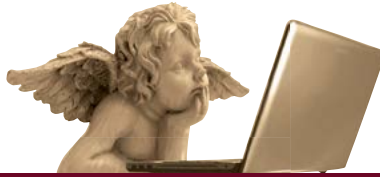


EMC 2015 JOINT IEEE INTERNATIONAL SYMPOSIUM ON ELECTROMAGNETIC COMPATIBILITY AND EMC EUROPE



EMC 2015

DRESDEN, AUGUST 16-22

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Dresden, Germany

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**Joint IEEE International Symposium on Electromagnetic Compatibility
and EMC Europe, Dresden 2015
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1 Monday, August 17

1.1 SS-2: Shielding Measurements from LF to Microwave

1.1.1 2:00 PM – 3:30 PM

Chairs: Johan Catrysse¹ and Davy Pisssoort¹, (1) Technology Campus Ostend, KU Leuven, Ostende, Belgium

2:00 PM (ID 5072)

Modelling the micro-structure of non-uniform conductive Nonwoven fabrics: Determination of sheet resistance

Andrew Austin¹, John Dawson¹, Ian Flintoft¹, Andrew Marvin², (1) University of York, York, United Kingdom, (2) York EMC Services, York, United Kingdom

2:25 PM (ID 5348)

Towards a Stripline Setup to Characterise the Effects of Corrosion and Ageing on the Shielding Effectiveness of EMI Gaskets

Davy Pisssoort¹, Tim Claeys¹, Filip Vanhee¹, Johan Catrysse¹, Christian Brull², Bart Boesman¹, (1) Technology Campus Ostend, KU Leuven, Ostend, Belgium, (2) Schlegel Electronic Materials, Leffinge, Belgium

2:50 PM (ID 5189)

Differences between NSA 94-106 and IEEE 299 LF magnetic shielding measurements

Johan Catrysse¹, Davy Pisssoort¹, Filip Vanhee¹, Salvatore Celozzi², (1) Technology Campus Ostend, KU Leuven, Ostend, Belgium, (2) Department of Astronautical, Electrical, and Energetic Engineering, Electrical Division, Sapienza University of Rome, Roma, Italy

3:15 PM (ID 5193)

Shielding Effectiveness of anisotropic materials: how to measure?

Johan Catrysse¹, Davy Pisssoort¹, Filip Vanhee¹, Tim Claeys¹, Andy Degraeve², (1) Technology Campus Ostend, KU Leuven, Ostend, Belgium, (2) KU Leuven, technologie campus Ostende, Ostende, Belgium

3:40 PM (ID 5518)

Shielding Effectiveness Measurements of Materials and Enclosures using a Dual Vibrating Intrinsic Reverberation Chamber

Hans Schipper¹ and Frank Leferink^{1,2}, (1) Thales Nederland B.V., Hengelo, Netherlands, (2) University of Twente, Enschede, Netherlands

1.2 SS-Auto: EMC for Hybrid and Electric Vehicles (EV)

1.2.1 4:25 PM – 5:40 PM

Chair: Matthias Richter, , WH Zwickau

4:25 PM (ID 5616)

Testing of High Voltage Systems installed in Hybrid and Electric Vehicles

U. Reinhardt, J. Mooser, T. Artz, Mooser EMC Technik GmbH, Ludwigsburg, Germany

4:50 PM (ID 5720)

A Broadband Directional Coupler for the Signal Integrity Analysis on Automotive High Speed Differential Data Links

Stephan Schreiner, Gunnar Armbrecht, Stephan Kunz, Thomas Schmid and Michael Wollitzer, Research and Development, Rosenberger GmbH & Co. KG, Fridolfing, Germany

5:15 PM (ID 5466)

LATEST DEVELOPMENT OF THE NATIONAL AND INTERNATIONAL EMC-STANDARDS FOR ELECTRIC VEHICLES AND THEIR CHARGING INFRASTRUCTURE

M. Maarleveld, J. Bärenfänger, EMC Test NRW GmbH, Dortmund, Germany
H. Hirsch, S. Jeschke, L. Wei, M. Trautmann, University of Duisburg-Essen
Duisburg, Germany, J. Heyen, A. Darrat, Volkswagen AG, Wolfsburg, Germany

DRAFT

2 Tuesday, August 18

2.1 Track A: 10:20 AM – 5:40 PM

2.1.1 10:20 AM - 12:00 AM: TC 4 : Circuits and Devices

Chair: John G. Kraemer, Rockwell Collins, USA

10:20 (ID 5130)

The Investigation of Frequency Modulation in Voltage-Controlled Oscillator due to Low Frequency Interference from Supply Voltage

Le Zhang, Xiao-Peng Yu and Er-Ping Li, Zhejiang University, Hangzhou, China

10:45 (ID 5212)

Increased EMI Immunity in CMOS Operational Amplifiers Using an Integrated Common-Mode Cancellation Circuit

Marco Grassi¹, Jean-Michel Redoute² and Anna Richelli¹, (1) University of Brescia, Brescia, Italy, (2) Monash University, Melbourne, Australia

11:10 (ID 5315)

On the Effectiveness of EMIRR to Qualify OpAmps

Marco Brignone, Franco Fiori, DET, Politecnico di Torino, Torino, Italy

11:35 (ID 5653)

Prediction of the Robustness of Integrated Circuits against EFT/BURST

Susanne Bauer, Bernd Deutschmann, Gunter Winkler, Institute of Electronics, Graz University of Technology, Graz, Austria

2.1.2 2:00 PM – 3:10 PM: TC 4: Shielding I

Chair: Frank Leferink, Netherlands^{1,2}, (1) University of Twente, Enschede, Netherlands, (2)Thales Nederland B.V., Hengelo, Netherlands

2:00 PM (ID 5029)

Suppression of End-fired Emission for a Miniaturized-Element Frequency-Selective Shielding Surface with Finite Size Using EBG

Yimin Yu¹, Cheng-Nan Chiu², Yih-Ping Chiou¹, Tzong-Lin Wu¹, (1) Graduate Institute of Communication Engineering, National Taiwan University, Taipei, Taiwan, (2) Department of Electrical Engineering, Da-Yeh University, Changhua, Taiwan,

2:25 PM (ID 5475)

Hole inductance in Braided Cable Shields

Harmen Schippers¹, Jaco Verpoorte², (1) Avionics Technology, National Aerospace Laboratory, Marknesse, The Netherlands, (2) Marknesse, The Netherlands

2:50 PM (ID 5486)

Effect of Gland Quality on the Screening Effectiveness of Cable-Connector Assemblies

Patrick Deschênes¹, Rob Bijman¹, Frank Leferink^{1,2}, (1) Thales Nederland B.V., Hengelo, The Netherlands, (2) University of Twente, Enschede, The Netherlands

2.1.3 4:00 PM – 5:40 PM: TC 4: Shielding II

Chair: Chair: Frank Leferink^{1,2}, (1) University of Twente, Enschede, Netherlands, (2)Thales Nederland B.V., Hengelo, Netherlands

4:00 PM (ID 5527)

External Scattering by Rectangular Cavities with Small Apertures

Jörg Petzold, Enrico Pannicke and Sergey Tkachenko, Otto-von-Guericke University, Magdeburg, Germany

4:25 PM (ID 5552)

Measurement of Radio Signal Propagation Through Window Panes and Energy Saving Windows

