED TO ELECTROMAGNETIC PROBLEM IN CAVITY**

---

**Monday, September 12, 2005, Sala Sella**

---

**Session 8**

**RADAR IMAGING**

Chairs: N.V. Budko, M. Sabbadini

---

4:20 PM

*A.A. Vertiy, S.P. Gavrilov - TUBITAK-MRC - International Laboratory for High Technology (ILHT), Gebze-Kocaeli, TURKEY*

**SUBSURFACE TOMOGRAPHY APPLICATION FOR THROUGH-WALL IMAGING**

4:40 PM

*J. Tatoian, G. Franceschetti - Eureka Aerospace, Pasadena, CA, USA*

*R. Lanari - CNR-IREA, Napoli, Italy*

*H. Lackner - Engineering & Technical Services, Oakland, CA, USA*

*G. Gibbs - Marine Corps System Command, Quantico, VA, USA*

**“THROUGH-THE-WALL” IMPULSE SAR EXPERIMENTS**

5:00 PM

*N.V. Budko - Laboratory of Electromagnetic Research - Faculty of Electrical Engineering, Mathematics and Computer Science, Delft University of Technology, Delft, The Netherlands*

**ELECTROMAGNETIC IMAGING: WHAT RELATIVITY DID AND WHAT IT CAN DO FOR US?**

5:20 PM

*I. Catapano, L. Crocco - Istituto per il Rilevamento Elettromagnetico dell'Ambiente IREA-CNR, Napoli, Italy*  
*M. D'Urso - Dip. Ingegneria Elettronica e delle Telecomunicazioni - Università di Napoli Federico II, Napoli, Italy*

*T. Isernia - DIMET Università Mediterranea di Reggio Calabria, Loc. Feo di Vito Reggio Calabria, Italy*

**A NOVEL EFFECTIVE MODEL FOR SOLVING 3D SCATTERING PROBLEMS IN HOMOGENEOUS BACKGROUNDS**

---

**Tuesday, September 13, 2005, Sala Giolitti**

---

**Session 9**

**INTEGRAL EQUATION METHODS: PART 1**

Chairs: Z. Raida, J.M. Rius

---

8:40 AM

*Hendrik Rogier - Department of Information Technology (INTEC) - Ghent University, Gent, Belgium*

**DERIVATION OF FAST CONVERGING 2-D PERIODIC GREEN'S FUNCTION SERIES USING PML-BASED EIGENMODES**

9:00 AM

*Y. Altuncu, I. Akduman, A. Yapar - Istanbul Technical University - Electrical and Electronics Engineering Faculty, Istanbul, Turkey*

**ON THE SCATTERING OF ELECTROMAGNETIC WAVES BY BODIES BURIED IN A HALF-SPACE WITH ROUGH INTERFACE**

9:20 AM

*A.T. Vouldis - School of Electrical and Computer Engineering - National Technical University of Athens, Athens, Greece*

*G.K. Avdikos - School of Applied Mathematics and Physics - National Technical University of Athens, Athens, Greece*

*H.T. Anastassiou - Hellenic Aerospace Industry - Electronics Engineering Department, Schimatari - Tanagra/Viotia, Greece*

**OPTIMIZED SCHEMES FOR THE METHOD OF AUXILIARY SOURCES APPLIED TO THE ANALYSIS OF VARIOUS METALLIC SCATTERERS**

9:40 AM

*A.A. Kucharski, P.M. Slobodzian - Institute of Telecommunications, Teleinformatics and Acoustics - Wroclaw University of Technology, Wroclaw, Poland*

**ANALYSIS OF A SLOT EXCITED DRA ABOVE A CAVITY FILLED WITH A MULTILAYERED MEDIUM**

10:20 AM

*J. Lacik, Z. Lukes, P. Smid, Z. Raida - Dept. of Radio Electronics - Brno University of Technology, Brno, Czech Republic*

**TRANSIENT ANALYSIS OF SCATTERERS AND ANTENNAS: LAGUERRE POLYNOMIALS SCHEME WITH IMPROVED EFFICIENCY**

10:40 AM

*C. Marasini - Faculty of Electrical Engineering - Eindhoven University of Technology, Eindhoven, The Netherlands*  
*E.S.A.M. Lepelaars, A.P.M. Zwamborn - TNO Defense & Security, The Hague, The Netherlands*

**ANALYSIS OF THE RESONANT BEHAVIOR OF A COMPLEX LOADED WIRE BY USING THE EXACT KERNEL MOM**

11:00 AM

*M. Lucido, G. Panariello, F. Schettino - D.A.E.I.M.I. - Università di Cassino, Cassino (FR), Italy*

**ELECTROMAGNETIC SCATTERING BY REGULAR POLYGONAL CYLINDERS**

11:20 AM

*A. Saeedfar, K. Sawaya - Department of Electrical and Communications Engineering - Graduate School of Engineering - Tohoku University, Sendai, Japan*

**MIXED-DOMAIN MOM SOLUTION OF THE TENSOR-VOLUME INTEGRAL EQUATION FOR THREE-DIMENSIONAL DIELECTRIC SCATTERERS**

11:40 AM

*W. Arter - Culham Electromagnetics and Lightning Ltd - Culham Science Centre, Abingdon, England*

*J. Simkin - Vector Fields Limited, Kidlington, England*

**COMPARISON OF SCHEMES FOR COMPUTATIONAL ELECTROMAGNETICS**

12:00 PM

*D. Poljak - Department of Electronics - University of Split, Split, Croatia*

*E.K. Miller - Lincoln, CA, USA*

*C.Y. Tham - Faculty of Engineering and Science - Tunku Abdul Rahman University, Kuala Lumpur, Malaysia*

*S. Antonijevic, V. Doric - Department of Electronics - University of Split, Split, Croatia*

**TIME DOMAIN ANALYSIS OF THE ENERGY STORED IN THE NEAR FIELD OF MULTIPLE STRAIGHT-WIRES ABOVE DIELECTRIC HALF-SPACE**

---

**Tuesday, September 13, 2005, Sala Einaudi**

---

**Session 10**

**WIRELESS COMMUNICATIONS: ANTENNAS, PROPAGATION, AND COMPONENTS TECHNOLOGIES: PART I**

**Organized by D. Erricolo and M.F. Iskander**

Chairs: C. Christodoulou, M. Iskander

---

8:00 AM

*T. Kürner - Institut für Nachrichtentechnik - Technische Universität Braunschweig, Braunschweig, Germany*

**THE ROLE OF PROPAGATION MODELS FOR THE DEVELOPMENT AND DEPLOYMENT OF FUTURE WIRELESS COMMUNICATION SYSTEMS**

8:20 AM

*H. Shirai - Department of Electrical, Electronic, and Communication Engineering - Faculty of Science and Engineering Chuo University, Tokyo, Japan*

**ELECTROMAGNETIC WAVE PROPAGATION ESTIMATION FOR WIRELESS COMMUNICATION SYSTEM**

8:40 AM

*N. Blaunstein, N. Yarkoni, D. Katz - Department of Communication System Engineering - Faculty of Applied Science and Engineering - Ben-Gurion University of the Negev, Beer-Sheva, Israel*

**INNOVATIVE APPROACH TO RADIO PROPAGATION MODELING IN URBAN AND SUBURBAN AREAS**

9:00 AM

*D.D. Stancil, A.G. Cepni, B.E. Henty, Y. Jiang, Y. Wei, J. Zhu, I.M.F. Moura - Department of Electrical and Computer Engineering - Carnegie Mellon University, Pittsburgh, PA, USA*

**SUPER-RESOLUTION FOCUSING AND NULLING IN RICH MULTIPATH ENVIRONMENTS USING TIME REVERSAL TECHNIQUES**

9:20 AM

*M.A. Jensen, J.W. Wallace - Department of Electrical and Computer Engineering - Brigham Young University, Provo, UT, USA*

**RECENT ADVANCES IN ANTENNAS AND PROPAGATION FOR MIMO SYSTEMS: MULTI-USER NETWORKS AND CHANNEL TEMPORAL VARIATION**

9:40 AM

*P. Bernardi, M. Cavagnaro, S. Pisa, E. Piuzzi - Department of Electronic Engineering - "La Sapienza" University of Rome, Rome, Italy*

**ELECTROMAGNETIC ENVIRONMENTAL IMPACT REDUCTION FOR A GSM BASE TRANSCIVER STATION THROUGH THE USE OF A SWITCHED-BEAM SMART ANTENNA**

10:20 AM

*Z. Huang, C.A. Balanis, P. Ioannides - Department of Electrical Engineering - Arizona State University, Tempe, AZ, USA*

**PATTERN BEAMFORMING USING CIRCULAR AND SPHERICAL ARRAYS**

10:40 AM

*M.F. Abedin, M. Ali - Department of Electrical Engineering - University of South Carolina, Columbia, SC, USA*

*L. Chen, P.F. Wahid - Department of Electrical Engineering - University of Central Florida, Orlando, FL, USA*

**ANALYSES OF SMALL INTERNAL DIVERSITY ANTENNAS FOR 1900 MHZ MOBILE PHONES**

11:00 AM

*C.G. Christodoulou, G. Tzeremes - ECE Department - University of New Mexico, Albuquerque, NM, USA*

*T.S. Liao, P.K. Yu - ECE Department - University of California at San Diego, San Diego, CA, USA*

**OPTICALLY COUPLED ANTENNAS FOR WIDEBAND WIRELESS COMMUNICATIONS**

11:20 AM

*R. Gardelli, G. Siracusano, M. Albani - DFMTFA - Univ. di Messina, Messina, Italy*

*G. La Cono - DIMET - Univ. Mediterranea, loc. Feo di Vito Reggio Calabria, Italy*

**PLANAR RADIATING ELEMENTS FOR MICROWAVE SMARTARRAY ANTENNAS**

11:40 AM

*M.F. Iskander, W. Kim, M. Rezk, Z. Yun - Hawaii Center for Advanced Communications - University of Hawaii at Manoa, Hawaii, USA*

