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Finances

Dr. Federico Bonzanigo and Hannes Grubinger:
Publications

Klaus Krohne and Aldo Rossi:
Computers

Raimondo Ballisti:
Website and e-mail

R. Danieli:
Social Events

Dr. Christophe Fumeaux and Dirk Baumann:
Local Arrangements

Conference Administration

EMC Zurich 2005
Secretarial Office, Ms. M. Rafiq
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Speakers Attention

All authors have the opportunity to meet their session chair prior to their presentation.

Meet your session chair and get your "speakers present" in the “Symposium Officers Lounge”, room G 60, at the following times:

Tue morning sessions: 09:30 sharp
Tue afternoon sessions: 13:30 sharp
Wed morning sessions: 08:30 sharp
Wed afternoon sessions: 14:15 sharp
Thu morning sessions: 08:30 sharp
Thu afternoon sessions: 13:30 sharp

For details on projection, video projector, slides etc. please refer to the speakers instruction sheet, available at the information desk.
### Symposium Program EMC Zurich

**Tuesday, February 15, 2005**

#### Opening Ceremony  Room Audimax

- **Keynote speech**: "EMC Paints the Lane Marks on the Wireless Information Superhighway" by Mike Marcus, Visiting Researcher at école Nationale Supérieure des Télécommunications.

#### Session 1:  Room F1

**Broadband Powerline Communications [BPC]**

- **Chair**: Mike Marcus

  - **Technical considerations for broadband powerline (BPL) communication**: Robert G. Olsen*, Washington State University, USA
  - **Sensitivity of a short-wave receiving station regarding PLC transmission**: Sven Battermann*, Heyno Garbe: University of Hannover, Germany
  - **Effects of broadband over power line communication systems on aeronautical HF-services**: Frank Sabath: Federal Armed Forces Research Institute for Protective Technologies and NBC Protection, Munster, Germany; Lawrence Steven Cohen*, Edmond Tomas: US Naval Research Laboratory, Washington DC, USA

#### Session 2:  Room E7

**EMC in Communications [Com]**

- **Chair**: Pascal Leuchtmann

  - **Higher-order effects of radiated interference - future challenging research domains within EMC in dynamic wireless communication networks**: Peter F. Stenumgaard*, Swedish Defence Research Agency; Leif Junholm: Swedish Defence Materiel Administration

#### Session 3:  Room F7

**Reverberation Chambers and TEM Cells [Rev]**

- **Chair**: Heyno Garbe

  - **Parameter estimates for the stirrer efficiency in reverberation chambers**: Niklas Wellander*, Olof Lundén, Mats Bäckström: Swedish Defence Research Agency, Sweden
  - **Mode perturbation induced by the stirrer rotation in a reverberating chamber**: Gerard Orjubin*, Elodie Richalot, Stephanie Mengue, Odile Picon: Université de Marne la Vallée, France
  - **The influence of stirrer size and chamber load on the number of uncorrelated samples created in a reverberation chamber**: Magnus Otterskog*: Örebro University, Sweden
  - **Modeling coupling phenomena between septum and loop at low frequency**: Aubry Picard*, François Fouquet, Anne Louis, Belahcène Mazari: IRSEE-MESIGELEC, Rouen, France; Olivier Maurice: EADS, France; Bernard Demoulin: IEMN-TELICE, Lille, France

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*SC*: Speaker

*SC*: Student Contest

**Bandwidth conversion of the amplitude probability distribution for emission requirements of pulse modulated interference**: Kia Wiklund*: Swedish Defence Research Agency, Sweden

**Immunity of bluetooth-transmitters against interfering electromagnetic fields with high field-strengths**: Adrien Schoof*, Jan Luiken ter Haseborg: Hamburg University of Technology, Germany

**Electromagnetic emission of xDSL systems transmitted on twisted copper pairs**: Fahd Hassoun: Blaise Pascal University (Clermont–Ferrand), France; Ahmed Zeddam, Rabah Tarafi, J. – M. Debraux: France Télécom
Session 4: Room F3

Miscellaneous [Misc]

Armin Kälin

Band ratio and frequency-domain norms: Carl E. Baum*, Air Force Research Laboratory, USA; Daniel H Nitsch, German Armed Forces Institute for Protective Technologies, Münster, Germany

Managing EMC and safety compliance for telecommunication products: Subramanian Chidambaram*, Hewlett Packard, Singapore

Distribution of levels of intrasystem electromagnetic interference in systems of co-located radio equipment: Mikalai I. Azamatov: Defence Industry Committee of the Republic of Belarus; Uladzimir I. Valoshy*, Yury I. Masiyenka: Agat State Research and Production Association, Minsk, Belarus

Experimental and theoretical studies on the Schumann resonance magnetic polarization in the gyrotropic earth-ionosphere cavity: Vladimir G. Bezrodny*, Oleg V. Budanov, Alexander V. Koloskov, Yuri M. Yampolski: Institute of Radio Astronomy, Ukraine

Session 5: Room F1

History of EMC [Hist]

Rüdiger Vahldieck

A general history of the evolution of the discipline of EMC: Daniel D. Hoolihan*, Hoolihan EMC Consulting, USA; Nigel Carter, QinetiQ, UK

Three decades of EMC Zurich and the impacts of a changing environment: Peter E. Leuthold*: Communication Technology Laboratory, ETH Zurich, Switzerland

A history of the evolution of EMC regulatory bodies and standards: Donald Heirman*, New Jersey, USA; Manfred Stecher, Rohde and Schwarz, Germany

14:00 – 17:10

Session 6: Room E7

Automotive EMC [Auto]

Chair

Robert Weigel

Simulating the electromagnetic susceptibility of automotive vehicles in their early design stage: Frédéric Bocquet: RENAULT Research Center, France; Jean-Claude Kedzia*: ESI Group, Rungis, France

Harness influence in bulk current injection testing: Frédéric Lafon*, Laurent Caves, VALEO EMC Departement, Créteil, France; François De-daran: VALEO, Center of electronic expertise, Créteil, France

Periodic frequency modulation applied to noise cancellation between power and communication buses: Alfonso Santolaria, David Gonzalez, Javier Gago, Josep Balcells: Universitat Politècnica de Catalunya, Spain; Stephane Brehaut, Jean-Charles Le Bunetel, Didier Magnon: Université François Rabelais, Tours, France

Investigation of automotive emissions measurement frequencies, test methods and operating modes: Alastair R. Ruddle*: MIRA Limited, Warks, UK

Application of geometry based strategies in the development of EMC-conformable motors in the automotive industry: Linh-Thai Stubenbord*, Claus Schmiederer: Robert Bosch GmbH, Germany

Influence of the PCB traces of an automotive electronic equipment in the case of random cable harnesses: Stephane Egot*, Marco Klingler: PSA Peugeot Citroën, France; Lamine Kone, Sylvie Baranouski, Bernard Demoulin: Université des Sciences et Technologies de Lille, France
Application of adaptive scheme for the method of moments in automotive EMC problems: Roman Jobava*, Faik Bogdanov, Anna Gheonjian: EMCoS, Tbilisi, Georgia; Stephan Frei: AUDI AG, Ingolstadt, Germany

**Session 7: Room F7**

**Bioelectromagnetics [Bio]**

Michal Okoniewski

Spectral analysis of simulated currents for the study of the interaction between electromagnetic fields and cellular ionic channels: Alessandra Paffi*, Giuseppe Cotignola, Micaela Liberti, Francesca Apollonio, Guglielmo D’Inzeo: “La Sapienza” University of Rome, Italy

MSRC measurements of high frequency non ionizing electromagnetic radiations [NIR] on living organisms: David Roux*, Alain Vian, Pascale Goupil, Gérard Ledoigt, Sébastien Girard, Françoise Paladini, Pierre Bonnet: Blaise Pascal University (Clermont-Ferrand II), France

Modelling electromagnetic field exposure and SAR in vehicles due to on-board transmitters: Alastair R. Ruddle*: MIRA Limited, Warks, UK