Per Ängskog^{1,2}, Mats Gösta Bäckström^{1,3}, Bengt Vallhagen³, (1) Dept. of Electromagnetic Engineering, KTH Royal Institute of Technology, Stockholm, Sweden, (2) Department of Electronics, Mathematics and Natural Sciences, University of Gävle, Gävle, Sweden, (3) Saab Aeronautics, Linköping, Sweden

4:50 PM (ID 5581)

A Study on Transmission Characteristics and Shielding Effectiveness of Shielded-Flexible Flat Cable for Differential-Signaling

Yoshiki Kayano, Akita University, Akita, Japan, Hiroshi Inoue, The Open University of Japan, Akita, Japan

5:15 PM (ID 5744)

Characterization of Cable Feedthrough by Measurements in Nested Reverberation Chambers and Comparison with Simple Theory

Jan Carlsson, Kristian Karlsson, Urban Lundgren, Electronics - EMC, SP Technical Research Institute of Sweden, Borås, Sweden

2.2 Track B: 10:20 AM – 5:40 PM

2.2.1 10:20 AM - 12:00 AM: TC 7 Low Frequency Electromagnetic Compatibility I

Chair: Alexander van Deursen, Eindhoven University of Technology, David Thomas, University of Nottingham

10:20 (ID 5439)

Efficient Analysis and Reduction of Magnetic Near-Field-Coupling in Mixed-Signal PCBs via the Reciprocity Principle

Andreas Mantzke¹, Marco Leone¹ and Thomas Fischer², (1) Theoretical Electrical Engineering, Otto-von-Guericke University of Magdeburg, Magdeburg, Germany, (2) Sivantos GmbH, Erlangen, Germany

10:45 (ID 5582)

Modeling the Evolution of Conducted EMI of a Buck Converter after N-MOS Transistor Aging

Mohamed Tlig, SAGE, sousse, TN, Tunisia and Ben Hadj Slama Jaleleddine Industrial Electronics- ENISo, Advanced Systems in Electrical Engineering (SAGE), Sousse, Tunisia

[11:10 \(ID 5655\)](#)

Effects of single tone RF interferences on chopped operational amplifiers

Andrea Lavarda and Bernd Deutschmann, Institute of Electronics, Graz University of Technology, Graz, Austria

[11:35 \(ID 5823\)](#)

Benefits Of Multiphase Buck Converters In Reducing EME (Electromagnetic Emissions)

Guillaume Aulagnier¹, Kamel Abouda¹, Marc Cousineau², Eric Rolland¹ and Thierry Meynard², (1) Freescale Semiconductor, Toulouse, France, (2) University of Toulouse, LAPLACE Laboratory, Toulouse, France

2.2.2 2:00 PM – 3:40 PM: TC 7 Low Frequency Electromagnetic Compatibility II

Chair: Alexander van Deursen, Eindhoven University of Technology, David Thomas, University of Nottingham

[2:00 PM \(ID 5166\)](#)

Filter for the Measurement of Supraharmonics in Public Low Voltage Networks

Matthias Klatt¹, Jan Meyer¹, Robert Wolf², Peter Schegner¹ and Bernhard Wittenberg³, (1) Institute of Electrical Power Systems and High Voltage Engineering, Technische Universität Dresden, Dresden, Germany, (2) Institute of Circuits and Systems, Technische Universität Dresden, Dresden, Germany, (3) Technology Innovation, Netze BW GmbH, Stuttgart, Germany

[2:25 PM \(ID 5330\)](#)

Transfer Characteristic of a MV/LV Transformer in the Frequency Range between 2 kHz and 150 kHz

Stefan Schöttke, Stephan Rademacher, Jan Meyer and Peter Schegner, Institute of Electrical Power Systems and High Voltage Engineering, Technische Universität Dresden, Dresden, Germany

[2:50 PM \(ID 5617\)](#)

Contributing Factors in the Final Performance of a Common Mode Choke

Anne Roc'h¹, Frank Leferink^{2,3}, (1) Electrical Engineering Faculty - Electromagnetics, Eindhoven University of Technology, Eindhoven, Netherlands (2) University of Twente, Enschede, Netherlands, (3) Thales Nederland B.V., Hengelo, Netherlands

[3:15 PM \(ID 5641\)](#)

Power System Series Resonance Studies by Modified Admittance Scan

Felix Kalunta, Frank Okafor, Osita Omeje, Electrical/Electronic engineering Department, University of Lagos, Lagos, Nigeria.

2.2.3 4:00 PM – 5:40 PM: TC 7 Low Frequency Electromagnetic Compatibility III

Chair: Alexander van Deursen, Eindhoven University of Technology, David Thomas, University of Nottingham

4:00 PM (ID 5192)

EMI Modeling of Switching Circuits via Augmented Equivalent and Measured Data

Riccardo Trincherio¹, Igor Stievano¹ and Flavio Canavero², (1) DET, Politecnico di Torino, Torino, Italy, (2) Department of Electronics and Telecommunications, Politecnico di Torino, Torino, Italy

4:25 PM (ID 5283)

Prediction of the Conducted Emission Generated by the Electrified Railway Traction System

Kelin Jia and David Ribbenfjard, Bombardier Transportation Sweden AB, Västerås, Sweden

4:50 PM (ID 5666)

On Harmonic Source Identification In Power Distribution Network With Multiple Non-Linear Load

Osita Omeje, Frank Okafor and Felix Kalunta, Electrical/Electronic Department, University of Lagos, Lagos, Nigeria

5:15 PM (ID 5738)

DWT Analysis of High Order Harmonics Influence over Distorted Regimes with Fast Variable Loads

Ileana-Diana Nicolae¹, Petre-Marian Nicolae², and Ionut-Daniel Smarandescu², (1) Computer Science and Information Technology, University of Craiova, Craiova / Dolj County, Romania; (2) Electrical Engineering, Energetics, and Aeronautics, University of Craiova, Craiova / Dolj County, Romania

2.3 Track C: 10:20 AM – 5:40 PM

2.3.1 10:20 AM - 12:00 AM: SC-4 EMC for Emerging Wireless Technologies I

Chair: Robert Keibel, Airbus, Germany

10:20 (ID 5142)

Interference Test Method for Low-Power Wireless Sensor Networks

Ramiro Serra¹, Majid Nabi¹, (1)Eindhoven University of Technology, Eindhoven, The Netherlands

10:45 (ID 5277)

Measurement Validation for Radio-Frequency Interference Estimation by Reciprocity Theorem

Liang Li¹, Jingnan Pan¹, Chulsoon Hwang², Gyuyeong Cho², Hark Byeong Park², Yaojiang Zhang¹ and Jun Fan¹, (1)EMC Laboratory, Missouri University of Science and Technology, Rolla, MO, USA (2)Samsung Electronics, Suwon, South Korea

11:10 (ID 5516)

Performance Estimation of DSSS Wireless Systems in Impulsive Interference

Sara Örn Tengstrand and Peter Stenumgaard, Robust Telecommunications,
Swedish Defence Research Agency, Linköping, Sweden

11:35 (ID 5553)

Interference Impact on LTE from Radiated Emission Limits

Peter Stenumgaard¹, Kia Wiklundh² and Karina Fors¹, (1)Robust
Telecommunications, Swedish Defence Research Agency, Linköping, Sweden,
(2)Robust telecommunications, Swedish Defence Research Agency, Linköping,
Sweden

2.3.2 2:00 PM – 3:40 PM: SC-4 EMC for Emerging Wireless Technologies II

Chair: Jun Fan, Missouri Institute of Science and Technology, USA

2:00 PM (ID 5576)

Using the Amplitude Variation of a Reverberation Chamber Channel to Predict the Synchronization of a Wireless Digital Communication Test System