**ANTENNA DESIGNS AND A HYBRID SMART ANTENNA TECHNIQUE FOR ADVANCED WIRELESS COMMUNICATION SYSTEMS**

12:00 PM

*S. Mohammadi, B. Perlman - Communications-Electronics Research - Development and Engineering Center US Army RDECOM, Ft. Monmouth, NJ, USA*

*L.P.B. Katehi - Purdue University - School of Electrical and Computer Engineering, West Lafayette, Indiana, USA*

**HIGH PERFORMANCE INDUCTORS ON CMOS SUBSTRATE FOR HIGH-FREQUENCY APPLICATIONS**

---

**Tuesday, September 13, 2005, Sala Sella**

---

**Session 11**

**THE ELECTROMAGNETIC FACETS OF EMC**

**Organized by F. Canavero**

Chairs: F. Canavero, R. Vahldieck

---

8:00 AM

*A.P.J. van Deursen - Dep. Electrical Engineering - Eindhoven University of Technology, Eindhoven, The Netherlands*

*S. Kapora - United Technical Solutions, Eindhoven, The Netherlands*

**NUMERICAL SCHWARZ-CHRISTOFFEL METHODS IN EMC ANALYSIS**

8:20 AM

*R. Vahldieck, Ch. Bruns - ETH Zurich, Zurich, Switzerland*

**ELECTROMAGNETIC CHARACTERIZATION OF REVERBERATION CHAMBERS**

8:40 AM

*A. Maffucci, F. Villone - Ass. Euratom/ENEA/CREATE DAEIMI - Università di Cassino, Cassino (FR), Italy*

*G. Miano - DIEL - Università degli Studi di Napoli "Federico II", Napoli, Italy*

**RECENT DEVELOPMENTS IN THE NUMERICAL MODELING OF INTERCONNECTS IN HUGE**

## FREQUENCY RANGES AND COMPLEX GEOMETRIES

9:00 AM

*R. Marijon, C. Girard - Thales Land and Joint Systems-TCF/UCT/DIS, Colombes, France*

*W. Tabbara - Supelec/DRE, Gif sur Yvette, France*

**ELECTROMAGNETIC MODELS FUSION IN AN EMC MULTI-SCALE PROBLEM. APPLICATION TO A MISSED LANDING PROBLEM ON AN AIRCRAFT CARRIER**

9:20 AM

*C. Christopoulos, P. Sewell, D.W.P. Thomas, T.M. Benson, A. Vukovic, K. Biwojno, Y. Liu, J. Paul - George Green Institute for Electromagnetics Research - University of Nottingham, Nottingham, UK*

**FULL-FIELD ELECTROMAGNETIC MODELS AND COMPLEXITY IN EMC**

9:40 AM

*O.M. Ramahi, S. Shahparnia - Electrical and Computer Engineering Department - A. James Clark University of Maryland, College Park, MD, USA*

**MINIATURIZED ELECTROMAGNETIC BANDGAP STRUCTURES FOR NOISE SUPPRESSION**

10:20 AM

*H. Haase, J. Nitsch, S. Tkachenko - Institute for Fundamental Electrical Engineering and Electromagnetic Compatibility, Magdeburg, Germany*

**A FULL-WAVE TRANSMISSION LINE THEORY**

10:40 AM

*F. Paladian, P. Bonnet, R. Vernet, F. Diouf, S. Girard, S. Lalléchcre - LASMEA - Blaise Pascal University, Aubière cedex, France*

*M. Fogli - LaMI - Blaise Pascal University, Aubière cedex, France*

**ADAPTATION OF DETERMINISTIC AND PROBABILISTIC METHODS TO EMC PROBLEMS. APPLICATION TO MODE STIRRED REVERBERATION CHAMBERS**

---

**Tuesday, September 13, 2005, Sala Sella**

---

**Session 12**

**INVERSE SCATTERING AND REMOTE SENSING**

Chairs: A. Franchois, D. Smith

---

11:20 AM

*M. Donelli, D. Franceschini, G. Franceschini, A. Massa - Department of Information and Communication Technology - University of Trento, Trento, Italy*

**ON THE EFFECTS OF PHASE INFORMATION ON THE RECONSTRUCTION CAPABILITIES OF THE ITERATIVE MULTI-SCALING STRATEGY**

11:40 AM

*Y. Altuncu, I. Akduman, A. Yapar - Istanbul Technical University - Electrical and Electronics Engineering Faculty, Istanbul, Turkey*

**DETECTION AND LOCATION OF BURIED DIELECTRIC OBJECTS BENEATH A ROUGH INTERFACE**

12:00 PM

*D. Smith, M. Leach, M. Elsdon, M.J. Fernando - School of Informatics Engineering and Technology - Northumbria University, Newcastle upon Tyne, UK  
S.J. Foti - Pele Cottage, Wingates, UK*

**IMAGING OF DIELECTRIC OBJECTS FROM PHASE PATTERNS RECONSTRUCTED USING INDIRECT HOLOGRAPHIC INTENSITY PATTERNS**

2:00 PM

*S. Caorsi, G. Cevini - Dipartimento di Elettronica - Università di Pavia, Pavia, Italy*

**ELECTROMAGNETIC RECONSTRUCTION OF LAYERED GEOMETRIES BY A NEURAL NETWORK AND MULTI-OFFSET DATA**

2:20 PM

*R.F. Remis, N.V. Budko - Laboratory of Electromagnetic Research - Faculty of Electrical Engineering, Mathematics and Computer Science, Delft University of Technology, Delft, The Netherlands*

**NONLINEAR MULTIPLE-FREQUENCY EFFECTIVE INVERSION BASED ON MODEL-ORDER REDUCTION**

2:40 PM

*J. De Zaeytjij, A. Franchois, F. Olyslager - INTEC - Ghent University, Ghent, Belgium*

**A FAST HF MLFMA FULL-WAVE FORWARD SOLVER FOR 3-D LOSSY DIELECTRIC OBJECTS IN A HOMOGENEOUS BACKGROUND**

3:00 PM

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

*G. Prisco - Dipartimento di Ingegneria dell'Informazione - Seconda Università di Napoli, Aversa, Italy*

*R. Solimene - Dipartimento di Informatica, Matematica, Elettronica e Trasporti - Università Mediterranea di Reggio Calabria, Reggio Calabria, Italy*

**EQUALIZATION OF THE ANTENNA PATTERN IN MICROWAVE IMAGING OF METALLIC OBJECTS**

3:20 PM

*P. Lewyllie, A. Franchois - INTEC-IMEC Ghent University, Ghent, Belgium*

*C. Eyraud, J-M. Geffrin - Institut Fresnel, Marseille, France*  
**TESTING A 3D BCGS-FFT SOLVER AGAINST EXPERIMENTAL DATA**

**INTEGRAL EQUATION METHODS: PART 2**

Chairs: G. Di Massa, J.R. Mosig

---

2:00 PM

*H. Miyagawa, T. Hata, T. Nishikawa, K. Wakino, T. Kitazawa - Dept. of Electrical & Electronic Engineering - Ritsumeikan University, Kusatsu, Japan*

**QUASI-STATIC ANALYSIS OF CYLINDRICAL COPLANAR WAVEGUIDES WITH FINITE METALLIZATION THICKNESS**

2:20 PM

*K. Blagovic, I. Stevanovic, J.R. Mosig, A.K. Skrivervik - Laboratoire d'Electromagnétisme et d'Acoustique (LEMA) - Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland*

**NEW APPROACH TO THE EFFICIENT ANALYSIS OF THE PERIODICALLY PERFORATED GROUND PLANE WITH FINITE THICKNESS**

2:40 PM

*G. Angiulli - DIMET - Univ. Mediterranea, loc. Feo di Vito (Reggio Calabria), Italy*  
*G. Di Massa - DEIS - Univ. della Calabria, Rende (Cs), Italy*

**STABILIZATION OF EFIE BY COMPUTING ITS NULL SPACE**

3:00 PM

*B.P. de Hon, M.C. van Beurden - Eindhoven University of Technology - Faculty of Electrical Engineering, Eindhoven, The Netherlands*  
*R. Gonzalo, I. Ederra, C. del Rio - Universidad Publica de Navarra, Pamplona, Spain*  
*B. Alderman, P.G. Huggard, B. Martinez - Rutherford Appleton Laboratory, Chilton Didcot, Uk*  
*L. Marchand, P. de Maagt - ESA/ESTEC, Noordwijk, The Netherlands*

**EFFICIENT NUMERICAL MODELLING OF ANTENNAS BACKED BY ELECTROMAGNETIC BAND-GAP SLAB SUBSTRATES**

3:20 PM

*G. Addamo, R. Orta, D. Trincherio - Dipartimento di Elettronica - Politecnico di Torino, Torino, Italy*  
*R. Tascone - IEIT-CNR, Torino, Italy*  
*P. Gianola - Telecom Italia Lab, Torino, Italy*

**ANALYSIS AND CHARACTERIZATION OF LEAKY COAXIAL CABLES**

Session 14

**WIRELESS COMMUNICATIONS: ANTENNAS,  
PROPAGATION, AND COMPONENTS TECHNOLOGIES:  
PART 2**

**organized by D. Erricolo and M.F. Iskander**

Chairs: C. Balanis, D. Erricolo

---

2:00 PM

*D. Caratelli, R. Cicchetti - Dipartimento di Ingegneria  
Elettronica - "La Sapienza" University of Rome, Rome, Italy*

**ELECTROMAGNETIC CHARACTERISTICS OF A NEW  
CLASS OF PLANAR INTERDIGITAL CAPACITORS  
FOR WIRELESS APPLICATIONS**

2:20 PM

*A. V. Bosisio - CNR-IEIT c/o Dipartimento di Elettronica e  
Informazione - Politecnico di Milano, Milano, Italy*

*U. Spagnolini - Dipartimento di Elettronica e Informazione -  
Politecnico di Milano, Milano, Italy*

**INDOOR LOCALIZATION BY ATTENUATION MAPS:  
MODEL-BASED INTERPOLATION FOR RANDOM  
MEDIUM**

2:40 PM

*I. Turer - Department of Computer Engineering - Maltepe  
University, Istanbul, Turkey*