The estimation of the maximum SAR with respect to various types of wireless device usage: Teruo Onishi*, Takahiro Iyama, Shinji Uebayashi: NTT DoCoMo, Inc., Japan

FDTD analysis of SAR from a cell phone inside a vehicle: Gabriel Anzaldi*: Technical Superior School, Buenos Aires, Argentina, Eduard Canela, Pere Riu, Ferran Silva: Technical University of Catalonia, Spain

The SAR evaluation method with optical fiber thermometer: Yoshinobu Okano*, Youji Sugama, Minoru Abe: Musashi Institute of Technology, Tokyo, Japan

Wednesday, February 16, 2005

**Session 8: Room F1**

**Sensors and Antennas [Sens]**

Jan Luiken ter Haseborg

Time domain characteristics of resistively-loaded electric field sensors: James McLean*: TDK R&D Corp., Texas, USA; Heinrich Foltz, Robert Sutton: The University of Texas – Pan Am, USA

Comparison between three antenna method and measuring impedance method for the antenna factor of a small half loop antenna: Masanori Ishii*, Koji Komiyama: National Institute of Advanced Industrial Science and Technology, National Metrology Institute of Japan

A novel indirect method to determine the radiation impedance of an unknown antenna structure: Jari O. Jekkonen*: NOKIA Corporation, Finland; Ian D. Flintoft, Myles H. Capstick, Andrew C. Marvin: University of York, UK

Analyzing the coupling principles of radiated immunity tests for automotive components in the UHF-band: Bernd Koerber*, Dieter Sperling: Zwickau University of Applied Sciences, Germany; Karl-Heinz Gonschorek, Dresden University of Technology, Germany

Calibration of small antennas in a GTEM cell: Claudio Piatti, Marco Falda, Alessandro Giardina: TESEO S.p.A., Druento (Torino), Italy; Michele Borsero*, Giuseppe Vizio: IEN Galileo Ferraris, Torino, Italy; Ernesto Arri: Polytechnic of Turin, Italy

Quasi free-space antenna calibration in anechoic room: Frédéric Conrad Pythoud*: Swiss Federal Office of Metrology and Accreditation, Switzerland

Requirement to input impedance of common mode absorbing device: Peter Mosshammer*: emc GmbH, Traufkirchen, Germany; Lutz Dunker: Regulierungsbehörde für Telekommunikation und Post, Berlin, Germany
Session 9: Room E7

Lightning and its Effects I [Light1]

Vladimir A. Rakov

Simple model of repeating lightning-leader pulses: Carl E. Baum*, Air Force Research Laboratory, USA

Incorporation of distributed capacitive loads in the antenna theory model of lightning return stroke: Siamak Bonyadi-ram*, Rouzbeh Moini, Seyed Hossein Sadeghi: Amirkabir University of Technology, Tehran, Iran; Vladimir Rakov: University of Florida, USA

Influence of lightning channel tortuosity and branches on a magnetic field distribution: Grzegorz Maslowski*: Rzeszow University of Technology, Poland

Time-frequency resolution of the electric field radiated from a lightning discharge: Stefano Marchi*, Riccardo Enrico Zich: Politecnico di Milano, Italy

A method approach for lightning return stroke characterization: Joan Montanya*, Pedro Rodriguez, David Romero: Technological University of Catalonia, Spain; Blas Hermoso: Public University of Navarre, Spain; Angel Illa: INGESCO, Terrassa (Barcelona), Spain

The temporal characteristics of leader fields at ground level when a part of the lightning channel is inclined: Chandima Gomes*: University of Colombo, Sri Lanka; Vernon Cooray: Uppsala University, Sweden

Finite difference analyses of Schumann resonance and reconstruction of lightning distribution: Yoshiaki Ando*, Masashi Hayakawa: The University of Electro-Communications, Tokyo, Japan

Session 10: Room F7

Chip Level EMC (invited) [Chip]

Albert Rühli

Single summation expression for the rectangular power ground plane cavity: Joe Trinkle*: University of Western Australia; Antonio Cantoni: Western Australian Telecommunications Research Institute

The impact of decoupling capacitors on the impedance of rectangular PCB power-bus structures: Matthias Hampe*, Stefan Dickmann: Helmut-Schmidt-University, Hamburg, Germany

Impedance analysis of power ground planes loaded with multiple capacitors: Joe Trinkle*: University of Western Australia; Antonio Cantoni: Western Australian Telecommunications Research Institute

Mixed volume and surface PEEC circuit and electromagnetic solver: Albert E. Ruehli*: IBM Research Division, Yorktown Heights, USA; Dipanjan Gope, Vikram Jandhyala: University of Washington, Seattle, USA

Parasitic extraction and simulation of simultaneous switching noise in on-chip power distribution networks: Subramanian N. Lalgudi, Jifeng Mao, Madhavan Swaminathan: Georgia Institute of Technology, Atlanta, USA

PCB interconnects characterization from S-parameter measurements: Vittorio Ricchiuti*: Siemens CNX S.p.A., Italy; Antonio Orlandi, Giulio Antonini: Univ. of L’Aquila, Italy

Analog and mixed-signal simulation of EMC at system level: Flavio G. Canavero*, Stefano Grivet-Talocia, Ivano A. Maio, Igor Simone Stievano: Politecnico di Torino, Italy

Adaptive broadband macromodeling of passive high-speed components using vector fitting: Tom Dhaene*: University of Antwerp, Belgium
Session 11: Room F1

EMC Innovation [Innov]

Antonio Orlandi

Source identification of electromagnetic radiation in electronic circuits using artificial neural network:
Kraison Aunchaleewarapan: Electrical and Electronic Products testing center, Bangkok, Thailand; Sathit Intrajak*, Werachate Khan-Ngern, Yothin Preampanee: King Mongkut’s Institute of Technology, Thailand; Prasit Teekaput: Chulalongkorn University, Thailand; Shuichi Nitta: Salasian Polytechnic, Tokyo, Japan

2mm industrial connector modeling with EM-ANN and polynomial description: Arnaud Argouarch*, Gérard Levanic: Thales Airborne System, Brest France; Mhamed Drissi: IETR CNRS UMR Rennes, France

Experimental study of thermal influence on EMC emissions of digital circuit on PCB: Jean-marc Dienot*: LESIA/ IUT Tarbes, France; Lourdel Guillaume: PEARL/ALSTOM, France

Influence of the short-channel effects in HEMTs on EMC characteristics of the HEMT-based amplifier: Igor V. Khrebtov*, Anatoly M. Bobreshov: Voronezh State University, Russia

A universal method for setting up macromodels from frequency response of devices: Nikolay Korovkin*, T. Minevich: State Polytechnic University, St. Petersburg, Russia

A new broadband double ridge guide horn with improved radiation pattern for electromagnetic compatibility testing: Vicente Rodriguez*: ETS-Lindgren, USA

Session 12: Room E7

Lightning and its effects II [Light2]

Riccardo Zich

The performance of charge transfer system against lightning rod at the communication towers analyzed by using lightning video system and Rogowski coils:
Annuar Ramli, Nurul Idris, Baharin Shariff, Telekom Research & Development Sdn Bhd, Malaysia

A novel model for lightning induced current computation: Aref E. Slama*: Villanova University, USA; Jack Nachamkin: Boeing Company, USA

A wavelet based classifier for classification of cloud-to-ground lightning strokes:
Keyhan Sheshyekani, Paria Sattari, Aryan Nicoomanesh, Hossein Sadeghi*, Rouzbeh Moini: University of Technology, Tehran, Iran

Electromagnetic radiated field by a direct lightning stroke on an aircraft model: Edoardo Alfassio Grimaldi*, Morris Brenna, Fulvio Martinelli, Riccardo Enrico Zich: Politecnico di Milano, Italy

Model variations of global lightning activity derived from the optical transient detector data: Alexander P. Nickolaenko*: Ukrainian National Academy of Sciences, Kharkov, Ukraine; Olga Pechony, Colin Price: Tel Aviv University, Israel; Gabriella Satori: Hungarian Academy of Sciences, Hungary

Session 13: Room F7

Chip and Package Level EMC [ChiPa]