Ray Tanuhardja¹, Luis Gonzalez², Chih-Ming Wang³, William Young⁴, Kate Remley⁵,
John Ladbury⁶, (1)Telecommunication Engineering Group, University of Twente,
Enschede, The Netherlands, (2)University of Colorado, Boulder, CO, USA,
(3)Statistical Engineering Division, National Institute of Standards and Technology,
Boulder, CO, USA, (4)Communications Technology Lab, National Institute of
Standards and Technology, Boulder, CO, USA, (5)Electromagnetics Division,
National Institute of Standards and Technology, Boulder, CO, USA, (6)RF Fields,
National Institute of Standards and Technology, Boulder, CO

2:25 PM (ID 5599)

Impact of Different Interference Types on an LTE Communication Link using Conducted Measurements

Peter Ankarson¹, Jan Carlsson¹, Björn Bergqvist², Stefan Larsson³ and Markel Bertilsson¹, (1)Electronics - EMC, SP Technical Research Institute of Sweden,
Borås, Sweden, (2)EMC, Volvo Car Corporation, Gothenburg, Sweden, (3)Hardware
& Framework Verification, EMC, Volvo Group Trucks Technology, Gothenburg,
Sweden

2:50 PM (ID 5629)

The risk of coexistence problems between DAB and DVB-T2 and military services at the 225-240 MHz band

Kia Wiklundh¹, Karina Fors¹ and Peter Holm², (1)Robust Telecommunications,
Swedish Defence Research Agency, Linköping, Sweden, (2)Swedish Defence
Research Agency, Linköping, Sweden

3:15 PM (ID 5634)

Mitigation of Co-Channel Interference by Transmit Power Control

Patrik Eliardsson, Kia Wiklundh, Erik Axell and Peter Stenumgaard, Robust
Telecommunications, Swedish Defence Research Agency, Linköping, Sweden

2.3.3 4:00 PM – 4:50 PM SC-4 EMC for Emerging Wireless Technologies III

Chair: Jun Fan, Missouri Institute of Science and Technology

4:00 PM (ID 5704)

A Numerical Dosimetry Study of a wearable RFID Reader Antenna for Navy Personnel Localization

Tommaso Campi¹, Silvano Cruciani¹, Valerio De Santis², Stefano Di Francesco¹, Emidio Di Giampaolo¹, Ramona Di Pompeo¹, Mauro Feliziani¹ and Piero Tognolatti¹, (1)Dept. of Industrial and Information, Engineering and Economics, University of L'Aquila, L'Aquila, Italy, (2)Nagoya Institute of Technology, Nagoya, Japan

4:25 PM (ID 5660)

Electromagnetic Environment Mapping for the Assessment of Critical Wireless Services in ISM Bands

Patrik Eliardsson, Björn Gabrielsson, Mikael Alexandersson, Karina Fors and Peter Stenumgaard, Robust Telecommunications, Swedish Defence Research Agency, Linköping, Sweden

2.4 Track D: 10:20 AM – 12:00 AM

2.4.1 10:20 AM - 12:00 AM: SC 1 Smart Grid EMC

Chair: Donald Heirman, Don HEIRMAN Consultants, Lincroft, New Jersey USA

10:20 (ID 5141)

Impact of Rogowski Sensors on the EMC Performance of MV Power Substations

Christian Suttner¹, Stefan Tenbohlen¹ and Werner Ebbinghaus², (1)Institute of Power Transmission and High Voltage Technology, University of Stuttgart, Stuttgart, Germany, (2)ABB AG, Ratingen, Germany

10:45 (ID 5242)

Electromagnetic Time Reversal Applied to Fault Detection: the Issue of Losses

Gaspard Lugrin¹, Reza Razzaghi², Farhad Rachidi¹, Mario Paolone³, (1)Electromagnetic Compatibility Laboratory, The Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland, (2) DESL, Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland, (3)Electrical Engineering, Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland

11:10 (ID 5628)

Predicting Conducted Emissions of Multiple VSCs Using Dimension Reduction Technique

Preye Ivry¹, Oluwabukola Oke¹, Dave Thomas², and Mark Sumner¹, (1)Department of Electrical and Electronics Engineering, University of Nottingham, Nottingham, United Kingdom, (2)Electrical Systems and Optics, University of Nottingham, Nottingham, United Kingdom

2.5 SS-1: EM Information Security and Countermeasures

Chairs: Yuichi Hayashi¹ and William Radasky², (1) Tohoku University, Sendai, Japan, (2) Metatech Corporation, Goleta, California, USA.

2.5.1 2:00 PM – 3:40 PM

2:00 PM (ID 5261)

Comparison of Electromagnetic Side-Channel Energy Available to the Attacker from Different Computer Systems

R. Callan, N. Popovic, A. Daruna, E. Pollman, A. Zajic, and **M. Prvulovic**, Georgia Tech, Atlanta, Georgia, USA

2:25 PM (ID 5522)

Security Simulation against Side-Channel Attack on Advanced Encryption Standard Circuit Based on Equivalent Circuit Model

K. Iokibe¹, T. Watanabe² and Y. Toyota¹, (1) Okayama University, Okayama, Japan, (2) Industrial Technology Center of Okayama Prefecture, Okayama, Japan

2:50 PM (ID 5218)

Advanced Fault Analysis Techniques on AES

K. Sakiyama, **T. Machida**, and A. Matsubara, The University of Electro-Communications, Tokyo, Japan

3:15 PM (ID 4969)

Method for Estimating Fault Injection Time on Cryptographic Devices from EM Leakage

K. Nakamura, Y. Hayashi, N. Homma, T. Mizuki, and T. Aoki, Tohoku University, Sendai, Japan

2.5.2 4:00 PM – 5:15 PM

4:00 PM (ID 5211)

Detection Method for Overclocking by Intentional Electromagnetic Interference

A. Nagao¹, Y. Okugawa¹, K. Takaya¹, Y. Hayashi², N. Homma², and T. Aoki², (1) NTT Energy and Environment Systems Laboratories, Musashino-shi, Japan, (2) Tohoku University, Sendai, Japan

4:25 PM (ID 5769)

Electromagnetic Circuit Fingerprints for Hardware Trojan Detection

J. Balasch, **B. Gierlichs**, and I. Verbauwhede, KU Leuven, ESAT/COSIC, Leuven, Belgium

4:50 PM (ID 5378)

Proactive and Reactive Protection Circuit Techniques Against EM Leakage and Injection

N. Miura, D. Fujimoto, and M. Nagata, Kobe University, Kobe, Japan

2.6 Track E: 10:20 AM – 5:40 PM

2.6.1 10:20 AM - 12:00 AM: TC 1 EMC Management

Chair: Friedrich-Wilhelm Trautnitz, Albatross Projects GmbH, Germany

10:20 (ID 5118)

A Novel Characterization Method for Cable Ferrites Using a TEM-Waveguide Test Setup

Moawia Al-Hamid¹, Marco Leone¹, Steffen Schulze², (1)Theoretical Electrical Engineering, Otto-von-Guericke University of Magdeburg, Magdeburg, Germany (2)Wurth Elektronik eiSos GmbH & Co. KG, Waldenburg, Germany

10:45 (ID 5235)

Electromagnetic Compatibility Levels in Power Plants and Substations

Urban Metod Peterlin and Tomaz Zivic, Milan Vidmar Electric Power Research Institute, Ljubljana, Slovenia

11:10 (ID 5412)

Tested Once, Forever Right?