*M. Kuzuoglu - Department of Electrical and Electronics  
Engineering - Middle East Technical University, Ankara, Turkey*

**EVALUATION OF SPECIFIC ABSORPTION RATE  
DISTRIBUTION IN A HUMAN HEAD USING FINITE  
DIFFERENCE TIME DOMAIN METHOD**

3:00 PM

*L. Valbonesi - Politecnico di Milano - Dipartimento di  
Elettrotecnica, Milano, Italia*

*M. Nervi - Università di Genova - Dipartimento di Ingegneria  
Elettrica, Genova, Italia*

*M. Mussetta, R.E.Zich - Politecnico di Milano - Dipartimento  
di Elettrotecnica, Milano, Italia*

*P. Girdinio - Università di Genova - Dipartimento di  
Ingegneria Elettrica, Genova, Italia*

**ELECTROMAGNETIC OPTIMIZATION FOR UMTS  
CELLULAR NETWORKS**

3:20 PM

*L.I. Babilio - Sandia National Laboratories, Albuquerque,  
NM, USA*

*W. Dong, J.T. Williams, D.R. Jackson - Dept. of ECE -  
University of Houston, Houston, TX, USA*

**POSITIONAL ERRORS IN GPS DUE TO THE  
EFFECTIVE POINT OF RECEPTION OF  
MICROSTRIP PATCH ANTENNAS**

Session 15

**FINITE METHODS AND HYBRID METHODS**

Chairs: D. B. Davidson, P. Russer

---

4:20 PM

*M.M. Botha, D.B. Davidson - Department of Electrical and Electronic Engineering - University of Stellenbosch, Stellenbosch, South Africa*

**HIERARCHICAL DIVERGENCE-CONFORMING BASIS FUNCTIONS ON TETRAHEDRONS FOR ELECTROMAGNETIC ANALYSIS**

4:40 PM

*W. Arter, J.W. Eastwood, N.J. Brealey - Culham Electromagnetics and Lightning Ltd - Culham Science Centre, Abingdon, England*

**CONSTITUTIVE RELATIONS IN THE EMX SOFTWARE**

5:00 PM

*F. Freschi - Dipartimento di Ingegneria Elettrica - Politecnico di Torino, Torino, Italy*

*G. Gruosso - Dipartimento di Elettronica e Informazione - Politecnico di Milano, Milano, Italy*

*M. Repetto - Dipartimento di Ingegneria Elettrica - Politecnico di Torino, Torino, Italy*

**USE OF FINITE FORMULATION OF ELECTROMAGNETIC FIELD FOR SOLVING PEEC PROBLEMS ON UNSTRUCTURED GRIDS**

5:20 PM

*R. Fernandez-Recio - Departamento de Teoria de la Senal y Comunicaciones - Universidad de Alcala Escuela Politecnica, Alcala de Henares (Madrid), Spain*

*I. Gomez-Revuelto - Departamento de Ingenieria Audiovisual y Comunicaciones - Universidad Politecnica de Madrid, Madrid, Spain*

*L.E. Garcia-Castillo - Departamento de Teoria de la Senal y Comunicaciones - Universidad de Alcala Escuela Politecnica, Alcala de Henares (Madrid), Spain*

**A HYBRID FEM\_UTD METHOD FOR THE ANALYSIS OF RADIATION PROBLEMS IN COMPLEX ENVIRONMENTS**

5:40 PM

*F. Akleman - Istanbul Technical University Electronics and Communication Eng. Dept., Istanbul, Turkey*

**ANALYSIS OF PERIODICALLY LOADED WAVEGUIDES VIA FDTD USING PERIODIC BOUNDARY CONDITION**

6:00 PM

*P. Lorenz, P. Russer - Technische Universitat Munchen - Institute for High-Frequency Engineering, Munchen, Germany*

**HYBRID TRANSMISSION LINE MATRIX - MULTIPOLE EXPANSION (TLMME) METHOD**

Tuesday, September 13, 2005, Sala Sella

---

Session 16

EMC/EMI/EMP

Chairs: C. Christopoulos, L. Vegni

---

4:20 PM

*U. Paoletti, W. John - Fraunhofer Institute Reliability and Microintegration, Berlin, Germany*

**MULTIPOLE MODEL OF A PATCH ANTENNA**

4:40 PM

*A. Wraight - QinetiQ Cody Technology Park, Farnborough, UK*  
*I.L. Morrow - Cranfield University - Royal Military College of Science, Swindon, UK*

*R. Hoad - QinetiQ Cody Technology Park, Farnborough, UK*  
**THE ANALYSIS, MEASUREMENT AND SIGNAL PROCESSING OF EMP INDUCED CURRENTS**

5:00 PM

*A. Toscano, L. Vegni - Dipartimento di Elettronica Applicata - Università Roma Tre, Roma, Italy*

**ELECTROMAGNETIC COMPATIBILITY ANALYSIS OF PRINTED CIRCUITS BOARDS LOADED WITH COMPLEX MATERIALS USING FINITE ELEMENT METHOD**

5:20 PM

*A. Argento, P.S. Crovetto, F. Fiori - Politecnico di Torino - Dip. di Elettronica, Torino, Italy*

**SUSCEPTIBILITY OF MICROMACHINED ACCELEROMETERS TO RF INTERFERENCE**

5:40 PM

*M. Vahtola, T. Tarvainen - Esju Oy, Oulu, Finland*

**COMPUTATIONALLY EFFICIENT FIT CHARACTERIZATION AND MEASUREMENT OF EMC GASKETS**

6:00 PM

*I. Bertino, M. Bozzetti - Alenia Aeronautica S.p.A., Caselle Torinese (TO), Italy*

**SHIELDED CLOSED HIRF/EMC AND ANTENNA MEASUREMENT FACILITY AT ALENIA AERONAUTICA II**

---

Wednesday, September 14, 2005, Sala Cavour

---

Session 17

**RADOMES AND ELECTROMAGNETIC STRUCTURES**

Chairs: A. Delogu, N. Savage

---

8:00 AM

*C. Brand - EADS Deutschland GmbH Military Aircraft, München, Germany*

**DEVELOPMENT AND MANUFACTURING OF A STRUCTURE INTEGRATED ANTENNA PROTOTYPE FOR AIRCRAFT APPLICATIONS**

8:20 AM

*P.A.C. McNair - Chelton Radomes Ltd, Stevenage, United Kingdom*

**ELECTROMAGNETIC MODELLING OF RADOMES IN A COMMERCIAL ENVIRONMENT: A BUILDING BLOCK APPROACH**

8:40 AM

*A. Delogu, M. Mwanja - Galileo Avionica, San Maurizio C.se (TO), Italy*

**DESIGN AND TESTING OF A RADOME FOR A BEAM STEERING RADAR ANTENNA**

9:00 AM

*M. Marchetti - Dipartimento di Ingegneria Aerospaziale ed Astronautica, Roma, Italy*

*A. Maccapani - Galileo Avionica, San Maurizio C.se (TO), Italy*

*R. Aricò, M. Griccini - Sistema Compositi, Castelluccio di Paliano (FR), Italy*

**AIRBORNE RADOME STRUCTURAL DESIGN FOR SURVEILLANCE SYSTEM**

9:20 AM

*E. Sabatier, C. Gayraud - AIACP, Division Radômes et Composites, Cuers, France*

*C. Jeanneau, J. Fournié, C. Bernus, P. Descamps - Airbus France, Toulouse, France*

*N. Degroote, V. Desobry - AIACP, Division Radômes et Composites, Cuers, France*

**THE A380 RADOME'S CHALLENGE**

9:40 AM

*M. Feo, L. Liguori, A. D'Agata - MBDA, Bacoli (NA), Italy*

*U. D'Elia - MBDA, Roma, Italy*

*L. Sassi - CST GmbH, Darmstadt, Germany*

*E. Leroux - CST GmbH Branch Italy, Caravaggio (BG), Italy*

**FULL WAVE ELECTROMAGNETIC MODELING OF STREAMLINED RADOME ENCLOSED ANTENNA**

10:20 AM

*B. Dumont - Thales Airborne Systems, Elancourt, France*

*C. Marais - ONERA*

*E. Sabatier - AIA/CP-DRC*

*G. Sausseureau - MBDA-F*

**HIGH TEMPERATURE RESINS FOR HIGH SPEED RADOMES**

10:40 AM

*S. Bolioli - Département Electromagnétisme et Radar - ONERA, Toulouse, France*

*J. Sokoloff - Laboratoire AD2M - Université Paul Sabatier, Toulouse Cedex, France*

*A. Chabory - Département Electromagnétisme et Radar - ONERA, Toulouse, France*

**MULTILAYER RADOME COMPUTATION - COMPARISON BETWEEN GAUSSIAN BEAMS FORMALISM AND PLANE WAVE SPECTRUM -**

## **APPLICATION TO AIRBUS A380**

11:00 AM

*N. Savage - Chelton Radomes Ltd., Stevenage, UK*

### **A ROBUST BROADBAND RADOME CONCEPT FOR HIGH PERFORMANCE MICROWAVE APPLICATIONS**

11:20 AM

*S. Poulsen - Chelton Applied Composites AB, Linköping, Sweden*

### **ARTIFICIAL PUCK PLATE RADOMES**

11:40 AM

*M. Andersson - Chelton Applied Composites AB, Ljungby, Sweden*

### **SOFTWARE FOR ANALYSIS OF RADOME PERFORMANCE**

12:00 PM

*S. Papadopoulos - Alan Dick & Company Ltd, Cheltenham, UK*  
**RESULTS FROM RECENT ANTENNA PATTERN FIELD TESTS OF SURFACE-BASED RADOMES**

---

**Wednesday, September 14, 2005, Sala Giolitti**

---

### **Session 18**

### **METAMATERIALS/METAMORPHOSE NETWORK**

**Organized by A. Sihvola and S. Tretyakov**

Chairs: A. Sihvola, S. Tretyakov

---

8:50 AM

### **INTRODUCTION AND OPENING**

9:00 AM

*J.C. Vardaxoglou, A.P. Feresidis, G. Goussetis, A. Charaya, G.K. Palikaras - Department of Electronic and Electrical Engineering - Loughborough University, Loughborough, UK*