Giulio Antonini

A modal transmission technique providing a large reduction of crosstalk and echo: Frédéric Broydè*, Evelyne Clavelier: Excem, Maule, France
Accurate identification long interconnects with the generalized method of characteristics: Massimiliano de Magistris, L. De Tommasi, G. Miano: Università di Napoli Federico II, Italy; A. Maffucci: Università di Cassino, Italy

Using ICEM models for substrate noise: Olivier Valorge*, Pierre Dautriche: STMicroelectronics, Grenoble, France; Bertrand Vignon: STMicroelectronics, Crolles, France; Cristian Andrei, Francis Calmon, Christian Gontrand, Jacques Verdier: LPM INSA Lyon, Villeurbanne, France

Assessment of resonance properties of electrically small PCBs via radar cross-section measurements in a GTEM cell: David Pouhé*, Gerhard Mönich, Wilfried Fami Kemi: Technical University Berlin, Germany

Analysis of the effect of radio frequency interference on the DC performance of operational amplifiers: Muhammad Taher Abuelmaatti*: King Fahd University of Petroleum and Minerals, Saudi Arabia

A PLL-based clock generator with improved EMC: Fabio Pareschi*, Luca Antonio De Michele, Riccardo Rovatti, Gianluca Setti: University of Bologna, Italy and University of Ferrara, Italy

Fast pulse testing of power system control equipment to determine their susceptibility to HEMP conducted transients: Edward Savage*, Kenneth Smith, Michael Madrid, James Gilbert, William Radasky: Metatech Corporation, Goleta, California USA

Simulator test results of the withstand of distribution class insulators to steep-front/short duration (SFSD) impulses to simulate the early-time HEMP: John G. Kappenman*: Metatech Corporation, Duluth (MN), USA; William A. Radasky: Metatech Corporation, Goleta (CA), USA; Stan Grzybowski, Y Song: Mississippi State University (MS), USA

Research of power line insulator flashover due to the joint effect of a high voltage disturbance and line operating voltage: A. Kozlov, S. Louzganov, Yu. Parfenov, M. Povareshkin, V. Polischouk, A. Shurupov, L. Zdoukhov: Institute for High Energy Densities, Moscow, Russia; William Radasky: Metatech Corporation, Goleta, California USA

Thursday, February 17, 2005

Session 14: Room F1

HEMP Effects (invited) [Hemp]

William Radasky

The effects of HEMP and UWB pulses on complex computer systems: Daniel Nitsch, Andre Bausen, Jörg Maack: Research Institute for Protective Technologies, Münster, Germany; Roland Krzikalla*, Technical University of Hamburg–Harburg, Germany

A study and improvement of open-ended coaxial probe used for near-field measurements: David Baudry*, Anne Louis, Bélahcène Mazari: IRSEE, Technopôle du Madrillet, France

Complex deconvolution for improvement of standard monopole in near-field measurement results: Adam Tankielun*: University of Paderborn, Germany; Uwe Keller, Werner John: Fraunhofer Institute for Reliability and Microintegration, Germany; Heyno Garbe: University of Hanover, Germany

Multi-purpose anechoic chambers - EMC (SAR/FAR) to antenna measurements: Martin A.K. Wiles*: ETS-Lindgren, UK; Alexander Kriz: ARC Seibersdorf Research GmbH, Austria
How to test emissions of really big machines.
Investigations to improve the test wire method:
Karl-Heinz Gonschorek, Samuel Hochauf*:
Dresden University of Technology, Germany; Franz Schlagenhauffer: The University of Western Australia

Session 16: Room F7
Computational Electromagnetics I [Comp1]
Daniel de Zutter
EMC relevant arrangements - a combination of MoM and GMT: Stefan Balling*, Dirk Plettemeier, Karl-Heinz Gonschorek: Technical University of Dresden, Germany
A partitioned MoM scheme for treating EMC problems on a series of geometries with a predominant common part: Faik G. Bogdanov, Roman Jobava*, Paata Tsereteli: EMCoS, Tbilisi, Georgia; Stephan Frei: AUDI AG, Ingolstadt, Germany
Geometrical optimization embedded in the method of moments: Natalie Baganz, Dirk Plettemeier, Karl-Heinz Gonschorek: Dresden University of Technology, Germany
Combined-node moment method analysis of through hole vias: Reza Sabbagh Amirkhizi*, Hermann Singer: Hamburg University of Technology, Germany
Boundary integrodifferential equations for the solution of electromagnetic scattering problems for metal-dielectric bodies: Alexei M. Serebrennikov* Permn Federal Technical University and Ural Branch of Russian Academy of Sciences, Russia
Numerical simulation of power-bus structures: Marco Leone*: Siemens AG, Germany; Heinz-D. Brüns, Dietmar Leugner: Technische Universität Hamburg-Harburg, Germany

Session 17: Room F1
Power System EMC I [Pow1]
Farhad Rachidi
Electric power grid vulnerability to natural and intentional geomagnetic disturbances: John G. Kappenman*: Metatech Corporation, Duluth (MN), USA; William A. Radasky, James L. Gilbert: Metatech Corporation, Goleta (CA), USA
Electromagnetic noise emission measurements near the FACTS device at the inez (AEP) station: David Klineck, David Nichols, Ben Mehraban: American Electric Power, Columbus (Ohio), USA; Stephen Sebo, Longya Xu, Xin Liu: The Ohio State University, USA; Brian Cramer, Michael Silva: EPRI, Palo Alto (California), USA; Robert Olsen*: Washington State University, USA; Jerry Ramie: ARC Technical Resources, Inc., San Jose (California), USA
Analysis of the heatsink influence on conducted EMI generation in SMPS: Andrea Dolente*, Ugo Reggiani, Leonardo Sandrolini, Francesco Ballerini: University of Bologna, Italy
Crossed-frequency-admittance matrix approach for voltage quality study in distribution power system: Andrzej Bachry, Rainer Krebs: Siemens AG, Germany; Cezary Dzienis*, Zbigniew Styczynski: Otto-von-Guericke-University Magdeburg, Germany
Session 18: Room E7

Measurement Validation [MeaV]

Chair: Ralf Vick

A practical analysis of test site validation methods for radiated RF measurements above 1 GHz: Angela Nothofer*, David Knight, Martin Alexander: National Physical Laboratory, UK; Andrew Rowell, Andrew Ward, Andy Marvin: University of York, UK

Inter-laboratory tests of electromagnetic field measurements: Michael Mann*, Bernd Gutheil, Karsten Glöser, Paul Weiß: University of Kaiserslautern, Germany; Hauke Brüggemeyer, Lower Saxony State Office for Ecology, Germany

Reduction of the uncertainty in radiated susceptibility testing by introduction of the compound polarisation efficiency: Magnus Höijer*: Swedish Defence Research Agency FOI, Sweden

Practical validation of a low cost truck container as EMC pre-compliance test facility: Wilbert M. Ellema*: Queensland University of Technology, Australia

Session 19: Room F1

Power System EMC II [Pow2]

Chair: Michel Ianoz

Voltages and currents distribution along an A.C. electrified railway line: Comparison between Measurements and Calculations: Giovanni Lucca*, Livio Zucchelli, Maurizio Moro, Alberto Pagani: Sirti S.p.A., Italy

Calculation of overvoltage of powertransformer windings under VFTO based on network functions: Guishu Liang, Xile Zhang, Xiaohui Wang, Xiang Cui: North China Electric Power University, China

Calculation of very fast transient overvoltages in transformer windings: Xile Zhang, Guishu Liang, Haifeng Sun, Xiang Cui: University of North China, Hebei

Application of the wavelet transform to the analysis of conducted EMI in SMPSs: Luisa Coppola*, Simone Buso: University of Padova, Italy

Interactions between an input EMI filter and a power supply: Stéphane Brehaut, Jean-Charles Le Bunetel, Didier Magnon: Laboratoire de Micro-électronique de puissance Tours, France; Antoine Pazo: SAFT POWER SYSTEMS GROUP, Chambry-Lès-Tours, France; Alfonso Santolaria, David González*, Javier Gago, Josep Balcells: Universitat Politécnica de Catalunya, Spain