Kai Borgeest, Aschaffenburg University of Applied Science, Aschaffenburg, Germany

11:35 (ID 5682)

On the Need of Certification in Computational Electromagnetics based Engineering Services

Sebastian Lange¹, Frank Sabath² and Martin Schaarschmidt¹, (1)Scientific Computing, Bundeswehr Research Institute for Protective Technologies and NBC Protection, Munster, Germany, (2)Electromagnetic Effects and HPEM, Bundeswehr Research Institute for Protective Technologies and NBC Protection, Munster, Germany

2.6.2 2:00 PM – 3:15 PM: TC 3 EMC in Communication Systems

Chair: Pierre Degauque, Université de Lille/IEMN, Villeneuve d Ascq, France, and Randy J. Jost, Ball Aerospace and Technologies Inc.,USA

2:00 PM (ID 5742)

Influence of Modern Broadband Inhouse PLC Transmission on Short-Wave Reception

S. Battermann⁽¹⁾, and H. Garbe⁽²⁾, (1) Univ. of Applied Sciences Bielefeld, Minden, Germany, (2) Leibniz Univ., Hannover, Germany

2:25 PM (ID 4924)

A Novel Method for the Evaluation of Polarization and Hemisphere Coverage of HF Radio Noise Measurement Antennas

B. A. Witvliet^{(1), (2)}, E. Van Maanen⁽²⁾, M. J. Bentum⁽¹⁾, C. H. Slump⁽¹⁾, and R. Schiphorst⁽¹⁾, (1) Univ. of Twente, Enschede, The Netherlands, (2) Radiocommunications Agency Netherlands, Groningen, Netherlands

2:50 PM (ID 5573)

Determination of Radiated Emissions of an Electrically Large EUT: Simulation and Experiment

X. Wang and R. Vick, Otto-von-Guericke-Univ., Magdeburg, Germany

2.6.3 4:00 PM – 5:15 PM: TC 3 EM environment

Chair: Pierre Degauque, Université de Lille/IEMN, Villeneuve d Ascq, France, and Randy J. Jost, Ball Aerospace and Technologies Inc., USA

4:00 PM (ID 5763)

Health Protection Reference Levels for Voltages and Currents in Typical Domestic Electrical Installations

L. Nuño, Polytechnic Univ. of Valencia, Valencia, Spain

4:25 PM (ID 5579)

Increasing Electromagnetic Compatibility of Contactless Inductive Flow Tomography

T. Wondrak⁽¹⁾, M. Ratajczak⁽¹⁾, T. Gundrum⁽¹⁾, F. Stefani⁽¹⁾, H. G. Krauthäuser⁽²⁾, and R. T. Jacobs⁽²⁾, (1) Magnetohydrodynamics, Helmholtz-Zentrum, Dresden, Germany, (2) Technical Univ. Dresden, Germany

4:50 PM (ID 5644)

Shielding Effectiveness of Screened Rooms with Line Feed-Throughs - a Semi-Analytical Approach

H. Karcoon⁽¹⁾, S. Parr⁽¹⁾, S. Dickmann⁽¹⁾, and R. Rambousky⁽²⁾, (1), Helmut Schmidt Univ. / Univ. of the Federal Armed Forces, Hamburg, Germany, (2) Bundeswehr Research Institute for Protective Technologies, Munster, Germany

3 Wednesday, August 19

3.1 Track F: 8:20 AM – 5:40 PM

3.1.1 8:20 AM – 10:00: TC-4: System EMC Prediction I

Chair: Todd H. Hubing, LearnEMC, Stoughton, Wisconsin, USA

8:20 AM (ID 5220)

Systematic Hybrid Modeling Method for Analysis of Electromagnetic Susceptibility in Electronics System

Zaw Zaw Oo¹, Bui Viet Phuong¹, (1) Electronics & Photonics, Institute of High Performance Computing, Singapore, Singapore

8:45 AM (ID 5299)

Investigation on the Propagation and Coupling in Aircraft using Absorbing Films

Rafael Rennó Nunes¹, Jens Schüür², (1) Institute of Flight Systems, German Aerospace Center (DLR), Braunschweig, Germany, (2) Institute for Electromagnetic Compatibility, TU Braunschweig, Braunschweig, Germany

9:10 AM (ID 5437)

Numerical and Experimental Evaluation of Electromagnetic Coupling between Radiating Antenna Structures inside a Computer Casing

Qi Wu, Alexander Vogt Vogt, Heinz-D. Brüns, Frank Gronwald, Christian Schuster, Institut für Theoretische Elektrotechnik, Technische Universität Hamburg-Harburg (TUHH), Hamburg, Germany

9:35 AM (ID 5538)

The Controlled Stratification Method to Estimate Extreme Quantiles in the Field of EMC Modelling

Mourad Larbi¹, Philippe Besnier², Bernard Pecqueux³, (1) Antennas and Microwave devices, Institute of Electronics and Telecommunications of Rennes, Rennes, France, (2) IETR-CNRS-Institut National des Sciences Appliquées de Rennes, Rennes, France, (3) CEA, DAM, GRAMAT, Gramat, France

3.1.2 10:20 AM – 11:35 AM: TC-4: System EMC Prediction II

Chair: Todd H. Hubing, LearnEMC, Stoughton, Wisconsin, USA

10:20 AM (ID 5543)

Use of Frequency Selective Surfaces to Reduce Coupling between Antennas on Satellites

Ibrahim Türer, Space Systems Group, Turkish Aerospace Industries, Inc., Ankara, Turkey

10:45 AM (ID 5817)

Vulnerability and Coupling Behaviour of a TETRA Communication System to Electromagnetic Fields

Michael Camp¹, Juergen Schmitz¹, Markus Jung², (1) HPEM / Laser, Rheinmetall Defence, Unterlüß, Germany, (2) Rheinmetall Waffe Munition GmbH, Unterlüß, Germany

11:10 AM (ID 5841)

Application of Dipole-moment Model in EMI Estimation

Jingnan Pan¹, Liang Li¹, Xu Gao¹, Chulsoon Hwang², Gyuyeong Cho², Hark Byeong Park², Jun Fan¹, (1) EMC Laboratory, Missouri University of Science and Technology, Rolla, MO, (2) Samsung Electronics, Suwon, South Korea

3.1.3 2:00 PM – 3:40 PM: TC-4: Filters and Conducted Coupling I

Chair:

2:00 PM (ID 4466)

Cross Coupling between Lightning Conductor and Signal Lines within Rotor Blades

Matthias Hampe¹, Olaf Berndt², Michael Przybilla³, Birgit Wieland⁴ (1) Department of Electrical Engineering, EMC, Ostfalia, Wolfenbuettel, Germany, (2) WaveTec Engineering, Zinnowitz, Germany, (3) Rotorcraft, DLR - Institute of Flight Systems, Braunschweig, Germany, (4) Deutsches Zentrum für Luft- und Raumfahrt, Braunschweig, Germany,

2:25 PM (ID 4567)

Analysis of PIFA antenna coupling in nearby traces and reduction with CSRRs in PCB at 2.45 GHz

Ignacio Gil, Raúl Fernández, Department of Electronic Engineering, Universitat Politècnica de Catalunya, Terrassa, Spain

2:50 PM (ID 4971)

MEDIAN FILTERS TO SUPPRESS INTERFERENCE

Bruno Audone, EMC Consultant, Torino, Italy and Michele Borsero, INRIM, Torino, Italy

3:15 PM (ID 5167)

Simple and Cost-Effective Method for Improving the High Frequency Performance of Surface-Mount Shunt Capacitors Filters