### **METALLODIELECTRIC EBG SURFACES: MINIATURISATION, TUNABILITY AND ANTENNA APPLICATIONS**

9:20 AM

*O. Ouchetto, S. Zouhdi, A. Bossavit, - Laboratoire de Génie Electrique de Paris LGEP-Supélec, Plateau de Moulon, Gif-sur-Yvette, France*

*G. Griso - Université Pierre et Marie Curie, Laboratoire Jacques-Louis Lions, Paris, France*

*B. Miara - ESIEE, Laboratoire de Modélisation et Simulation Numérique, Noisy-le-Grand, France*

*A. Razek - Laboratoire de Génie Electrique de Paris LGEP-Supélec, Plateau de Moulon, Gif-sur-Yvette, France*

### **HOMOGENIZATION OF THREE-DIMENSIONAL STRUCTURED MATERIALS AND METAMATERIALS**

9:40 AM

*E. Ozbay - Nanotechnology Research Center - Bilkent University, Ankara, TURKEY*

### **EXPERIMENTAL OBSERVATION OF TRUE**

**LEFT-HANDED TRANSMISSION, NEGATIVE REFRACTION AND NEGATIVE PHASE VELOCITY IN COMPOSITE METAMATERIALS**

10:20 AM

*I.V. Lindell, A. Sihvola - Electromagnetics Laboratory - Helsinki University of Technology, Espoo, Finland*

**PERFECT ELECTROMAGNETIC CONDUCTOR (PEMC)**

10:40 AM

*A. Sihvola, I.V. Lindell - Helsinki University of Technology - Electromagnetics Laboratory, Espoo, Finland*

**MATERIAL ASPECTS OF PEMC**

11:00 AM

*F. Capolino - Department of Information Engineering - University of Siena, Siena, Italy*

*G. Lovat, P. Burghignoli - Department of Electrical Engineering - "La Sapienza" University of Rome, Rome, Italy*

*D.R. Jackson, D.R. Wilton - Department of Electrical and Computer Engineering - University of Houston, Houston, TX, USA*

**DIRECTIVITY ENHANCEMENT EFFECTS IN ARTIFICIAL MATERIALS: A COMPARISON BETWEEN LOW- AND HIGH-IMPEDANCE MATERIALS**

11:20 AM

*I.S. Nefedov - Radio Laboratory / SMARAD - Department of Electrical and Communications Engineering - Helsinki University of Technology, Helsinki, Finland*

*A.J. Viitanen - Electromagnetics Laboratory - Department of Electrical and Communications Engineering - Helsinki University of Technology, Helsinki, Finland*

*S.A. Tretyakov - Radio Laboratory / SMARAD - Department of Electrical and Communications Engineering - Helsinki University of Technology, Helsinki, Finland*

**ELECTROMAGNETIC WAVE REFLECTION FROM AN INTERFACE WITH A 2D WIRE MEDIUM**

11:40 AM

*A. Alù - Department of Electrical and Systems Engineering - University of Pennsylvania, Philadelphia, PA, USA*

*F. Bilotti - Department of Applied Electronics - University of Roma Tre, Roma, Italy*

*N. Engheta - Department of Electrical and Systems Engineering - University of Pennsylvania, Philadelphia, PA, USA*

*L. Vegni - Department of Applied Electronics - University of Roma Tre, Roma, Italy*

**ANOMALOUS RADIATION PROPERTIES OF CYLINDRICAL METAMATERIAL LEAKY-WAVE ANTENNAS**

12:00 PM

*R. Gonzalo, I. Ederra, J.C. Iriarte, B. Martinez, E. Sainz, A. Cantora - Antenna Group Electrical and Electronic*

*Engineering Department - Universidad Pública de Navarra*

*Campus Arrosadia, Pamplona, Navarra, Spain*  
*P. De Maagt - Electromagnetics & Space Environments*  
*Division - European Space Agency Estec, Noordwijk, The*  
*Netherlands*

**RESEARCH ON METAMATERIALS FOR ANTENNA  
APPLICATIONS**

**Wednesday, September 14, 2005, Sala Einaudi**

---

**Session 19**

**RF ASPECTS OF ULTRA WIDEBAND TECHNOLOGY**

**Organized by W. Wiesbeck**

Chairs: J. Kunisch, W. Wiesbeck

---

8:40 AM

*J. Kunisch, J. Pamp - IMST GmbH, Kamp-Lintfort, Germany*  
**UWB RADIO CHANNEL MEASUREMENTS FOR  
SENSOR COMMUNICATION IN AN INDUSTRIAL  
ENVIRONMENT**

9:00 AM

*W. Sörgel, S. Schulteis, S. Knörzer, W. Wiesbeck - Institut für  
Hochfrequenztechnik und Elektronik - University of  
Karlsruhe, Karlsruhe, Germany*  
**DECONVOLUTION OF THE ANTENNAS FROM  
DIRECTIONAL UWB CHANNEL MEASUREMENTS**

9:20 AM

*B. Uguen, F.T. Talom - IETR - INSA, Rennes, France*  
**IMPLEMENTATION OF UWB ANTENNA  
CHARACTERISTICS IN 3D RAY TRACING**

9:40 AM

*M. Franceschetti - Dept. of Electrical and Computer  
Engineering - University of California at San Diego, La Jolla,  
CA, USA*  
*S. Marano - DIIE - University of Salerno, Fisciano (SA), Italy*  
**IMPULSE POWER PROFILE VIA STOCHASTIC  
RAYS: RESULTS AND OPEN PROBLEMS**

10:20 AM

*C. Roblin - Electronics and Computer Engineering  
Laboratory ENSTA, Paris, France*  
**A PRELIMINARY APPROACH OF THE STATISTICAL  
MODELLING OF ANTENNAS FOR THE UWB  
COMMUNICATIONS**

10:40 AM

*M. Migliorelli, M. Ciattaglia, G. Marrocco - DISP -  
Università di Roma - TorVergata, Roma, Italy*  
**APPLICATION OF THE TWO-DIMENSIONAL  
HERMITE PROCESSING TO THE UWB ANTENNA  
MODELING**

11:00 AM

*A. Neto, S. Bruni, G. Gerini - TNO Defence Security and  
Safety, The Hague, The Netherlands*  
*M. Sabbadini, F. Marliani - Electromagnetics Division -*

*European Space Agency, Noordwijk, The Netherlands*  
**BAND-WIDTH PERFORMANCES OF ANTENNAS  
BASED ON LEAKY LENS RADIATION**

11:20 AM

*J. Sachs, R. Zetik - Technische Universität Ilmenau, Ilmenau,  
Germany*

*P. Peyerl, J. Friedrich - MEODAT GmbH, Ilmenau, Germany*

**AUTONOMOUS ORIENTATION BY ULTRA  
WIDEBAND SOUNDING**

11:40 AM

*L. Reggiani, A. Tomasetta - Dip. di Eletttronica ed  
Informazione - Politecnico di Milano, Milano, Italy*

**TRELLIS DECISION AIDED CHANNEL ESTIMATION  
IN UWB IMPULSE RADIO COMMUNICATIONS**

---

**Wednesday, September 14, 2005, Sala Sella**

---

**Session 20**

**WAVE INTERACTIONS WITH APERIODIC ORDER**

**Organized by L.B. Felsen and V. Galdi**

Chairs: L.B. Felsen, V. Galdi

---

8:40 AM

*L.B. Felsen - Department of Aerospace and Mechanical  
Engineering - Boston University, Boston, MA, USA*

**PERTURBED PERIODICITY: A RETROSPECTIVE ON  
FORWARD AND INVERSE MODELINGS OF POSSIBLE  
RELEVANCE FOR APERIODIC-ORDER DYNAMICS**

9:20 AM

*V. Galdi, G. Castaldi, V. Pierro, I.M. Pinto - Waves Group -  
Department of Engineering - University of Sannio, Benevento,  
Italy*

*L.B. Felsen - Department of Aerospace and Mechanical  
Engineering - Boston University, Boston, MA, USA*

**PARAMETERIZING WAVE DYNAMICS WITHIN A  
FRAMEWORK OF "ORDERLY DISORDER": SOME  
EXAMPLES**

9:40 AM

*N. Engheta - Dept. of Electrical and Systems Engineering -  
University of Pennsylvania, Philadelphia, PA, USA*

*A. Hoorfar, J. McVay - Dept. of Electrical and Computer  
Engineering - Villanova University, Villanova, PA, USA*

**ELECTRODYNAMICS OF SPACE-FILLING CURVES**

10:20 AM

*V. Fiumara - D.I3.E. - University of Salerno, Fisciano (SA),  
Italy*

*I. Gallina, S. Petracca, I.M. Pinto - Waves Group - DING -  
University of Sannio at Benevento, Benevento, Italy*

**GENERALIZED PRE-FRACTAL MULTILAYERS**

10:40 AM

*E. Ozbay - Nanotechnology Research Center - Bilkent  
University, Ankara, TURKEY*

## **NEGATIVE REFRACTION AND SUBWAVELENGTH FOCUSING USING PHOTONIC CRYSTALS**

11:00 AM

*R.A. Abram, D.M. Beggs, D.T. Roper, M.A. Kaliteevski, S. Brand - Department of Physics - University of Durham, Durham, U.K.*

### **PHOTONIC BAND-GAP QUASICRYSTALS**

11:20 AM

*A. Della Villa - Department of Information Engineering - University of Siena, Siena, Italy*

*S. Enoch, G. Tayeb - Institut Fresnel - Universite Paul Cezanne Aix-Marseille III - Faculte des Sciences et Techniques, Marseille, France*

*V. Galdi, V. Pierro - Waves Group - Department of Engineering - University of Sannio, Benevento, Italy*

*F. Capolino - Department of Information Engineering - University of Siena, Siena, Italy*