Radio frequency characteristics of high power common-mode chokes: Stefan-Peter Weber*, Marcus Schinkel, Eckart Hoene, Stephan Guttowski, Werner John, Herbert Reichl: Fraunhofer I2M, Berlin, Germany

Common mode current generated by multiple transient sources on grounding grids: Marcos Mattos: Okime Eletromagnetismo Aplicado, São Paulo, Brazil

Session 20: Room E7

System Level EMC [SysL]

Chair: Frank Leferink

Proposal of a modified Kron computation technic for complex EMC problems: Olivier Maurice*: EADS-CCR, Suresne, France; Mohamed Ramdani: ESEO, Angers, France; Aubry Picard, François Fouquet: ESIGELEC, St. Etienne du Rouvray, France

Analysis of the wire coupling under an aperture illuminated by an incident field by means of a topological approach: Phumin Kirawanich, Nakka S. Kranthi, A.R. Stillwell, Naz E. Islam: University of Missouri, Columbia (MO), USA; Forrest J. Agee*: Air Force Office of Scientific Research, USA; Sumuru Joe Yakura: Air Force Research Lab, USA

Modeling of a large ground structure by an equivalent circuit for low frequency applications: Thimo Stadtler*, Jan Luiken ter Haseborg: Hamburg University of Technology, Germany
A closed-form formulation for the total power radiated by a single-wire overhead line: Andrea Cozza*, Flavio Canavero: Politecnico di Torino, Italy; Bernard Demoulin: Université des Sciences et Technologies de Lille, France

Session 21: Room F7
Computational Electromagnetics II [Comp2]

Chair

Hermann Singer

Efficient generalized circuital analysis of rectangular semi-anechoic chambers and NSA computation: Ignacio Monterde*, Luis Nuno, Juan V. Balbastre: Universidad Politécnica de Valencia, Spain; Fernando D. Quesada: Universidad Politécnica de Cartagena, Spain

Cubic and corrugated reverberation chambers: mode distribution, correlation and field uniformity: Christian Bruns*, Pascal Leuchtmann, Ruediger Vahldieck: ETH Zürich, Switzerland

Stability of full-wave PEEC models: reason for instabilities and way for correction: Sergey V. Kochetov*, Guenter Wollenberg: Otto-von-Guericke-University of Magdeburg, Germany

Optimization of the matching network for microstrip-like antennas using genetic algorithm: Jalil Rasekhi*, Jalil Rashed-Mohassel: Univ. of Tehran, Iran

Session 22: Room E7
Transmission Lines [Trans]

Chair

Jean-Phillipe Parmantier

Transfer admittance and impedance for shielded coaxial cables: evaluation by voltage measurements and model tuning: Giulio Antonini, Antonio Orlandi*, Romeo Michele Rizzi: University of L’Aquila, Italy

Effect of modelling fringing and losses for a microstrip on the radiated emission characteristics: Bert W.J. Wong: Curtin University of Technology, Perth WA, Australia; Antonio Cantoni, Kevin Fynn: Western Australian Telecommunications Research Institute; Joe Trinkle: University of Western Australia

Numerical investigation of crosstalk effect in coupled coplanar waveguides with linear frequency dependent loads: Tomasz Stefanski*, R&D Marine Technology Centre, Poland; Bogdan J. Janiczak: Gdańsk University of Technology, Poland

Inclusion of proximity effect on full-wave analysis of interconnects with arbitrary conductor shapes: Antonio Maffucci, Fabio Villone: Università di Cassino, Cassino, Italy; Giovanni Miano, Università di Napoli Federico II, Italy

Session 23: Room F7
EMC Protection [Prot]

Chair

Robert Olsen

Ageing of shielding joints; shielding performance and corrosion: Lena Sjögren*: Swedish Corrosion Institute, Stockholm, Sweden; Mats Bäckström: Swedish Defence Research Agency, Sweden

Shielding effectiveness of woven carbon fiber composite materials for aerospace applications: Simon Paul Rea*, David Linton: Queens University, Belfast, UK; Eddie Orr, Jonathan McConnell: Bombardier Aerospace, Belfast, UK

Study on reducing common-mode current on a wire through an aperture with a ring stack: Sungtek Kahng*: University of Incheon, Korea
Students Contest

Papers taking part in the students contest have a poster presentation in addition to the regular presentation at the symposium. The posters are presented by the student authors in the exhibition hall on Wednesday 13:00–15:30. Refreshments are offered to all conference participants visiting this event. A jury will rate the presentations and the winners will be invited to the conference banquet in order to receive the prices.

Topical Meeting on Biomedical EMC

Wednesday, February 16, 2005

Session 1: Room F3

Medical I

Elise Fear and Susan Hagness

Thermal analysis of catheter antennas for microwave ablation therapy: Stefano Pisa, Marta Cavagnaro, Emanuele Piuze, Paolo Bernardi: University of Rome, Italy; James C. Lin: University of Illinois, USA

Characteristics of single-arm microstrip archimedean spiral antennas in near field probing of tissue: Svein Jacobsen*: University of Tromsø, Norway; Hans Olav Rolfsnes, Paul Stauffer: University of California, USA

A quantitative comparison of calculated and measured 3-D temperature data sets using a 3-D hyperthermia applicator inside a 1.5 Tesla tunnel-type MR tomograph: Jacek Nadobny, Waldemar Włodarczyk, Lothar Westhoff, Johanna Gellermann, Roland Felix, Peter Wust: Charité Universitätsmedizin Berlin, Germany

Pulsed response of optimally absorbing tissue layers for hyperthermic applications: Daniel Razansky, Pinchas D. Einziger, Dan R. Adam: Technion – Israel Institute of Technology, Israel

Session 2: Room F3

Medical II

Elise Fear and Susan Hagness

Tissue sensing adaptive radar for breast tumour detection: Investigation of issues for system implementation: Jeff M. Sill, Trevor C. Williams, Elise C. Fear: University of Calgary, Canada
### Symposium Sessions