Joaquin Bernal Mendez¹, Fisica Aplicada III¹, Manuel Freire Rosales² and Sebastian Ramiro³, (1) University of Seville, Seville, Spain, (2)Electronica y Electromagnetismo, University of Seville, Seville, Spain, (3) Skylife Engineering, La Rinconada, Sevilla, Spain

3.1.4 4:00 PM – 5:40 PM: TC-4: Filters and Conducted Coupling II

Chair:

4:00 PM (ID 5224)

Mode Conversion and Transfer Characteristics of Conducted Disturbance to Ethernet Device from Power Supply Cable

Tohlu Matsushima¹, Osami Wada¹, Kazuhiro Takaya², Yuichiro Okugawa², (1)Kyoto University, Kyoto, Japan, (2)NTT Network Technology Laboratories, Musashino-shi, Japan

[4:25 PM \(ID 5483\)](#)

Unexpected Poor Performance of Presumed High Quality Power Line Filter

Niek Moonen¹, Frits Buesink¹, Frank Leferink^{1,2}, (1) University of Twente, Enschede, The Netherlands, (2) Thales Nederland B.V., Hengelo, The Netherlands

[4:50 PM \(ID 5556\)](#)

Subminiature common mode filter with integrated ESD protection

Tomas Hurtig, Leif Adelöw, Mose Akyuz, Mattias Elfsberg, Anders Larsson and Sten E Nyholm, Swedish Defence Research Agency, Norra Sorunda, Sweden

[5:15 PM \(ID 5675\)](#)

Effect of Pulsed Interference on an ASK Receiver

Jens Werner¹, Jennifer Schütt², Guido Notermans², (1) Jade University of Applied Science, Wilhelmshaven, Germany, (2) NXP Semiconductors Germany GmbH, Hamburg, Germany

3.2 Track G: 8:20 AM – 5:40 PM

3.2.1 8:20 AM – 10:00 AM: TC-2: Reverberation Testing I

Chair: John Dawson, University of York, York, UK

[8:20 AM \(ID 4464\)](#)

An Evaluation of the Independent Stirrer Positions in the Dresden Reverberation Chambers based on Field Homogeneity within a defined Test Volume

Stephan Pfennig, Chair of Electromagnetic Theory and Compatibility, Technical University Dresden, Dresden, Germany

[8:45 AM \(ID 4992\)](#)

Analysis of a Simultaneously Clockwise and Counterclockwise Rotated Mode Stirrer in a Reverberation Chamber

Michael Gruber, Thomas Dengler, Alexander Knaak, Josef Knapp and Thomas Eibert, Lehrstuhl für Hochfrequenztechnik, Technische Universität München, Munich, Germany

[9:10 AM \(ID 4967\)](#)

On measurement of reverberation chamber time constant and related curve fitting techniques

Xiaotian Zhang, Martin Robinson, Ian Flintoft, Department of Electronics, University of York, York, United Kingdom

9:35 AM (ID 5326)

Vectorial Channel Sounding in a Reverberation Chamber – Measuring Dynamic Behaviour

Georg Zimmer¹, Robert Geise¹, Björn Neubauer¹, Jens Schüür², Achim Enders¹,
(1)Institute for Electromagnetic Compatibility, University of Braunschweig,
Braunschweig, Germany, (2)Institute for Electromagnetic Compatibility, TU
Braunschweig, Braunschweig, Germany

3.2.2 10:20 AM – 12:00 AM: TC-2: Reverberation Testing II

Chair: Martin Robinson, University of York, York, UK

10:20 AM (ID 5324)

Quantitative evaluation for Radio-frequency Effects of Electro-explosive Device

Juan Ye, Guilan Li and Longfei Zhao, Beijing Institute of Radio Metrology and
Measurement, Beijing, China

10:45 AM (ID 5344)

Effect of absorber number and positioning on the power delay profile of a reverberation chamber

Luca Bastianelli¹, Luca Giacometti², Valter Mariani Primiani¹ and Franco Moglie¹,
(1)Dipartimento di Ingegneria dell'Informazione, Università Politecnica delle Marche,
Ancona, Italy, (2)Università Politecnica delle Marche, Ancona, Italy

11:10 AM (ID 5618)

An EMC Study on the Interoperability of the European Railway Network

Eva Karadimou and Rob Armstrong, York EMC Services, York, United Kingdom

11:35 AM (ID 5566)

Source Stirring Analysis in a Reverberation Chamber Based on Modal Expansion of the Electric Field

Emmanuel Amador, LME, EDF Lab, Moret sur Loing, France and Philippe Besnier,
IETR-CNRS-Institut National des Sciences Appliquées de Rennes, rennes, France

3.2.3 2:00 PM – 3:40 PM: TC-2: Emission Measurements I

Chair: Ghery Pettit, Pettit EMC Consulting, Olympia, Washington USA

2:00 PM (ID 5371)

Erroneous Practices in Measuring Discontinuous Disturbances

Mario Monti, Elettronica Monti, Ponte a Egola, Italy

2:25 PM (ID 5519)

Extension of the Emission Measurements for Alternative Test Methods above 1 GHz for Unintentional Electromagnetic Radiators

Benjamin Menßen, David Hamann and Heyno Garbe, Institute of Electrical
Engineering and Measurement Technology, Leibniz Universität Hannover, Hannover,
Germany

2:50 PM (ID 5717)

Localization of Cyclostationary EMI Sources based on Near-Field Measurements

Anastasia Gorbunova, Andrey Baev, Yury Kuznetsov and Maxim Konovalyuk, Theoretical Radio Engineering Department, Moscow Aviation Institute (National Research University), Moscow, Russia

3:15 PM (ID 5102)

Radiated Transient Interferences Measurement Procedure To Evaluate Digital Communication Systems

Marc Pous¹, Ferran Silva¹, Marco A. Azpúrua¹, (1) Universitat Politècnica de Catalunya, Barcelona, Spain; Grup de Compatibilitat Electromagnètica, Barcelona, Spain

3.2.4 4:00 PM – 5:15 PM: TC-2: Emission Measurements II

Chair: Ghery Pettit, Pettit EMC Consulting, Olympia, Washington USA

4:00 PM (ID 5057)

The Time-Domain Performance of the Van Veen Loop

James McLean¹, Robert Sutton¹, Koji Takizawa², Akihiro Sato², Masataka Midori², Yuki Naito², (1)TDK R&D Corp., Cedar Park, TX, (2)TDK R&D Corp., Tokyo, Japan

4:25 PM (ID 5135)

Atom-Based Electric Field Measurements: An Initial Investigation of the Measurement Uncertainties

Christopher Holloway, NIST, Boulder, CO

4:50 PM (ID 5476)

Experience on Proficiency Testing in Italy

Carlo Carobbi¹, Alessio Bonci¹, Marco Cati², Carlo Panconi³, Michele Borsero⁴, Giuseppe Vizio⁴, (1)Department of Information Engineering, Università degli Studi di Firenze, Firenze, Italy, (2)Powersoft S.p.A., Firenze, Italy, (3)Elettroingegneria, Pistoia, Italy, (4)INRIM, Torino, Italy

3.3 Track H: 8:20 AM – 5:40 PM

3.3.1 8:20 AM – 10:00: TC 9: Advanced Models and Time Domain Methods I

Chair: Frank Gronwald, Institut für Theoretische Elektrotechnik, Technische Universität Hamburg-Harburg (TUHH), Hamburg, Germany

8:20 AM (ID 5059)