### **LDOS ANALYSIS OF THE ELECTROMAGNETIC BAND-GAP PROPERTIES OF CERTAIN CATEGORIES OF QUASICRYSTALS**

11:40 AM

### **PANEL DISCUSSION**

---

**Wednesday, September 14, 2005, Sala Cavour**

---

#### **Session 21**

### **FREQUENCY SELECTIVE SURFACES**

Chairs: P. Savi, R. Tascone

---

2:00 PM

*T. Bertuch, T.F. Eibert - FGAN Research Institute for High Frequency Physics and Radar Techniques (FHR), Wachtberg, Germany*

### **INVESTIGATION ON PARALLEL-PLATE MODE SUPPRESSION BY HIGH-IMPEDANCE SURFACES FOR FEEDING NETWORKS OF INTEGRATED PLANAR ANTENNAS**

2:20 PM

*S. Monni, A. Neto, G. Gerini - TNO Defence - Security and Safety, The Hague, The Netherlands*

*A.G. Tijhuis - Eindhoven University of Technology - Faculty of Electrical Engineering, Eindhoven, The Netherlands*

### **A STUDY OF THE EXPANDING FUNCTIONS FOR A MOM-BASED SOLUTION OF REDUCED KERNEL INTEGRAL EQUATIONS**

2:40 PM

*I. Hertl, Z. Raida, M. Vavrda - Dept. of Radio Electronics - Brno University of Technology, Brno, Czech Republic*

### **DESIGN OF DUAL BAND PRINTED DIPOLE ANTENNA WITH FREQUENCY SELECTIVE SURFACES REFLECTOR FOR ISM BAND APPLICATION**

3:00 PM

*K. Pontoppidan - TICRA, Copenhagen, Denmark*

*D. Trincherò - Dip. Elettronica, Politecnico di Torino, Torino, Italy*

**APPROXIMATE METHODS FOR THE ANALYSIS OF REFLECTOR ANTENNAS WITH GRIDDED SURFACES**

3:20 PM

*P. Besso - ESA/ESOC, Darmstadt, Germany*

*M. Bozzi, M. Formaggi, S. Germani, M. Pasian, L. Perregrini - Dipartimento di Elettronica - Università degli Studi di Pavia, Pavia, Italy*

**OPTIMIZED DICHROIC MIRROR DESIGN FOR DEEP SPACE ANTENNAS**

3:40 PM

*I. Montiel, D. Poyatos, D. Escot, F. Ortega - Laboratorio de Detectabilidad - Departamento de Equipos y Sistemas Instituto Nacional de Técnica Aeroespacial, Torrejón de Ardoz, Madrid, Spain*

**DESIGN, ANALYSIS, DEVELOPMENT AND MEASUREMENT OF A MULTILAYER FREQUENCY SELECTIVE SURFACE**

---

**Wednesday, September 14, 2005, Sala Giolitti**

---

**Session 22**

**DIRECT AND INVERSE SCATTERING**

**organized in memory of R. Tiberio by**

**P.H. Pathak and P.L.E. Uslenghi**

Chairs: P.H. Pathak, P.L.E. Uslenghi

---

2:00 PM

*Y.A. Antipov - Department of Mathematics - Louisiana State University, Baton Rouge, LA, United States*

*V.V. Silvestrov - Department of Mathematics - Chuvash State University, Cheboksary, Russia*

**METHOD OF RIEMANN SURFACES IN ELECTROMAGNETIC SCATTERING**

2:20 PM

*V. Daniele, G. Lombardi - Dip. Elettronica, Politecnico di Torino, Torino, Italy*

**WIENER-HOPF FORMULATION FOR WEDGE PROBLEMS**

2:40 PM

*G. Lombardi - Dip. Elettronica, Politecnico di Torino, Torino, Italy*

**NUMERICAL VALIDATION OF THE WIENER-HOPF APPROACH TO WEDGE PROBLEMS**

3:00 PM

*S. Laybros, P.F. Combes - Université P. Sabatier / laboratoire AD2M, Toulouse Cedex, France*

*H.J. Mametsa - ONERA-DEMR, Toulouse Cedex, France*

**EQUIVALENT EDGE CURRENTS FOR THE 3D  
DIFFRACTION BY AN IMPEDANCE DIELECTRIC  
WEDGE**

3:20 PM

*P. Nepa, G. Manara, S. Mugnaini - Department of  
Information Engineering - University of Pisa, Pisa, Italy*  
**INCLUDING SURFACE WAVE CONTRIBUTIONS IN A  
HYBRID MM-PO NUMERICAL TECHNIQUE FOR  
ANALYZING THE SCATTERING FROM ARBITRARY  
IMPEDANCE WEDGES**

3:40 PM

*F. Molinet - MOTHEM, Le Plessis-Robinson Cedex, France*  
**DIFFRACTION COEFFICIENTS FOR MATERIAL  
DISCONTINUITIES IN PLANAR AND SMOOTH  
CONVEX OR CONCAVE SURFACES**

4:20 PM

*M. Albani, A. Italiano, R. Gardelli - Dip. Fisica della Materia  
e Tecnologie Fistiche Avanzate - Università di Messina,  
Messina, Italy*  
*G. La Cono - DIMET - Univ. Mediterranea, loc. Feo di Vito  
Reggio Calabria, Italy*  
**LINE-INTEGRAL REPRESENTATION FOR THE PO  
FIELD SCATTERED BY A FACETED OBJECT,  
ILLUMINATED BY A COMPLEX POINT SOURCE**

4:40 PM

*P. Janpugdee, P.H. Pathak, R.J. Burkholder - ElectroScience  
Laboratory - Department of Electrical & Computer  
Engineering - The Ohio State University, Columbus, OH, USA*  
**A NEW TRAVELING WAVE EXPANSION FOR THE  
UTD ANALYSIS OF THE COLLECTIVE EM  
SCATTERING BY LARGE FINITE PLANAR ARRAYS**

5:00 PM

*P.L.E. Uslenghi - Department of Electrical and Computer  
Engineering - University of Illinois at Chicago, Chicago, IL,  
USA*  
**DIRECT AND INVERSE SCATTERING OF  
COMBINED FIELDS**

5:20 PM

*R.G. Kouyoumjian, P.H. Pathak - The Ohio State University,  
Columbus, OH, USA*  
*G. Manara - University of Pisa, Pisa, Italy*  
*S. Maci, A. Toccafondi - University of Siena, Siena, Italy*  
**A SUMMARY OF THE CONTRIBUTIONS BY PROF.  
ROBERTO TIBERIO TO HF ELECTROMAGNETICS  
RESEARCH**

Wednesday, September 14, 2005, Sala Einaudi

---

Session 23

**ELECTROMAGNETIC PROPERTIES OF MATERIALS**

Chairs: B. Munk, H. Zippold

---

2:20 PM

*B.A. Munk - ElectroScience Laboratory - The Ohio State University, Columbus, OH, Usa*

**A NEW INTERPRETATION OF NEGATIVE  $\mu_1$  AND  $\epsilon_1$  PRODUCED BY A FINITE PERIODIC STRUCTURE**

3:00 PM

*K.N. Rozanov, A.B. Luchkov - Institute for theoretical and applied electromagnetics, Moscow, Russia*

**BANDWIDTH TO THICKNESS RATIO OF DIELECTRIC RADAR ABSORBERS**

3:20 PM

*R. Rotman, M. Tur - Faculty of Engineering - Tel Aviv University, Tel Aviv, Israel*

*B. Munk - Ohio State University - ElectroScience Laboratory, Columbus, OH, USA*

**EFFECT OF FINITE PHASED ARRAYS ON SHORT RADAR PULSES**

3:40 PM

*Ö. Aydın Civi - Dept. of Electrical & Electronics Eng. - Middle East Technical University, Ankara, Turkey*

*P.H. Pathak, P. Janpujdee - The ElectroScience Laboratory - The Ohio State University, Columbus, OH, USA*

**EFFECTS OF ARRAY GUIDED SURFACE WAVES ON THE RADIATION AND SCATTERING FROM A FINITE PRINTED DIPOLE ARRAY**

4:20 PM

*C. Engström - Department of Electrosience - Lund Institute of technology, Lund, Sweden*

**BOUNDS ON EFFECTIVE ANISOTROPIC MATERIAL PARAMETERS**

4:40 PM

*A. Andreone, U. Dell'Angelo, E. Di Gennaro, G. Lamura - INFN Coherentia and Dipartimento di Scienze Fisiche - Università di Napoli, Napoli, Italy*

*M.R. Masullo - INFN Sezione di Napoli Complesso Univ. MSA, Napoli, Italy*

**STUDY OF MICROWAVE PLASMONIC METALLIC MESOSTRUCTURES**

---

Wednesday, September 14, 2005, Sala Sella

---

Session 24

**MICROWAVE ANTENNAS**

Chairs: A. Neto, R.E. Zich

---

2:20 PM

*P. Baccarelli, S. Paulotto - "La Sapienza" University of Rome*

- *Electronic Engineering Dept., Roma, Italy*

*D.R. Jackson - University of Houston - Dept. of Electrical and Computer Engr., Houston, TX, USA*

**BROADSIDE RADIATION PROPERTIES OF 1D PERIODIC MICROSTRIP LEAKY-WAVE ANTENNAS**

2:40 PM

*Z. Lukes, J. Lacik, P. Smid, Z. Raida - Dept. of Radio Electronics - Brno University of Technology, Brno, Czech Republic*

**MULTI-OBJECTIVE SYNTHESIS OF DUAL-BAND CIRCULARLY POLARIZED ANTENNAS BY PARTICLE SWARM OPTIMIZATION METHOD**

3:00 PM

*J. Vizcarguenaga, A. Torre, J.M. Montero - RYMSA, Madrid, Spain*

*L. Salghetti Drioli - ESA-ESTEC, Noordwijk, The Netherlands*  
**GALILEO: DESIGN, MANUFACTURING AND TEST OF THE SEARCH AND RESCUE ANTENNA**

3:20 PM

*N. Llombart, A. Neto, G. Gerini - TNO Defence Security and Safety, Den Haag, The Netherlands*