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<th>Day</th>
<th>Time</th>
<th>Room</th>
<th>Chair</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Broadband Powerline Communications</td>
<td>[BPC]</td>
<td>Tue</td>
<td>11:00-12:10</td>
<td>F1</td>
<td>Mike Marcus</td>
</tr>
<tr>
<td>2.</td>
<td>EMC in Communications</td>
<td>[Com]</td>
<td>Tue</td>
<td>11:00-12:30</td>
<td>E7</td>
<td>Pascal Leuchtmann</td>
</tr>
<tr>
<td>3.</td>
<td>Reverberation Chambers and TEM Cells</td>
<td>[Rev]</td>
<td>Tue</td>
<td>11:00-12:30</td>
<td>F7</td>
<td>Heyno Garbe</td>
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<td>4.</td>
<td>Miscellaneous</td>
<td>[Misc]</td>
<td>Tue</td>
<td>11:00-12:10</td>
<td>F3</td>
<td>Armin Kälin</td>
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<td>5.</td>
<td>History of EMC</td>
<td>[Hist]</td>
<td>Tue</td>
<td>14:00-16:30</td>
<td>F1</td>
<td>Rüdiger Vahldieck</td>
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<td>6.</td>
<td>Automotive EMC</td>
<td>[Auto]</td>
<td>Tue</td>
<td>14:00-17:10</td>
<td>E7</td>
<td>Robert Weigel</td>
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<tr>
<td>7.</td>
<td>Bioelectromagnetics</td>
<td>[Bio]</td>
<td>Tue</td>
<td>14:00-16:50</td>
<td>F7</td>
<td>Michal Okoniewski</td>
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<tr>
<td>8.</td>
<td>Sensors and Antennas</td>
<td>[Sens]</td>
<td>Wed</td>
<td>09:00-12:30</td>
<td>F1</td>
<td>Jan Luiken ter Haseborg</td>
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<td>9.</td>
<td>Lightning and its Effects I</td>
<td>[Light1]</td>
<td>Wed</td>
<td>09:00-12:10</td>
<td>E7</td>
<td>Vladimir A. Rakov</td>
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<td>10.</td>
<td>Chip Level EMC</td>
<td>[Chip]</td>
<td>Wed</td>
<td>09:00-12:30</td>
<td>F7</td>
<td>Albert Rühl</td>
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<td>11.</td>
<td>EMC Innovation</td>
<td>[Innov]</td>
<td>Wed</td>
<td>14:45-17:30</td>
<td>F1</td>
<td>Antonio Orlandi</td>
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<td>13.</td>
<td>Chip and Package Level EMC</td>
<td>[ChiPa]</td>
<td>Wed</td>
<td>14:45-17:30</td>
<td>F7</td>
<td>Giulio Antonini</td>
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<td>14.</td>
<td>HEMP Effects [invited]</td>
<td>[Hemp]</td>
<td>Thu</td>
<td>09:00-10:30</td>
<td>F1</td>
<td>William Radasky</td>
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<td>15.</td>
<td>Emission Testing</td>
<td>[EmT]</td>
<td>Thu</td>
<td>09:00-10:30</td>
<td>E7</td>
<td>Karl-Heinz Gonschorek</td>
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<td>16.</td>
<td>Computational Electromagnetics I</td>
<td>[Comp1]</td>
<td>Thu</td>
<td>09:00-12:30</td>
<td>F7</td>
<td>Daniel de Zutter</td>
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<td>17.</td>
<td>Power System EMC I</td>
<td>[Pow1]</td>
<td>Thu</td>
<td>11:00-12:30</td>
<td>F1</td>
<td>Farhad Rachidi</td>
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<td>18.</td>
<td>Measurement Validation</td>
<td>[MeaV]</td>
<td>Thu</td>
<td>11:00-12:30</td>
<td>E7</td>
<td>Ralf Vick</td>
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<td>19.</td>
<td>Power System EMC II</td>
<td>[Pow2]</td>
<td>Thu</td>
<td>14:00-17:10</td>
<td>F1</td>
<td>Michel Ianoz</td>
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<td>20.</td>
<td>System Level EMC</td>
<td>[SysL]</td>
<td>Thu</td>
<td>14:00-15:30</td>
<td>E7</td>
<td>Frank Leferink</td>
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<td>21.</td>
<td>Computational Electromagnetics II</td>
<td>[Comp2]</td>
<td>Thu</td>
<td>14:00-15:30</td>
<td>F7</td>
<td>Hermann Singer</td>
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<td>22.</td>
<td>Transmission Lines</td>
<td>[Trans]</td>
<td>Thu</td>
<td>16:00-17:30</td>
<td>E7</td>
<td>Jean-Phillipe Parmantier</td>
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<td>23.</td>
<td>EMC Protection</td>
<td>[Prot]</td>
<td>Thu</td>
<td>16:00-17:10</td>
<td>F7</td>
<td>Robert Olsen</td>
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</table>

### Topical Meetings Sessions

<table>
<thead>
<tr>
<th>Meeting</th>
<th>Session</th>
<th>Day</th>
<th>Time</th>
<th>Room</th>
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<tbody>
<tr>
<td>Biomedical</td>
<td>Medical I</td>
<td>Wed</td>
<td>08:00-12:40</td>
<td>F3</td>
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<tr>
<td>Biomedical</td>
<td>Medical II</td>
<td>Wed</td>
<td>14:00-15:20</td>
<td>F3</td>
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<tr>
<td>Biomedical</td>
<td>Low Frequency</td>
<td>Wed</td>
<td>16:00-17:40</td>
<td>F3</td>
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<td>Biomedical</td>
<td>High Frequency</td>
<td>Thu</td>
<td>08:30-12:20</td>
<td>F3</td>
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<tr>
<td>Reverberation</td>
<td>I</td>
<td>Wed</td>
<td>09:00-12:00</td>
<td>E5</td>
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<tr>
<td>Reverberation</td>
<td>II</td>
<td>Wed</td>
<td>14:00-17:00</td>
<td>E5</td>
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<td>COST 281</td>
<td>MCM</td>
<td>Thu</td>
<td>10:00-12:00</td>
<td>G60</td>
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<td>1</td>
<td>Thu</td>
<td>13:00-14:30</td>
<td>G60</td>
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<tr>
<td>COST 281</td>
<td>2</td>
<td>Thu</td>
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<td>4</td>
<td>Fri</td>
<td>12:00-13:30</td>
<td>G60</td>
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All Events at a Glance

Sun | Mon | Tue | Wed | Thu | Fri
---|-----|-----|-----|-----|-----
8:00 |     |     |     |     |     
9:00 |     |     |     |     |     
10:00 |     |     |     |     |     
11:00 |     |     |     |     |     
12:00 |     |     |     |     |     
13:00 |     |     |     |     |     
14:00 |     |     |     |     |     
15:00 |     |     |     |     |     
16:00 |     |     |     |     |     
17:00 |     |     |     |     |     
18:00 |     |     |     |     |     
19:00 |     |     |     |     |     
20:00 |     |     |     |     |     

Opening Ceremony Audi Max
Topical meeting Bio: F3
Poster Apero
Topical meeting Bio: F3
Wine-tasting
Welcome Reception
Symposium Banquet
COST Dinner

EMC_V5_Inhalt.indd   26-27
18.1.2005   19:50:06 Uhr
**Tutorials**

Electromagnetic Simulators — Theory and Practice: from theory to implementation

The Partial Equivalent Circuit (PEEC) Approach: from theory to implementation

Numerical techniques

Experimental Demonstration of EMC Principles

SAR in human organs

**Workshops**

Field-based Synthesis and Computer Aided Design of Electromagnetic Structures

Field Strength Meters / Radiation Monitors

Advances in Site Validation Techniques above 1 GHz

Automotive EMC Simulation

EMC for IC

State-of-the-art of E-safety technology on vehicles

**Social Events**

Wine tasting

Welcome Reception

Poster Apero

Symposium Banquet

Farewell Party

**Session 3:** Room F3

**Low Frequency**

Chair: Maria Stuchly and John Nyenhuis

Electric fields in the human body at power-line frequencies: Maria Anna Stuchly*: University of Victoria, Canada

Modeling of bone marrow cells in low-frequency electric field: Roanna Chiu, Maria Anna Stuchly*: University of Victoria, Canada

Influence on biological tissue by electric current: Andrey N. Volobuev, Aleksandr I. Sirota, Asia U. Bakhito: Samara State University, Russia

Interactions of time varying magnetic fields in MRI with medical implants: John Nyenhuis, Arslan Amjad, Rungkiet Kamondetdacha, Sung-Min Park: Purdue University, USA

Stimulation by pulsed magnetic fields: Werner Irnich: University Hospital, Giessen, Germany
Thursday, February 17, 2005

Session 4: Room F3
High Frequency

Om Gandhi and Gianluca Lazzi

A theoretical and experimental methodology for identifying dielectric models of biological cells: Caterina Merla, Micaela Liberti, Alfonsina Ramundo Orlando, Francesca Apollonio, Guglielmo D’Inzeo: ICEmB, Rome, Italy

MSRC measurements of high frequency non ionizing electromagnetic radiations [NIR] on living organisms: David Roux*, Alain Vian, Pascale Goupil, Gérard Ledoigt, Sébastien Girard, Françoise Paladian, Pierre Bonnet: Blaise Pascal University (Clermont-Ferrand II), France

Wideband complex dipole antenna design for reference measurements in the human body from radio-frequencies in the [5 to 6]GHz band: Daniel R. Brooks, Stuart Nicol, Jacek Wojcik: APREL Laboratories, Canada

Solving biomedical EMC problems using the ADI FDTD method: Stefan Schmidt, Gianluca Lazzi*: North Carolina State University, USA

Non-local coupling: how to overcome problem of large geometric ratio in numerical models: Blaz Valic, Damijan Miklavcic: University of Ljubljana, Slovenia

Averaged SAR computation: A neural network approach: Mauro Francavilla, Andrea Schiavoni: Telecom Italia Lab, Torino, Italy