A heuristic model for the transmission cross section of wire-mesh covered apertures

Ronny Gunnarsson, Saab Aeronautics, Linköping, Sweden and Mats Gösta Bäckström, Dept. of Electromagnetic Engineering, KTH Royal Institute of Technology, Stockholm, Sweden

8:45 AM (ID 4576)

Validation of a Flexible Causality Treatment for Transient Analysis of Nonlinearly Loaded Structures

Cheng Yang^{1,2}, Heinz-D. Brüns², Peiguo Liu¹ and Christian Schuster³, (1)Department of Electronic Science and Technology, National University of Defense Technology, Changsha, China, (2)Institut für Theoretische Elektrotechnik, Technische Universität Hamburg Harburg, Hamburg, Germany, (3)Institut für Theoretische Elektrotechnik, Technische Universität Hamburg-Harburg (TUHH), Hamburg, Germany

9:10 AM (ID 5369)

Capacity Extraction in Physical Equivalent Networks

Jan Hansen, AE/EMC3, Robert Bosch GmbH, Reutlingen, Germany and Carsten Potratz, CR/ARE1, Robert Bosch GmbH, Renningen, Germany

9:35 AM (ID 5565)

Parametric interpolation using physics-based basis functions

Alessandro Matteo Francavilla¹, Giorgio Giordanengo¹, Marco Righero¹, Giuseppe Vecchi² and Francesca Vipiana², (1)Antenna and EMC Lab, Istituto Superiore Mario Boella, Torino, Italy, (2)Antenna and EMC Lab, Politecnico di Torino, Torino, Italy

3.3.2 10:20 AM – 12:00 AM: TC 9: Advanced Models and Time Domain Methods II

Chair: Frank Gronwald, Institut für Theoretische Elektrotechnik, Technische Universität Hamburg-Harburg (TUHH), Hamburg, Germany

10:20 AM (ID 5396)

FDTD transient analysis of grounding grids. A comparison of two different thin wire models

Luis G Diaz¹, Céline Miry¹, Christophe Guiffaut², Alain Reineix² and Akiyoshi Tatematsu³, (1)LME, EDF R&D, Moret Sur Loing, France, (2)XLIM Laboratory, Limoges, France, (3)Electric Power Engineering Research Laboratory, Central Research Institute of Electric Power Industry, Yokosuka, Japan

10:45 AM (ID 5458)

A Stable Subgridding Finite Difference Time Domain Method on Multi-GPU Cluster

Jan Ritter¹, Magnus Benjes¹, Martin Murso¹, Daniela Wulf¹ and Sebastian Lange², (1)Airbus Defence and Space GmbH, Bremen, Germany, (2)Scientific Computing, Bundeswehr Research Institute for Protective Technologies and NBC Protection, Munster, Germany

11:10 AM (ID 5710)

Reduced-Order Models of VFETD/FDTD Algorithms for Optimized Nanomaterial EMC Applications Method

Nikolaos Kantartzis¹, Theodoros Zygidis², Christos Antonopoulos¹ and Theodoros Tsiboukis¹, (1)Electrical and Computer Engineering, Aristotle University of Thessaloniki, Thessaloniki, Greece, (2)Informatics and Telecommunications Engineering, University of Western Macedonia, Kozani, Greece

11:35 AM (ID 5510)

Method for determining region boundaries for transient data comparison using FSV

Gang Zhang¹, Alistair Duffy², Lixin Wang¹, Xiyuan Peng¹ and Bai Jinjun¹, (1)Harbin Institute of Technology, Harbin, China, (2)De Montfort University, Leicester, United Kingdom

3.3.3 2:00 PM – 3:15 PM: TC-9: Modelling Applications, including Reverberation Chambers I

Chair: Vignesh Rajamani, Oklahoma State University, Stillwater, OK, USA

2:00 PM (ID 4979)

Efficient Full-Wave Modeling of Radiative Near-Field Interactions in Semi-Anechoic Conditions

Gert-Jan Stockman, Department of Information Technology, Ghent University, Ghent, Belgium and Dries Vande Ginste, Department of Information Technology, Ghent University, Ghent, Belgium

2:25 PM (ID 5106)

Fast and Efficient Near-field to Near-field and Near-field to Far-field Transformation based on the Spherical Wave Expansion

Bart Boesman¹, Davy Pissoot¹, Georges Gielen² and Guy Vandenbosch³, (1)Technology Campus Ostend, KU Leuven, Ostend, Belgium, (2)Elektrotechniek ESAT-MICAS, KU Leuven, Leuven, Belgium, (3)Electrical Engineering, KU Leuven, Leuven, Belgium

2:50 PM (ID 5307)

Finite Element Simulation of the Frequency Dependent Polarization of Biological Cells

Sebastian Böhmelt¹, Fabian Scharf¹, Michael Dudzinski¹, Marco Rozgic¹, Lars-Ole Fichte¹ and Marcus Stiemer², (1)Helmut Schmidt University, Hamburg, Germany, (2)Chair for Theory of Electrical Engineering, Helmut Schmidt University, Hamburg, Germany

3:15 PM (ID 5503)

Specific Absorption Rate (SAR) Evaluation of Human Body Model in the Presence of Radar Wave Radiation on a Warship Deck

Yang Guo, Centre for Optical and Electromagnetic Research (COER), Zhejiang University, Hangzhou, China, Jian Wang, School of Information Science and Engineering, Ningbo University, Ningbo, China, Hong-Ke Ma, Science and Technology on High Power Microwave Lab, Institute of Applied Electronics, Mianyang, China, Lian-Dong Wang, State Key Lab of Complex Electromagnetic Environment Effects on Electronics and Information System (CEMEE), Luoyang, China and Wen-Yan Yin Sr., School of Information Science and Electronic Engineering/Key Lab of Ministry of Education of Design and EMC of High-Speed Electronic Systems, Zhejiang University/Shanghai Jiao Tong University, Shanghai, China

3.3.4 4:00 PM – 5:40 PM: TC-9: Modelling Applications, including Reverberation Chambers II

Chair: Vignesh Rajamani, Oklahoma State University, Stillwater, OK, USA

4:00 PM (ID 5317)

Experimental validation of the Statistical Energy Analysis for coupled reverberant rooms

Louis Kovalevsky¹, Robin S. Langley¹, Philippe Besnier² and Jerome Sol³, (1)University of Cambridge, Cambridge, United Kingdom, (2)IETR-CNRS-Institut National des Sciences Appliquées de Rennes, Rennes, France, (3)IETR-Institut National des Sciences Appliquées de Rennes, Rennes, France

4:25 PM (ID 5764)

Simulation Based Analysis of Field Correlation and Ergodicity of a Reverberation Chamber

David Sanchez¹, Michael Dudzinski², Marco Rozgic³, Sebastian Böhmelt², Lars-Ole Fichte², Marcus Stiemer⁴, Julia Schiffner⁵ and Julia Schiffner⁵, (1)Helmut Schmidt University of the Federal Armed Forces Hamburg, Hamburg, Germany, (2)Helmut Schmidt University, Hamburg, Germany, (3)Department of the Theory of Electrical Engineering, Helmut Schmidt University of the Federal Armed Forces Hamburg, Hamburg, Germany, (4)Chair for Theory of Electrical Engineering, Helmut Schmidt University, Hamburg, Germany, (5)Mathematical Institute, Heinrich Heine University Düsseldorf, Düsseldorf, Germany

4:50 PM (ID 5703)

Uncorrelated Frequency Steps in a Reverberation Chamber: a Multivariate Approach

Gabriele Gradoni¹, Luca Bastianelli², Valter Mariani Primiani² and Franco Moglie², (1)School of Mathematical Sciences, The University of Nottingham, Nottingham, United Kingdom, (2)Dipartimento di Ingegneria dell'Informazione, Università Politecnica delle Marche, Ancona, Italy

5:15 PM (ID 5197)

A Cavity Green's Function Boundary Element Method for the Modeling of Reverberation Chambers: Validation against Measurements

Michael Gruber and Thomas Eibert, Lehrstuhl für Hochfrequenztechnik, Technische Universität München, Munich, Germany

3.4 Track I: 8:20 AM – 5:40 PM

3.4.1 8:20 AM – 10:00: TC 10 Signal and Power Integrity I

Chair: Giulio Antonini, UAq EMC Laboratory, University of L'Aquila.