*P. De Maagt - Electromagnetics Division - European Space Agency, Noordwijk, The Netherlands*

**REFLECTION OF SURFACE WAVES IN PRESENCE OF A SEMI-INFINITE PLANAR EBG**

3:40 PM

*C. Di Nallo, A. Faraone - Motorola Inc. Corporate EME Research Laboratory, Fort Lauderdale, FL, USA*

*M. Maddaleno, T. Galia - Motorola Electronics SpA. - Mobile Devices Turin Design Center, Torino, Italy*

**PRINCIPLES AND APPLICATIONS OF THE FOLDED INVERTED CONFORMAL ANTENNA (FICA) TECHNOLOGY**

4:20 PM

*P. Cirese - Galileo Avionica, Campi Bisanzio (FI), Italy*

**LASER WELDING OF PLANAR WAVEGUIDE SLOT ARRAY ANTENNA (6082 T6) ALUMINUM ALLOY STRUCTURE**

4:40 PM

*M. Mussetta - Politecnico di Milano - Dept. Electr. Eng., Milano, Italia*

*N. Bliznyuk - Jet Propulsion Laboratory, Pasadena, CA, USA*

*P. Pirinoli - Politecnico di Torino - Dept. Electronics, Torino, Italia*

*N. Engheta - University of Pennsylvania - Dept. Electr. and Systems Eng., Philadelphia, PA, USA*

*R.E.Zich - Politecnico di Milano - Dept. Electr. Eng., Milano, Italia*

**DESIGN OF A GANGBUSTER SURFACE REFLECTOR ANTENNA**

Session 25

**ANTENNAS, SYSTEMS AND ARRAYS**

Chairs: S. Maci, W. Wiesbeck

---

8:40 AM

*L. Shmidov - Orbit/Fr-Israel, Netanya, Israel*

*S. Hizkiahou - Gaus Software & Systems, Tel-Aviv, Israel*

**ACTIVE ANTENNA MEASUREMENT SYSTEM WITH  
HIGH SPEED TIME SYNCHRONIZATION**

9:00 AM

*R. Goossens, H. Rogier - INTEC Ghent University, Gent,  
Belgium*

**2-D DIRECTION OF ARRIVAL ESTIMATION  
COMBINING UCA-RARE AND MUSIC FOR  
UNIFORM CIRCULAR ARRAYS SUBJECT TO  
MUTUAL COUPLING**

9:20 AM

*C. Kuhnert, M.A. Baldauf, W. Sorgel, W. Wiesbeck - Institut  
fur Hochstfrequenztechnik und Elektronik (IHE) - Universitat  
Karlsruhe (TH), Karlsruhe, Germany*

**NEAR FIELD CHARACTERIZATION OF MIMO  
ANTENNAS IN HAND-HELD DEVICES WITH  
REGARD TO EXPOSURE REDUCTION**

9:40 AM

*L. Baggen, S. Holzwarth, M. Böttcher, M. Eube - IMST  
GmbH, Kamp-Lintfort, Germany*

**CURRENT & FUTURE DEVELOPMENTS IN  
STEERABLE ANTENNA ARRAYS**

10:20 AM

*S. Schulteis, C. Sturm, C. Waldschmidt, W. Wiesbeck - Institut  
fur Hochstfrequenztechnik und Elektronik (IHE), Universitat  
Karlsruhe (TH) Germany*

**APPLICATION OF SMART ANTENNA TECHNIQUES  
IN A JOINT MIMO COMMUNICATION AND RADAR  
SYSTEM**

10:40 AM

*S. Bruni, A. Neto - TNO - Defence Security and Safety, The  
Hague, The Netherlands*

*S. Maci - Department of Information Engineering - University  
of Siena, Siena, Italy*

*G. Gerini - TNO - Defence Security and Safety, The Hague,  
The Netherlands*

**WIDE BAND SCANNING ARRAYS BASED ON LEAKY  
WAVE RADIATION**

11:00 AM

*M. Vavrda, Z. Raida, I. Hertl - Dept. of Radio Electronics -  
Brno University of Technology, Brno, Czech Republic*

**REAL ANTENNA ARRAY BEHAVIOR IMPACT ON  
THE BEAMFORMING ALGORITHM EFFICIENCY**

11:20 AM

*M. Ciattaglia, S. Mosca - AMS, Rome, Italy*

**BROADBAND BROADSIDE CHARACTERIZATION OF PERIODIC ARRAYS WITH TRIANGULAR LATTICE**

11:40 AM

*A. Capozzoli, G. D'Elia, S. Russo, M. Tutucci - Dipartimento di Ingegneria Elettronica e delle Telecomunicazioni - Università degli Studi di Napoli Federico II, Napoli, Italy*

**POWER PATTERN SYNTHESIS OF RECONFIGURABLE SHAPED-BEAM REFLECTARRAYS**

12:00 PM

*O.M. Bucci, A. Capozzoli, C. Curcio, G. D'Elia - Dipartimento di Ingegneria Elettronica e delle Telecomunicazioni - Università degli Studi di Napoli Federico II, Napoli, Italy*

**A DIGITAL TIME SHIFTER FOR OPTICAL TIME STEERED ANTENNAS**

---

**Thursday, September 15, 2005, Sala Giolitti**

---

**Session 26**

**COMPUTATIONAL ELECTROMAGNETICS**

**organized by R.D. Graglia and D.R. Wilton**

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

---

8:40 AM

*Z. Cendes - Ansoft Corporation, Pittsburgh, PA, U.S.A.*

**FINITE ELEMENT DOMAIN DECOMPOSITION FOR SOLVING LARGE ELECTROMAGNETIC PROBLEMS**

9:20 AM

*M.N. Vouvakis, S.-C. Lee, J.-F. Lee - ElectroScience Lab. Dept of Electrical and Computer Engineering - The Ohio State University, Columbus, OH, USA*

**HIGHER ORDER TRANSMISSION CONDITIONS FOR DOMAIN DECOMPOSITION METHOD FOR SOLVING LARGE ELECTROMAGNETIC PROBLEMS**

9:40 AM

*D.B. Davidson, M.M. Botha, N. Marais - Dept. Electrical and Electronic Engineering - Univ. Stellenbosch, Matieland, South Africa*

**RECENT PROGRESS WITH VECTOR ELEMENTS FOR RF AND MICROWAVE FINITE ELEMENT APPLICATIONS**

10:20 AM

*G. Rubinacci - Ass. EURATOM/ENEA/CREATE DIEL - Università Federico II di Napoli, Napoli Italy*

*F. Villone, W. Zamboni - Ass. EURATOM/ENEA/CREATE DAEIMI - Università di Cassino, Cassino (FR), Italy*

**NON-MATCHING GRIDS IN INTEGRAL FORMULATIONS**

10:40 AM

*A. Buffa - Istituto di Matematica Applicata e Tecnologie*

*Informatiche del CNR, Pavia, Italy*

*S.H. Christiansen - CMA c/o Matematisk Institutt -*

*Universitetet i Oslo, Oslo, Norway*

**DUAL FINITE ELEMENTS WITH APPLICATIONS TO  
THE PRECONDITIONING OF THE ELECTRIC FIELD  
INTEGRAL EQUATION**

11:00 AM

*M. Costabel, M. Dauge - IRMAR - Universite de Rennes 1,  
Rennes, France*

*C. Schwab - Seminar fur Angewandte Mathematik - ETH  
Zurich, Zurich, Switzerland*

**EXPONENTIAL CONVERGENCE OF THE  
WEIGHTED REGULARIZATION METHOD FOR  
MAXWELL EIGENVALUE PROBLEMS**

11:20 AM

*M.J. Bluck, S.P. Walker - Department of Mechanical  
Engineering - Imperial College, London, UK*

**ALGEBRAIC TOPOLOGY AND COMPUTATIONAL  
ELECTROMAGNETICS**

11:40 AM

*V. Jandhyala, D. Gope, S. Chakraborty - Dept. of Electrical  
Engineering, University of Washington, Seattle, WA, USA*

**FAST QR-BASED MULTILEVEL METHODS FOR  
INTEGRAL EQUATION SOLVERS**

12:00 PM

*P.W. Fink - NASA Johnson Space Center, Houston, TX, USA  
D.R. Wilton, M.A. Khayat - Dept. ECE, University of Houston,  
Houston, TX, USA*

**ISSUES AND METHODS CONCERNING THE  
EVALUATION OF HYPERSINGULAR AND  
NEAR-HYPERSINGULAR INTEGRALS IN BEM  
FORMULATIONS**

2:00 PM

*A. Heldring, J.M. Rius - Dpt. Teoria del Senyal i Comunicacions  
- Universitat Politècnica de Catalunya, Barcelona, Spain*

**HIGHLY ACCURATE THIN WIRE MOM WITH LOW  
ORDER BASIS FUNCTIONS**

2:20 PM

*D. De Zutter, L. Knockaert - Department of Information  
Technology - Ghent University - Electromagnetics Group,  
Ghent, Belgium*

**A 2D DIFFERENTIAL SURFACE ADMITTANCE  
OPERATOR APPROACH TO MODEL THE SKIN  
EFFECT**

2:40 PM

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

**SINGULAR VECTOR ELEMENTS IN MOM**

3:00 PM

*L.I. Babilio, W.A. Johnson - Electromagnetic and Plasma  
Physics Analysis - Sandia National Laboratories,*

*Albuquerque, NM, USA*

*D.R. Jackson, D.R. Wilton - Department of Electrical and Computer Engineering, Houston, Texas, USA*

**NUMERICAL MODELING OF FINITE-SIZE PLASMON STRUCTURES WITH ENHANCED OPTICAL TRANSMISSION USING EIGER**

3:20 PM

*W. Johnson, L. Warne, L. Basilio, R. Coats, J. Kotulski, R. Jorgenson - Electromagnetic and Plasma Physics Analysis Dept. - Sandia National Laboratories, Albuquerque, NM, USA*

**MODELING OF BRAIDED SHIELDS**

3:40 PM

*G. Rubinacci - Associazione Euratom-Enea-Crea - Dipartimento di Ingegneria Elettrica - Università degli Studi di Napoli "Federico II", Napoli, Italy*