Wednesday, February 16, 2005

Session 1: Room E5
Reverberation I

Mike Hatfield and Mark Katrancha

Transient reverberation response analysis: A new mode of reverberation chamber operation: Robert E. Richardson, Mike O. Hatfield, Michael B. Slocum, Mark F. Katrancha, Blaise L. Corbett: Naval Surface Warfare Center, Dahlgren, USA

Modal representation of a reverberation chamber for a parametric analysis of the field uniformity: Gérard Orjubin, Elodie Richalot, Stéphanie Mengué, Odile Picon: Université de Marne la Vallée, France

Statistical characterization of reverberation chamber transient response using common CW-analysis tools and methods: Blaise L. Corbett, Robert E. Richardson: Naval Warfare Center, Dahlgren, USA; Theodore H. Lehman: Albuquerque, USA
On the electromagnetic field in loaded reverberating chambers: Paolo Corona, Giuseppe Ferrara, Maurizio Migliaccio: Università degli Studi di Napoli Parthenope, Italy

Design of low cost antennas for reverberation chambers: Michael Hillgärtner, Robert Stonies, Dirk Peter, Edgar Voges: University of Dortmund, Germany Design of low cost antennas for reverberation chambers

Session 2: Room E5

Reverberation II

Chair: Mike Hatfield and Mark Katrancha

How to ... in a reverb chamber: Garth D’Abreu: ETS Lindgren, USA

Challenges in using a reverberation chamber for probe calibration: John M. Ladbury, Galen H. Koepke, Randy Direen: NIST, Boulder, USA; Dennis Lewis: Boeing, Seattle, USA

Metrology applications of reverberation chambers for electromagnetic field probe calibrations and antenna efficiency measurements: Dennis Lewis, Boeing Puget Sound Metrology, Seattle, USA; John Ladbury, National Institute of Standards and Technology, Boulder, USA

PICAROS program: reproducibility validation of radiated immunity and emission measurements in mode stirred reverberation chamber (MSRC): Sébastien Girard, Françoise Paladian, Raphael Vernet, Pierre Bonnet: Blaise Pascal University (Clermont–Ferrand II), France; Fabien Mangeant, Albin Maridet: EADS CCR, Suresnes, France; Vincent Bérat, Régis Seguin: RENAULT Technocentre, France; Rémy Perrot: UTAC/DT/Service CEM, Montlhery, France

Electromagnetic radiation measurements in two specific models of three-dimensional TEM cells: Virginie Deniau, Jean Rioult, Jean-Pierre Ghys: INRETS, France; Marco Klingler: PSA, France; Bernard Démoulin: University of Lille, France; Serge Ficheux: UTAC, France

COST 281

Thursday, February 17, 2005

08:15 – 10:00
Steering Committee Meeting (SCM) in room F 33.4

10:00 – 12:00
Management Committee Meeting (MCM) in room G 60

12:00 – 13:00
Lunch in GEP-Pavillon

Workshop

"Make sinusoidal versus non-sinusoidal wave forms a difference?"

Session 1: Room G60

Modulation of RF-fields in mobile phones and other technologies.

Chair

Mobile communication signals on the air: Werner Bächtold, Swiss Federal Institute of Technology (ETH), Zurich, Switzerland

Signal forms in wireless applications: Jørgen Bach Andersen, Aalborg University, Denmark

Session 2: Room G60

Biological effects of modulated versus nonmodulated fields including extremely high power microwave pulses.

Comparison of continuous wave and pulsed exposure: mechanisms and biological effects: Kenneth R. Foster, University of Pennsylvania, Philadelphia, USA

An Overview of Genotoxic Potential of Electromagnetic Radiation with different modulations in Mammalian Somatic Cells: Vijayalaxmi, University of Texas, San Antonio, USA
### Session 3: Room G60

**Nanosecond Ultra Wideband Pulses in Biotechnology**

11:00 – 11:30

Electro-permeabilization of cells by pulses of high field strength and ultra-short duration: **Ulrich Zimmermann, University of Würzburg, Germany**

11:30 – 12:00

Discussion

### Session 4: Room G60

**Interaction Mechanisms and Safety Standards**

12:00 – 12:30

Microdosimetry, chemical noise and implications for RF effects: **James C. Weaver, Massachusetts Institute of Technology, Cambridge, USA**

12:30 – 13:00

N.N.

13:00 – 13:30

Discussion

13:30 – 14:00

Lunch in GEP Pavillon

14:30 – 16:30

Management Committee Meeting (MCM) in room G 60

### Friday, February 18, 2005

**Session 2 (continued): Room G60**

**Biological Effects of Modulated Versus Nonmodulated Fields Including Extremely High Power Microwave Pulses.**

09:00 – 09:30

Pulse modulation appears crucial for RF-EMF-induced alterations in brain physiology: **Peter Achermann, University of Zurich, Switzerland**

09:30 – 10:00

Climbing the Megawatt-Per-Gram SAR Peak: The Research Into Bioeffects of Extremely High Power Microwave Pulses: **Andrei G. Pakhomov, University of Texas, San Antonio, USA**

10:00 – 10:30

Discussion

10:30 – 11:00

Coffee Break

Coffee Break
Sunday, February 13, 2005

T1 – Tutorials Room E5
Electromagnetic Simulators - Theory and Practice

ORGANIZERS:
D.G. Swanson Jr, M/A-COM, USA
W.J.R. Hoefer, Univ. of Victoria, Canada

SCHEDULE:

8:00
Welcome and Introduction: D.G. Swanson Jr.

8:15
Historical Background and General Field Modeling Strategies: W.J.R. Hoefer

9:00
Questions and Discussion

9:15
The Method of Moments: W.J.R. Hoefer

9:45
Break

10:15
Simulators using Surface Meshing I: D.G. Swanson Jr.

11:00
Questions and Discussion

11:15
Simulators using Surface Meshing II: D.G. Swanson Jr.

12:00
Lunch

13:00
Finite Element, Finite Difference and Finite Integration Methods: W.J.R. Hoefer

13:45
Questions and Discussion

14:00
Finite Difference-Time Domain and TLM Method: W.J.R. Hoefer

14:45
Break

15:15
Simulators using Volume Meshing I: D.G. Swanson Jr.

16:00
Questions and Discussion

16:15
Simulators using Volume Meshing II: D.G. Swanson Jr.

17:00
Closure

Monday, February 14, 2005

T2 – Tutorials Room F3
The Partial Equivalent Circuit (PEEC) Approach: from theory to implementation

ORGANIZERS:
G. Antonini, University of L’Aquila, Italy
A. Ruehli, IBM, T. J. Watson Research Center, USA
J. Ekman, University of Lulea, Sweden

SCHEDULE:

13:30
Overview of the Partial Element Equivalent Circuit (PEEC) Method: A. Ruehli

14:45
Recent Advancements in PEEC Modeling: G. Antonini

15:45
Break and Discussions

16:15
Implementation and Application of the PEEC Method: J. Ekman

T3 – Tutorials Room E5
Numerical Techniques

ORGANIZER:
Tapan K. Sarkar, Syracuse University, USA

SCHEDULE:

08:00
Overview of Numerical methods applicable to EMC problems: Tapan K. Sarkar

08:15
Advantage of modeling using HOBF [higher order basis functions] for solving integral equation based methods: Branko M. Kolundzija: University of Belgrade, Serbia

09:15
Application of FDTD and FVDT for solving EMC problems: François Paladian, Pierre Bonnet, France

10:15
Break/discussions
Friday, February 18, 2005

T5 — Tutorials Room F5

SAR in human organs

L. Inzoli, Italy

Introduction to SAR and application example: Luciano Inzoli

SAR and resulting temperature distribution for microwave exposure up to 30GHz - numerical simulations and measurements: Achim Bahr: IMST GmbH, Germany; Frank Gustrau: FH Dortmund - University of Applied Sciences, Germany

The simulation of HF wave-to-biotissue interactions with Finite Volume unstructured meshing techniques: Amaury Soubeyran et al., EADS/CCR, France