8:20 AM (ID 4841)

Through Silicon Via Time Domain Crosstalk Modeling Considering Hysteretic Coupling Capacitance

Antonio Orlandi¹, Francesco de Paulis¹, Stefano Piersanti¹, Dong-Hyun Kim², Jonghyun Cho³ and JoungHo Kim⁴, (1)Industrial and Information Engineering and Economics, University of L'Aquila, L'Aquila, Italy, (2)KAIST, Daejeon, South Korea, (3)KAIST Teralab., Daejeon, South Korea, (4)Korea Advanced Institute of Science and Technology (KAIST), Daejeon, South Korea

8:45 AM (ID 4943)

Modelling of Planar EBG Structure by Using Equivalent Circuit Method

Guang-xiao Luo¹, Er-ping Li², Xing-chang Wei², and Cui Xiang¹ (1)North China Electric Power University, Beijing, China, (2) Zhejiang University, Hangzhou, China

9:10 AM (ID 5753)

Predictive Method for Efficient Transmission Lines and Multilayered Power/Ground Planes Co-Modeling Using Multi-Conductor Transmission

Afef BOUCHAALA^{1,2}, Lionel COURAU¹, Philippe GALY¹, Olivier BONNAUD², (1) STMicroelectronics, Crolles, France, (2) IETR UMR 6164, University of Rennes1, Rennes, France

9:35 AM (ID 5295)

Development of Electromagnetic Analytical Models for Substrate Noise Propagation in Integrated Circuits

Merc` e Grau Novellas¹, Ramiro Serra¹, Matthias Rose² (1) Eindhoven University of Technology, Dept. of Electrical Engineering, Eindhoven, The Netherlands, (2) NXP Semiconductors, High Tech Campus 46, Eindhoven, The Netherlands

3.4.2 10:20 AM – 12:00 AM: TC 10 Signal and Power Integrity II

Chair: Giulio Antonini, UAq EMC Laboratory, University of L'Aquila.

10:20 AM (ID 5445)

Conformal Equivalent Circuit Model and Leapfrog Alternating Direction Implicit Formulation for Fast Simulation of Power Delivery Network

Tadatoshi Sekine¹, and Hideki Asai², (1) Mechanical Engineering, Shizuoka University, Hamamatsu-shi, Japan, (2) Nanovision Research Division, Research Institute of Electronics, Shizuoka University, Hamamatsu-shi, Japan

10:45 AM (ID 5587)

Effective Current Distribution Analysis Method for Multiple-Transmission-Line (MTL) System with Arbitrary Conductor Number Variation

Chi-Hsuan Cheng, and Tzong-Lin Wu, Graduate Institute of Communication Engineering, National Taiwan University, Taipei, Taiwan

11:10 AM (ID 5370)

Broadband Equivalent-Circuit Model for Non-Uniform Transmission Lines

Andreas Mantzke, Sebastian Südekum, Marco Leone, Otto-von-Guericke University, Magdeburg, Germany

11:35 AM (ID 5229)

A Novel Semi-Analytical Solution of Impedance of Grid-Type Power Distribution Network

Han-Qin Ye, Xing-Chang Wei and Er-Ping Li, Zhejiang University, Hangzhou, China

3.4.3 2:00 PM – 3:40 PM: TC 10 Signal and Power Integrity III

Chair: Christian Schuster, Technische Universität Hamburg-Harburg (TUHH), Hamburg, Germany

2:00 PM (ID 4581)

Using Rectangular-Patches (RPs) to Reduce Far-End Crosstalk Noise and Improve Eye-Diagrams on Microstrip Helix Delay Line

Ding-Bing Lin¹, Chung-Pin Huang¹, **Chih-Hao Lin**¹, Hsin-Nan Ke² and Wen-Sheng Liu³, (1)Department of Electronic Engineering, National Taipei University of Technology, Taipei, Taiwan, (2)Department of No.1 EMC, R&D Center, PEGATRON Corporation, Taipei, Taiwan, (3)Department of Lab. and C.A.E., WIESON Technologies Co., Ltd., New Taipei, Taiwan

2:25 PM (ID 5042)

Generic prediction of crosstalk between shielded wires

Jesper Lansink Rotgerink, J.H.G.J. and Harmen Schippers, Avionics Technology, National Aerospace Laboratory, Marknesse, Netherlands

2:50 PM (ID 5071)

Mitigating the Threat of Crosstalk and Unwanted Radiation when using Electromagnetic Bandgap Structures to Suppress Common Mode Signal Propagation in PCB Differential Interconnects

Christopher Kodama¹, Christopher O'Daniel¹, Joshua Cook¹, Francesco de Paulis², Michael Cracraft³, Samuel Connor⁴, Antonio Orlandi² and Edward Wheeler¹, (1)Electrical and Computer Engineering, Rose-Hulman Institute of Technology, Terre Haute, IN, (2)Industrial and Information Engineering and Economics, University of L'Aquila, L'Aquila, Italy, (3)Systems Group, IBM Corporation, Poughkeepsie, NY, (4)Systems Group, IBM Corporation, RTP, NC

3:15 PM (ID 5621)

Coupling Study in Smart Power Mixed ICs with a dedicated On-Chip sensor

Veljko Tomasevic¹, Sonia Ben Dhia¹, Alexandre Boyer¹, Alexander Steinmair², Bernhard Weiss², Ehrenfried Seebacher² and Peter Rust², (1)ESE, CNRS LAAS, Toulouse, France, (2)ams AG., Oberpremstätten, Austria

3.4.4 4:00 PM – 5:15 PM: TC 10 Signal and Power Integrity IV

Chair: Christian Schuster, Technische Universität Hamburg-Harburg (TUHH), Hamburg, Germany

4:00 PM (ID 4536)

Measurement of High-Frequency Conductivity Affected by Conductor Surface Roughness Using Dielectric Rod Resonator Method

Toshiki Iwai, Diasuke Mizutani and Motoaki Tani, FUJITSU LABORATORIES LTD., Atsugi, Japan

4:25 PM (ID 5595)

A study of intensify the power of verification for memory worst case conditions through the SI analysis

Chang-Ik Lee, Hyundai Mobis, Gyeonggi-Do, South Korea

4:50 PM (ID 5761)

Cost Competitive PI-SI Co-design for DDR Interfaces

Kinger Cai and **Steven Ji**, Intel Corporation, Santa Clara, CA

3.5 Automotive Track: 8:20 AM – 5:40 PM

3.5.1 8:20 AM – 9:35 AM: Hybrid and Electrical Vehicles

Chair: Matthias Richter, WH Zwickau, Mark Steffka, General Motors

8:20 AM (ID 4484)