*A. Tamburrino - Associazione Euratom-Enea-Crea - Dipartimento di Automazione, Elettromagnetismo, Ingegneria dell'Informazione e Matematica Industriale, Cassino, Italy*

**AN INTEGRAL FORMULATION FOR THE ELECTROMAGNETIC ANALYSIS OF LOSSY CONDUCTORS AND DIELECTRICS**

4:20 PM

*A.G. Tijhuis, M.C. van Beurden, M.J.H. Aben, R. Dirks - Eindhoven University of Technology - Faculty of Electrical Engineering, Eindhoven, the Netherlands*

**USING ANTENNA ARRAY MODELING IN DETECTION AND SYNTHESIS**

4:40 PM

*K. Hollaus, O. Bíró - Institute for Fundamentals and Theory in Electrical Engineering - Graz University of Technology, Graz, Austria*

*P. Caldera - Infineon Technologies - Microelectronic Design Centers, Villach, Austria*

*G. Matzenauer - Institute for Fundamentals and Theory in Electrical Engineering - Graz University of Technology, Graz, Austria*

*G. Paoli - Infineon Technologies - Microelectronic Design Centers, Villach, Austria.*

*K. Preis, B. Weiss - Institute for Fundamentals and Theory in Electrical Engineering - Graz University of Technology, Graz, Austria*

**SIMULATION OF SIMPLE TOPOLOGIES ON A PCB BY A FREQUENCY AND A TIME DOMAIN METHOD**

Session 27

FUNDAMENTAL EM THEORY ADVANCES

organized by P.D. Smith

Chairs: D. Erricolo, P.D. Smith

---

8:40 AM

*P.D. Smith - Department of Mathematics - Macquarie University, Sydney, Australia*

**ADVANCES IN ANALYTICAL AND ANALYTICAL-NUMERICAL METHODS IN SCATTERING AND PROPAGATION**

9:20 AM

*D. Erricolo, P.L.E. Uslenghi, M. Valentino - Department of Electrical and Computer Engineering - University of Illinois at Chicago, Chicago, IL, USA*

**EXACT ANALYSIS OF AN OBLATE SPHEROIDAL CAVITY WITH A CIRCULAR APERTURE IN A GROUND PLANE COVERED BY AN ISOREFRACTIVE LENS**

9:40 AM

*E.D Vinogradova - Department of Mathematics - Macquarie University, Sydney, Australia*  
*S.S.Vinogradov - School of Physics - Sydney University, Sydney, Australia*

**REFLECTOR ANTENNA STUDIES: VALIDATION OF APPROXIMATE HIGH-FREQUENCY TECHNIQUES BY A RIGOROUS APPROACH**

10:20 AM

*Y.A. Tuchkin - Electronics Dept., Gebze Institute of Technology, Gebze-Kocaeli, Turkey*

**ANALYTICAL REGULARIZATION METHOD FOR ELECTROMAGNETIC WAVE DIFFRACTION BY PERIODIC WAVY OBSTACLES: PERFECTLY CONDUCTIVE SCREEN AND TWO MEDIA BOUNDARY**

10:40 AM

*I.V. Lindell - Electromagnetics Laboratory - Helsinki University of Technology, Espoo, Finland*

**DIFFERENTIAL FORMS IN ELECTROMAGNETICS**

11:00 AM

*A.B. Yakovlev, A.W. Glisson - Department of Electrical Engineering - Center for Applied Electromagnetic Systems Research (CAESR) - University of Mississippi, University, MS, USA*

**MODAL ANALYSIS OF TEM HARD SURFACE WAVEGUIDES: GREEN'S FUNCTION APPROACH**

11:20 AM

*J. M. Arnold - Department of Electronics and Electrical Engineering - University of Glasgow, Glasgow, UK*

**ELECTRODYNAMICS OF SEMICONDUCTOR**

## **MODE-LOCKED LASERS WITH SLOW SATURABLE ABSORBERS**

11:40 AM

*L. Knockaert - Dept. Information Technology - Ghent University, Gent, Belgium*

### **ABEL, GAUSS AND RELATED TRANSFORMS FOR ELECTROMAGNETIC APPLICATIONS**

12:00 PM

*R.W. Sminck, B.P. de Hon, A.G. Tjihuis - Faculty of Electrical Engineering - University of Technology, Eindhoven, The Netherlands*

### **BENDING LOSS OF MODES IN OPTICAL FIBERS - PIVOTAL ASPECTS OF A COMPUTATIONAL SCHEME**

---

**Thursday, September 15, 2005, Sala Sella**

---

#### **Session 28**

### **INTERACTION OF ELECTROMAGNETIC WAVES WITH NANO/MICRO STRUCTURES**

**organized by N.G. Alexopoulos**

Chairs: N.G. Alexopoulos, R. Diaz

---

8:40 AM

*P.J. Burke, C. Rutherglen, Z. Yu - Department of Electrical Engineering and Computer Science - University of California, Irvine, CA, USA*

### **CARBON NANOTUBE ANTENNAS**

9:00 AM

*D. Wang, J.G. Lu - Dept. Electrical Engineering and Computers Science & Dept. of Chemical Engineering and Materials Science - University of California, Irvine, CA, USA*

### **A NEW APPROACH IN NANO SPINTRONICS: SINGLE-SPIN FIELD EFFECT TRANSISTORS**

9:20 AM

*Y.L. Song - Department of Electrical Engineering and Computer Sci. - University of California, Irvine, CA, USA*  
*S.C. Tsai, E. Degiovanni - Department of Chemical Engineering - California State Univ., Long Beach, CA, USA*  
*N. Wang, G. Qiu, Y.C. Huang, C.S. Tsai - Department of Electrical Engineering and Computer Sci. - University of California, Irvine, CA, USA*

### **MEMS-BASED MHZ SILICON ULTRASONIC NOZZLES AND APPLICATIONS TO NANO MATERIALS AND ELECTRONICS**

9:40 AM

*S.A. Maksimenko, G.Ya. Slepyan - Institute for Nuclear Problems - Belarus State University, Minsk, Belarus*

### **ELECTROMAGNETIC EFFECTS IN CARBON NANOTUBES: WAVEGUIDING, NONLINEAR RESPONSE, SPONTANEOUS DECAY ENHANCEMENT**

10:20 AM

*R.E. Diaz, D. Lim - Department of Electrical Engineering Ira*

*A. Fulton School of Engineering - Arizona State University,  
Tempe, AZ, USA*

**CLASSICAL EMULATION OF MOLECULAR  
FLUORESCENCE AND THE MODIFICATION OF ITS  
QUANTUM EFFICIENCY BY NEARBY MATERIAL  
STRUCTURES**

10:40 AM

*A. Tseronis, D. Tsilimantos, N. Uzunoglu - Department of  
Microwave and Fiber Optics Laboratory - National Technical  
University of Athens, Athens, Greece*

**ANALYSIS OF RADIATION PHENOMENA IN A  
WEDGE ENDED DIELECTRIC SLAB WAVEGUIDE**

11:00 AM

*C. Won Jung, M.-Jer Lee, G.P. Li, F. De Flaviis - Department  
of Electrical Engineering and Computer Science - University  
of California, Irvine, CA, USA*

**SINGLE ELEMENT STEERABLE BEAM ANTENNA  
USING MICRO ACTUATORS FOR WIRELESS  
COMMUNICATION**

11:20 AM

*C.A. Kyriazidou - The Henry Samueli School of Engineering  
and Computer Science - University of California, Irvine, CA,  
USA*

*H.F. Contopanagos - Institute for Microelectronics - National  
Center for Scientific Research "Demokritos", Athens, Greece*

*N.G. Alexopoulos - The Henry Samueli School of Engineering  
and Computer Science - University of California, Irvine, CA,  
USA*

**METAMORPHIC ELECTROMAGNETIC MEDIA**

11:40 AM

*K.K. Zanjani, M. Bachman - Department of Electrical  
Engineering and Computer Science - The Henry Samueli  
School of Engineering - University of California, Irvine,  
California, USA*

*R. Holcombe - Department of Medicine –  
Hematology/Oncology - University of California - Irvine  
Medical Center, Orange, California, USA*

*G.P. Li - Department of Electrical Engineering and Computer  
Science - The Henry Samueli School of Engineering -  
University of California, Irvine, California, USA*

**MICRO/NANO THERMAL DEVICES FOR  
MINIMALLY-INVASIVE TREATMENT OF LIVER  
TUMORS THROUGH HYPERTHERMIA**

---

**Thursday, September 15, 2005, Sala Cavour**

---

**Session 29**

**ELECTROMAGNETIC MODELLING IN TIME DOMAIN  
organized by A. Cangellaris and E. Michielssen**

Chairs: A. Cangellaris, E. Michielssen

---

2:00 PM

*G. Lippens, L. Knockaert, D. De Zutter - Electromagnetics*

*Group - Universiteit Gent, Gent, Belgium*

**GENERALIZED LAGUERRE-BASED ROM  
METHODS APPLIED TO FDTD-LIKE PROBLEMS**

2:20 PM

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

**AN IMPLICIT TIME STEPPING SCHEME FOR  
MAXWELL'S EQUATIONS**

2:40 PM

*A. Rubio Bretones, F.J. Garcia Ruiz, S.G. García,  
M. Fernández Pantoja, R. Gómez Martín - Facultad de  
Ciencias - Universidad de Granada, Granada, Spain*

**TIME-DOMAIN HYBRID METHODS TO STUDY THE  
INTERACTION BETWEEN THIN-WIRE ANTENNAS  
AND PERMEABLE BODIES**

3:00 PM

*J.-Y. Ihm, I.J. Chung, G. Manetas, A.C. Cangellaris - ECE  
Department - University of Illinois at Urbana-Champaign,  
Urbana, IL, USA*