Interference of pacemakers by multimedia communication terminals: Achim Bahr: IMST GmbH, Germany; Frank Gustrau: FH Dortmund - University of Applied Sciences, Germany

T4 — Tutorials Room F5

Experimental Demonstration of EMC Principles

T. Van Doren, EMC Lab. Univ. Of Missouri-Rolla, USA

The path of least impedance and resonance

Break

13:30 – 17:00

13:30

14:30

14:45

15:45

16:00

17:00

Self shielding, grounding, and energy coupling mechanisms

Break

Externally added electric-field, magnetic-field and electromagnetic wave shielding

End
### Sunday, February 13, 2005

#### WS1 — Workshops Room F5

**Field-based Synthesis and Computer Aided Design of Electromagnetic Structures**

**Organizers:**
N.K. Nikolova, McMaster University, Canada  
M.H. Bakr, McMaster University, Canada

#### Schedule:

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
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<tbody>
<tr>
<td>9:00</td>
<td>Opening remarks</td>
</tr>
<tr>
<td>9:30</td>
<td>The origin of nonuniqueness in inverse electromagnetic problems: a review: Natalia K. Nikolova, McMaster University, Canada</td>
</tr>
<tr>
<td>10:00</td>
<td>Solving challenging electromagnetic problems from DC to daylight (almost) on your personal computer: Magdalena Salazar-Palma, Universidad Politécnica de Madrid, Spain; Tapan Sarkar, Syracuse University, USA</td>
</tr>
<tr>
<td>10:30</td>
<td>Application of reduced order models in the optimization of electromagnetic devices: Klaus Krohne, Rüdiger Vahldieck, ETH-Zürich, Switzerland</td>
</tr>
<tr>
<td>10:50</td>
<td>Coffee break</td>
</tr>
<tr>
<td>11:20</td>
<td>Neural networks for fast optimization of EM structures: Qi-Jun Zhang, Carleton University, Canada</td>
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<tr>
<td>11:50</td>
<td>Modeling of electromagnetic sources by means of a genetic algorithm: Margherita Buzzo Margari, Flavio Canavero, Politecnico di Torino, Italy; Manuela Baroni, Filippo Marliani, ESA - ESTEC</td>
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<tr>
<td>12:20</td>
<td>Lunch break</td>
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### WS2 — Workshops Room F1

**Field Strength Meters / Radiation Monitors**

**Organizer:**
T. Schrader, PTB, Germany

#### Schedule:

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<thead>
<tr>
<th>Time</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:30</td>
<td>Technical specifications of radiation monitors: Zhong Chen, ETS Lindgren</td>
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<tr>
<td>14:10</td>
<td>Survey of international probe calibration standards and practices: Tim Harrington, US Federal Communications Commission</td>
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<tr>
<td>14:50</td>
<td>Aspects of field strength meters and „radiation monitors“ used for public and occupational safety: Hannah Heinrich, 2h-engineering, Hausen</td>
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<tr>
<td>Time</td>
<td>Event</td>
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<tr>
<td>15:20</td>
<td>Coffee break</td>
</tr>
<tr>
<td>15:40</td>
<td>Field strength meters / radiation monitors: Experiences of a calibration laboratory: Frederic C. Pythoud, metas, Switzerland</td>
</tr>
<tr>
<td>16:20</td>
<td>Applying data from a calibration certificate to a user’s measurement uncertainty budget: Reiner Pape, Klaus Münster, Thorsten Schrader, PTB, Germany</td>
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**Monday, February 14, 2005**

**WS3 – Workshops Room F3**

**Advances in Site Validation Techniques above 1 GHz**

**Organizer:** M.D. Foegelle, ETS-Lindgren, USA

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>08:00</td>
<td>Advances in site validation techniques above 1 GHz: Donald Heirman, Don HEIRMAN Consultants, USA</td>
</tr>
<tr>
<td>08:25</td>
<td>Site validation above 1 GHz [CISPR SC/A proposals]: Clark Vitek, Senior EMC Engineer, extreme networks, USA</td>
</tr>
<tr>
<td>08:50</td>
<td>Antenna characteristics above 1 GHz: Michael D. Foegelle, ETS-Lindgren, USA</td>
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<tr>
<td>09:15</td>
<td>Chamber validation using a field probe: Alexander Kriz, ARC Seibersdorf Research GmbH, Austria</td>
</tr>
<tr>
<td>09:40</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>10:10</td>
<td>CISPR &gt; 1GHz round robin: Ken Hall, HP, USA</td>
</tr>
<tr>
<td>10:35</td>
<td>Calibrating antennas above 1 GHz: A practical approach: David Gentle, National Physical Laboratory, UK</td>
</tr>
<tr>
<td>11:00</td>
<td>Analysis of 1-18 GHz biconical antennas - from a CISPR perspective: Dieter Schwarzbeck, Schwarzbeck Mess-Elektronik, Germany</td>
</tr>
<tr>
<td>11:25</td>
<td>Sources of uncertainty for emission measurements above 1 GHz: Pierre Beeckman, Philips, Netherlands</td>
</tr>
<tr>
<td>12:00</td>
<td>Closure</td>
</tr>
<tr>
<td>13:30</td>
<td>Automotive EMC Simulation Room F3</td>
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<tr>
<td>13:30</td>
<td>Automotive EMC simulation process and methods: Gernot Steinmair, BMW Group, Germany</td>
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<tr>
<td>13:35</td>
<td>Emission models for VLSI ICs: Thomas Steinecke, Infineon Techn., Munich, Germany</td>
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<tr>
<td>14:00</td>
<td>EMC-Simulation on PCB-level: ideas, options and realisation: Wolfram Meyer, Siemens, Germany</td>
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<tr>
<td>14:45</td>
<td>Linkage of PCB and cable harness simulation for combined EMC analysis: Matthias Tröscher, SimLab Software GmbH, Munich, Germany</td>
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<tr>
<td>15:10</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>15:45</td>
<td>EMC simulation using nonorthogonal PEEC modeling: Martin Ludwig Zitzmann, BMW Group, Germany</td>
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<td>16:10</td>
<td>Shielded cables with numerical simulation: Matthias Giese, Hanns Rudorfer, Universität Tübingen, Germany; Ralf Ehrhard, Andreas Ludwig, DaimlerChrysler, Germany</td>
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<tr>
<td>16:35</td>
<td>Recent advances in electromagnetic field modelling technologies as applied to automotive EMC applications: Ulrich Jakobus, EM Software &amp; Systems GmbH, Germany</td>
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Organizers:
Gernot Steinmair, BMW, München, Germany
Robert Weigel, University of Erlangen-Nuremberg, Germany


**Friday, February 18, 2005**

**WS5 — Workshops**  
**Room E5**

**EMC for IC**

**C. Lochot**, Freescale Semiconductor, France

**ICE Model**  
Jean-Luc Levant*, ATMEL Nantes, Mohamed Ramdani, Richard Perdriau, Ecole Supérieure d’Electronique de l’Ouest Angers, M’hamed Drissi: INSA Rennes, France

**LECCS (linear equivalent circuit and current source) modeling technique for ICs**  
Yuichi Mabuchi*, Hitachi Ltd, Japan; Atsushi Nakamura, Renesas Technology Corporation; K. Ichikawa, DENSO Corporation; T. Unou, Osami Wada: Okayama University, Japan

**3-wire model to predict RF emission**  
Mart Coenen*, Philips, Ege Engin, Heiko Koehne, G. Sommer, Werner John: Fraunhofer Institute for Reliability and Microintegration, Germany

**Coffee Break**

**PLL jitter improvement using ICEM architecture**  
Jean-Luc Levant*, ATMEL Nantes, Mohamed Ramdani, Richard Perdriau, Ecole Supérieure d’Electronique de l’Ouest Angers, M’hamed Drissi: INSA Rennes, France

**Bottom up approach for modeling and simulation of conducted emission of VLSI ICs**  
Thomas Steinecke*, Infineon Techn. Munich, Germany; Heiko Köhne, M. Schmidt, Werner John, Eh. H. Reichl: Fraunhofer, Berlin, Germany

**Exploitation of the ICEM model in an automotive application**  
Frédéric Lafon*, Christophe Lochot, François De-Daran, Olivier Maurice, Sébastien Calvet:

**Coffee Break**
**WS6 – Workshops**  Room F3

*State-of-the-art of E-safety technology on vehicles*

G. D’Anzieri, SYDERA s rl (Aerospace Systems), Italy
M. Audone, CRF s c.p.a. (Research Centre for automotive application), Italy

**SCHEDULE:**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tr>
<td>9.00</td>
<td>The SAFETEL program - purposes and objectives:</td>
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<td>Giovanni D’Anzieri, SYDERA, Italy</td>
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<td>9.15</td>
<td>EMC simulation and testing of components and subsystems:</td>
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<td>Lothar Geisbusch, Julia Kantz, University of Stuttgart, Germany</td>
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<td>10.00</td>
<td>Statistical approach for the quantitative evaluation of the immunity</td>
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<td>levels of devices and systems and high intensity susceptibility signal</td>
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<td>(HISS) test method:</td>
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<td>Michela Audone, Torino, Italy</td>
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<tr>
<td>10.30</td>
<td>EMC simulation in the automobile industry:</td>
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<td>Ralf Ehrhard, Jan Waldmann, DaimlerChrysler, Germany</td>
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<tr>
<td>11.00</td>
<td>A novel technique to perform susceptibility testing:</td>
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<td>Bruno Audone, Sydera Torino, Italy</td>
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<tr>
<td>11.30</td>
<td>Electromagnetic simulation of automotive systems, subsystems, and EMC</td>
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<td>test methods:</td>
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<td></td>
<td>Ulrich Jakobus, EM Software &amp; Systems GmbH, Germany</td>
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<tr>
<td>12.00</td>
<td>Lunch</td>
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<tr>
<td>14:00 – 16:15</td>
<td>Round table: Discussion and contact among attendees of the workshop</td>
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<tr>
<td>16:15 – 16:25</td>
<td>Conclusion: G. D’Anzieri, M. Audone</td>
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</tbody>
</table>
Welcome tea:
Tuesday, 14:30-15:30
A welcome tea will be offered to spouses and guests accompanying conference participants. Information about sightseeing tours will be given there. Meeting point: Fountain in the main hall of the conference building, 14.30.

Social Program – Tours

Mrs I.-M. Fumeaux, Zürich

Technical excursions:

Friday February 18:

Dätwyler Fiber Optics SA (Boudry):
Dätwyler is a leading supplier of high-quality systems solutions and services in the structured cabling, telecom carriers, safety and building automation, and elevator cabling industries. (http://www.daetwyler.net/e/index.htm). Visit of the material and single mode fiber production factory in Boudry in Western Switzerland. Lunch is provided.

Friday morning, February 18:

Swissbit (Bronschhofen):
Swissbit Group is Europe’s leading producer of memory products with 4 million manufactured units per year. The group produces memory modules for desktops, servers, workstations and notebooks as well as USB Flash Memories and CompactFlash Cards. (http://www.swissbit.ch) Half-day visit of a memory module production factory in Bronschhofen in Eastern Switzerland.

Bus departure from Symposium building, underground passage at 8.00 (to be confirmed). Since the number of places is limited, confirm your advance registration at the Information Desk until Wednesday, February 16, 13.00!

Coffee breaks:
Coffee and refreshments will be available free of charge during the breaks in the exhibition hall. Refreshments can also be purchased in the cafeterias located in the main building, E and F floors, and underneath the Polyterasse.

Lunch:
Lunch is provided for all symposium attendees in the Polyterasse Mensa. Be sure to bring your lunch tickets and to wear your badge. Please note that lunch can also be purchased on a walk-in basis in the Mensa.

Wine tasting party:
Monday, 17:30-18:30
All the attendees of the workshops and tutorials are invited to a wine and cheese tasting event in the second floor (F) of the main symposium building. Tickets for symposium attendees who did not register for a workshop or a tutorial can also be purchased at the registration desk.

Welcome reception:
Tuesday, 18:30-20:00
An Exhibitors break beginning at 17:00 will provide lecture-free time for the visit of the exhibits. All Symposium attendees are then cordially invited to the cocktail reception, opening at 18:30 in the exhibition Hall. Badge required for admission.

Poster apero:
Wednesday, 13:00-14:30
Wine and refreshments will be served during the poster session in the exhibition hall.

Symposium banquet:
Wednesday, 19:30-22:00
The EMC symposium banquet will be held at the Kongresshaus Zurich (Claridenstrasse 5). The evening will consist of an elegant dinner with entertainment. The Kongresshaus is within walking distance from the tram station „Bürkliplatz“ (Tram 2, 5, 8, 9, or 11).

Farewell party:
Thursday, 17:30-18:30
The farewell party will take place after the last sessions on Thursday in the main hall, first floor.
### General Information

**Currency**

All fees are covered in Euro (€). In Switzerland however the official currency is the Swiss Franc (CHF).

**Badge**

Conference badge will be delivered on site at the conference registration desk. Only participants wearing the badge will be admitted to the sessions and other events (free access to the technical exhibition).

**Internet Café**

5 PCs with internet access will be available in the exhibition hall. In addition to that there is a public wireless LAN access for using your own Laptop (in the exhibition hall only).

**Language**

The official conference language is English.

**Weather**

The temperature during the day in Zurich in February is in general around 5°C (41°F), with a possibility of temperatures below the freezing point. Rain or snow is possible.

**Medical Aid**

Please contact the information desk. A hospital is just across the street.

**Public Transport**

Conference participants are provided with a ticket valid for all bus, tram, boat, Polybahn or train within the city of Zurich for the whole week. Tram 6, 9 and 10 have stops in front of the conference building (Tramstop ETH/Universitätsspitäl). The nostalgic Polybahn connects ETH with the Central, close to Zurich railway main station ("Hauptbahnhof").

**Taxi**

In front of the conference building, Rämistrasse 101. Please, contact the information desk.

**Airport**

Unique airport Zurich is about 15 km away from Downtown Zurich. Different hotel buses are available. From Zurich Airport you can find a train connection nearly every 15 minutes to Zurich Main Station as well as roughly every hour to other Swiss cities.
Symposium President & General Chairman

Prof. Dr. Rüdiger Vahldieck

Technical Program Committee

Prof. Dr. Bob Olsen (co-chair) USA
Dr. Pascal Leuchtmann (co-chair) Switzerland
Prof. Dr. Karl-Heinz Gonschorek Germany
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Prof. Dr. Christian Hafner:
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Maria Rafiq:
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Klaus Krohne and Aldo Rossi:
Computers

Raimondo Ballistri:
Website and e-mail

R. Danieli:
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Dr. Christophe Fumeaux and Dirk Baumann:
Local Arrangements

Conference Administration

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Website

www.emczurich.ch

Conference Venue

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Tramstop ETH/Universitätsspital
[Lines 6, 9 or 10]

Phone: +41 1 632 9033
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Cooperating Organizations

- Association of Electrical and Electronics Engineers (SEV), Electrosuisse
- Association of Polish Electrical Engineers (SEP)
- Austrian Electrotechnical Association (ÖVE)
- Chinese Institute of Electronics (CIE)
- European Broadcasting Union (EBU)
- Finnish Electrotechnical Standards Association (SESKO)
- International Telecommunication Union (ITU)
- IEEE Electromagnetic Compatibility Society (IEEE EMC-S)
- IEEE Switzerland Section
- IEEE Swiss Chapter on AP/MTT/EMC
- Institute of Electronics, Information and Communication Engineers, Japan (IEICE)
- The Institution of Electrical Engineers (IEE)
- International Union of Radio Science (URSI)
- Italian Electrotechnical and Electronic Association (AEI)
- Swiss Federal Institute of Technology Zurich (ETHZ)
- International Telecommunication Union (ITU)
- VDE Association for Electrical, Electronic & Information Technologies
- COST 281

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- Swiss Electrotechnical Association (electrosuisse)
- Official Conference Carrier: Swiss International Air Lines (Swiss)