**A COMPREHENSIVE ELECTROMAGNETIC MODEL  
FOR TRANSIENT ANALYSIS OF ON-CHIP NOISE  
GENERATION AND COUPLING**

3:20 PM

*J.G. Wykes, C. Christopoulos, P. Sewell, D.W.P. Thomas,  
T.M. Benson, A. Vukovic - George Green Institute for  
Electromagnetics Research - University of Nottingham,  
Nottingham, UK.*

**HYBRID MESHES IN TIME-DOMAIN TLM**

3:40 PM

*D. Lukashovich - Institute for High-Frequency Engineering -  
Munich University of Technology, Munich, Germany  
A. Cangellaris - Department of Electrical and Computer  
Engineering - University of Illinois at Urbana-Champaign,  
Urbana, IL, USA*

*P. Russer - Institute for High-Frequency Engineering -  
Munich University of Technology, Munich, Germany*

**ACCELERATION OF TIME-DOMAIN TLM  
ELECTROMAGNETIC MACROMODELING  
TROUGH THE SCATTERING-SYMMETRIC  
LANCZOS ALGORITHM**

4:20 PM

*Y. Srisukh - ElectroScience Laboratory ECE Department -  
The Ohio State University, Columbus, OH, USA*

*N. Venkatarayalu - Temasek Laboratory - National University  
of Singapore, Singapore*

*R. Lee - ElectroScience Laboratory ECE Department - The  
Ohio State University, Columbus, OH, USA*

**HYBRID FINITE ELEMENT/FINITE DIFFERENCE  
METHODS IN THE TIME DOMAIN**

4:40 PM

*F. Wolfheimer, E. Gjonaj, T. Weiland - Institut für Theorie Elektromagn. Felder, Darmstadt, Germany*

**DYNAMIC DOMAIN DECOMPOSITION FOR PARALLEL PIC SIMULATIONS IN THE TIME DOMAIN**

---

**Thursday, September 15, 2005, Sala Einaudi**

---

**Session 30**

**RF-MEMS COMPONENTS, TECHNOLOGY AND MATERIALS: A EUROPEAN PERSPECTIVE**

**organized by R. Sorrentino**

Chairs: W. De Raedt, R. Sorrentino

---

2:00 PM

*R. Plana, F. Coccetti - LAAS – CNRS, Toulouse, France*

**RF-MEMS IN EUROPE: A REVIEW**

2:40 PM

*W. De Raedt, H. Tilmans - IMEC, Leuven, Belgium*

**DESIGN AND TECHNOLOGY FOR RF MEMS SWITCHES**

3:00 PM

*A. Pothier, C. Palego, D. Mercier, T. Paillot, S. Avrillon, P. Blondy - IRCOM-CNRS, Limoges, France*

**DESIGN AND TECHNOLOGY FOR RF TUNABLE COMPONENTS**

3:20 PM

*L. Vietzorreck - Lehrstuhl für Hochfrequenztechnik - TU München, München, Germany*

**ASPECTS OF EM MODELING TECHNIQUES FOR RF MEMS**

3:40 PM

*V. Leus, D. Elata - Faculty of Mechanical Engineering Technion - Israel Institute of Technology, Haifa, Israel*

**MODELING THE DYNAMIC RESPONSE OF RF-MEMS SWITCHES**

4:20 PM

*T.V. Heikkilä, M. Rintamäki, J. Varis, J. Tuovinen - MilliLab - VTT Information Technology, Finland*

**MEMS BASED IMPEDANCE TUNERS**

4:40 PM

*A.M. Ionescu, M. Mazza, K. Boucart - Electronics Laboratory - Institute of Microelectronics and Microsystems - Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland*

**RF MEMS FOR 3G AND BEYOND WIRELESS SYSTEMS**

5:00 PM

*P. Lindberg, A. Rydberg, E. Öjefors - Uppsala University - Signals and Systems Group, Uppsala, Sweden*

**MICROMECHANICALLY ENHANCED INTEGRATED RADAR FRONT-ENDS**

Session 31

**INNOVATIVE TECHNIQUES FOR SOLVING  
MULTI-SCALE, LARGE AND COMPLEX RADIATION  
AND SCATTERING PROBLEMS**

**organized by R. Mittra**

Chairs: R. Mittra, G. Vecchi

---

2:00 PM

*R. Mittra, H.A. Raouf, N.T. Huang - Electromagnetic  
Communication Laboratory - Department of Electrical  
Engineering - The Pennsylvania State University, University  
Park, PA, USA*

**CBFDTD--A NEW EXTENSION OF THE FDTD  
ALGORITHM FOR SOVING LARGE RADIATION,  
SCATTERING AND EMI/EMC PROBLEMS**

2:20 PM

*A. Cucini, S. Maci - Dipartimento di Ingegneria  
dell'Informazione - Università di Siena, Siena, Italy.  
G. Vecchi - Dipartimento di Elettronica - Politecnico di  
Torino, Torino, Italy*

**ANALYSIS OF EDGE EFFECTS IN LARGE FINITE  
FSS USING MACRO-SCALE AND LOCAL  
SYNTHETIC BASIS FUNCTIONS**

2:40 PM

*A.M. van de Water, B.P. de Hon, M.C. van Beurden, A.G.  
Tijhuis - Department of Electrical Engineering - Eindhoven  
University of Technology, Eindhoven, The Netherlands*

**GREEN'S FUNCTION DIAKOPTICS THROUGH  
EMBEDDING - GENERAL THEORY AND  
NUMERICAL ASPECTS**

3:00 PM

*P. Pirinoli, L. Matekovits, V.A. Laza, F. Vipiana, G. Vecchi,  
M. Orefice - LACE - Dept. of Electronics, Politecnico di  
Torino, Torino, Italy*

**MULTI-SCALE TECHNIQUES FOR THE  
PRE-PROTOTYPING ANALYSIS OF PRINTED  
REFLECTARRAYS**

3:20 PM

*C. Delgado, F. Cátedra, O.Gutierrez, I. González, F. Sáez de  
Adana - Dpto. De Ciencias de la Computación - Universidad  
de Alcalá, Alcalá de Henares, Spain*

**APPLICATION OF CURRENT MODES TO THE  
ANALYSIS OF ARBITRARILY SHAPED TARGETS  
USING PO WITH MULTIPLE BOUNCES**

3:40 PM

*M. Degiorgi, G. Tiberi, A. Monorchio, G. Manara -  
Department of Information Engineering - University of Pisa,  
Pisa, Italy*

*R. Mittra - Dept. Electrical Engineering, The Pennsylvania  
State University, University Park, PA, USA*

**A NUMERICAL SOLUTION FOR  
ELECTROMAGNETIC SCATTERING FROM LARGE  
CONDUCTING BODIES BY USING A CLASS OF  
PHYSICAL OPTICS-SVD DERIVED BASIS  
FUNCTIONS**

4:20 PM

*P. Janpugdee, P. H. Pathak, R. W. Kindt, R. J. Marhefka, J.L. Volakis - ElectroScience Laboratory - Department of Electrical & Computer Engineering - The Ohio State University, Columbus, OH, USA*

**A HYBRID NUMERICAL-UTD ANALYSIS OF LARGE  
ARRAYS ON A LARGE PLATFORM**

4:40 PM

*J. Maurer, S. Knörzer, W. Wiesbeck - Institut für Hochfrequenztechnik und Elektronik (IHE) - Universität Karlsruhe (TH), Karlsruhe, Germany*

**RAY TRACING IN RICH SCATTERING  
ENVIRONMENTS FOR MOBILE-TO-MOBILE LINKS**

---

**Friday, September 16, 2003, Sala Sella**

---

**Full-day Short Course on  
MODELING OF TRANSIENT ELECTROMAGNETIC  
INTERACTIONS IN MULTISCALE STRUCTURES**

---

08:30÷16:00

**Instructors**

*Andreas Cangellaris and Eric Michielssen  
Center for Computational Electromagnetics  
Department of Electrical & Computer Engineering  
University of Illinois at Urbana-Champaign, U.S.A.*

Efficient schemes for analyzing broadband electromagnetic transients have applications ranging from antenna design to electromagnetic compatibility analysis to the prediction of signal propagation in modern electronic systems and devices.

This course will review the state of the art in time-domain methods for analyzing broadband electromagnetic scattering, radiation, and guidance phenomena. Emphasis will be placed on general-purpose simulation technologies recently developed by the instructors aimed at tackling real-world problems involving multiscale geometries. These technologies are built around so-called fast time domain integral equation solvers that interact with finite-difference/element, SPICE, and macromodel driven simulation tools to broaden their application reach. Specific topics to be covered include:

Fundamentals of marching on in time based integral equation solvers. The construction of electric and magnetic field time domain integral equations pertinent to the analysis of transient electromagnetic interactions with perfectly conducting and penetrable bodies will be reviewed. A variety of marching on in time based discretization strategies will be described and compared on their accuracy and stability merits.

Techniques for accelerating time domain integral equation

solvers. Just like early-day frequency-domain method of moments solvers, classical marching on in time based simulators are computationally prohibitively expensive. Two avenues for accelerating them will be described. They involve extensions of the fast multipole method and adaptive integral concepts to the time domain. The fundamentals of both types of accelerators will be elucidated and parallel implementation strategies will be described.

Finite-Difference/Finite Element macromodeling of passive electro-magnetic structures. Efficient methodologies will be discussed for the development of passive, reduce-order, multi-port representations of passive structures of high complexity. Krylov-subspace model order reduction methods will be presented for the direct generation of broadband macromodels in forms compatible with general-purpose, network analysis-oriented simulators (such as SPICE and ADS), as well as system-level transient electromagnetic field solvers.

Hybridization with other simulation technologies. Fast time domain integral equation solvers only live up to their full potential when appropriately hybridized with other simulation technologies. Avenues for coupling these solvers to SPICE circuit simulators, time-domain finite element and difference tools for analyzing inhomogeneous volumes and cables, and macromodel driven device simulators, will be described.

Application to real-world problems, including the analysis of installed antenna systems, electromagnetic compatibility problems involving cable-loaded platforms, signal propagation on printed circuit boards and chip packages, etc....

Copies of presentation slides and journal articles will be provided.



ICEAA '05

*Litografia Geda - Nichelino (Torino)*