A characterization of EM coupling in a fully electric 4-wheel drive vehicle

I. Echeverria, M. Iglesias, F. Arteché, F. J. Piedrafita, Á. Pradas, ITAINNOVA, Zaragoza, Spain, F. J. Arcega, Universidad de Zaragoza, Zaragoza, Spain, J. de Smet, FLANDERS' DRIVE, Lommel, Belgium

8:45 AM (ID 5610)

The Effect of Fully Electric Vehicles on the Low Frequency Electromagnetic Environment

R. Armstrong, York EMC Services Heslington, York, United Kingdom, Dr. L. Dawson, University of York, York, United Kingdom, A. Rowell, York EMC Services Heslington, York, United Kingdom, A. Ruddle, MIRA Limited, Nuneaton, United Kingdom, C. A. Marshman, York EMC Services, York, United Kingdom

9:10 AM (ID 5643)

Automotive Industry's EMC Requirements for Voltage Ripple in the High-Voltage System of Electrical Vehicles

B. Willmann, T. Rinkleff, M. Obholz, VOLKSWAGEN AG, Wolfsburg, Germany, R. Vick, Otto-von-Guericke-University, Magdeburg, Germany

3.5.2 10:20 AM – 12:00 AM: Electrical Powertrain

Chair: Matthias Richter, WH Zwickau, Mark Steffka, General Motors

10:20 AM (ID 5173)

Transient Simulation of the Low-Frequency and High-Frequency Behavior of Asynchronous Machines in SPICE

M. Krüger, M. Magdowski, R. Vick, T. Schallschmidt, Otto-von-Guericke-University, Magdeburg, Germany, T. Rinkleff, Volkswagen AG, Wolfsburg, Germany

10:45 AM (ID 5182)

Understanding Conducted Emissions from an Automotive Inverter Using Common-Mode Model

P. Hillenbrand, University of Stuttgart, Stuttgart, Germany, C. Keller, Robert Bosch GmbH, Stuttgart, Germany, S. Tenbohlen, University of Stuttgart, Stuttgart, Germany, K. Spanos, Robert Bosch GmbH, Stuttgart, Germany

11:10 AM (ID 5205)

Inverter Modeling Including Non-ideal IGBT Characteristics in Hybrid Electric Vehicle for Accurate EMI Noise Prediction

H. Shim, H. Kim, Y. Kwack, M. Moon, H. Lee, J. Song, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, South Korea, B. Kim, E. Kim, Hyundai Kia Motors, Hwaseong, South Korea, J. Kim, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, South Korea

11:35 AM (ID 5320)

Investigations on the Shaft Currents of an Electric Vehicle Traction System in Dynamic Operation

S. Jeschke, H. Hirsch, S. Tsiapenko, University Duisburg-Essen, Duisburg, Germany

3.5.3 2:00 PM – 3:15 PM: Electrical power supply

Chair: Matthias Richter, WH Zwickau, Mark Steffka, General Motors

2:00 PM (ID 5451)

Feasibility of estimating in-service vehicle occupant exposure to electrical powertrain magnetic fields using non-local magnetic field measurements

A. Ruddle, MIRA Limited, Nuneaton, United Kingdom

2:25 PM (ID 5485)

High Frequency Impedance of Li-ion Batteries

S. Schoerle, Daimler AG, Böblingen, Germany, E. Hoene, Fraunhofer IZM Berlin, Germany, C. Spieker, University Kassel, Kassel, Germany, T. Doersam, Daimler AG, Böblingen, Germany, T. Waldmann, University Kassel, Kassel, Germany, K.-D. Lang, Fraunhofer IZM, Berlin, Germany

2:50 PM (ID 5678)

OPTIMUM COIL CONFIGURATION OF WIRELESS POWER TRANSFER SYSTEM IN PRESENCE OF SHIELDS

S. Cruciani, T. Campi, University of L'Aquila, L'Aquila, Italy, F. Maradei, Sapienza University, ROME, Italy, M. Feliziani, University of L'Aquila, L'Aquila, Italy

3.5.4 4:00 PM – 5:40 PM: Analysis Automotive Systems

Chair: Matthias Richter, WH Zwickau, Mark Steffka, General Motors

4:00 PM (ID 5187)

Influence of Car Body Materials on the Common-Mode Current and Radiated Emissions Induced by Automotive Shielded Cables

M. Vincent, M. P. Klingler, PSA Peugeot Citroën, Vélizy-Villacoublay, France,
Z. Riah, Technopôle du Madrillet Avenue Galilée, Saint-Etienne du Rouvray, France
Y. Azzouz, IRSEEM/ESIGELEC, Saint-Etienne du Rouvray, France

4:25 PM (ID 5200)

**Device for Adjusting Electromagnetic Losses Inside a Reverberation Chamber
- Application to Automotive Wireless Environment Simulations**

A. B. Hadj Mabrouk, M. P. Klingler, PSA Peugeot Citroën, Vélizy-Villacoublay,
France, H. Boulzazen, IRSEEM/ESIGELEC, Saint Etienne du Rouvray, France, M.
Heddebaut, IFSTTAR, Villeneuve d'ascq, France

4:50 PM (ID 5298)

Analysis of the Direct Radiation of EC Motors up to 10 MHz

U. Neibig, Robert Bosch GmbH, Stuttgart, Germany

5:15 PM (ID 5834)

**Immunity of Modulation Schemes in Automotive Low Bitrate Power Line
Communication Systems**

A. Zeichner, S. Frei, S. A. Hassanpour Razavi, TU Dortmund, Dortmund, Germany

DRAFT

4 Thursday, August 20

4.1 Track K: 8:20 AM – 12:00 AM

4.1.1 8:20 AM – 10:00 AM: TC-4: Field - Wire Coupling & Radiation I

Chair: Franco Fiori, Electronics, Politecnico di Torino, Torino, Italy

8:20 AM (ID 4987)

Susceptibility to EMI of a Battery Management System IC for Electric Vehicles

Orazio Aiello¹ Franco Fiori², Paolo Crovetto², (1) NXP Semiconductor - Automotive Business Unit, Nijmegen, Netherlands, (2) Electronics, Politecnico di Torino, Torino, Italy

8:45 AM (ID 4955)

Influence of Parasitic Elements on Radiated Emissions of a Boost Converter

Lars Middelstaedt¹, Andreas Lindemann¹, Moawia Al-Hamid², Ralf Vick², (1)Chair for Power Electronics, Otto-von-Guericke-University Magdeburg, Magdeburg, Germany, (2)Chair for Electromagnetic Compatibility, Otto-von-Guericke-University Magdeburg, Magdeburg, Germany

9:10 AM (ID 5345)

Equivalent Circuit Model of Frequency-Domain Responses With External Field

Bing Li, Junjun Wang, Xinwei Song and Donglin Su, Institute of EMC Technology, Beihang University, Beijing, China

9:35 AM (ID 5490)

Experimental Plane Wave and Random Field Coupling to Uniform and Non-uniform Transmission Lines

Robert Vogt-Ardatjew¹, Frank Leferink^{1,2}, (1) University of Twente, Enschede, Netherlands, (2)Thales Nederland B.V., Hengelo, Netherlands, Thales Nederland B.V., Hengelo, Netherlands

4.1.2 10:20 AM – 11:35 AM: TC-4: Field - Wire Coupling & Radiation II

Chair: Franco Fiori, Electronics, Politecnico di Torino, Torino, Italy

10:20 AM (ID 5493)

Study on the Reduction of Heatsink Radiation by Combining Grounding Pins and Absorbing Materials

Yoen Arien¹, Paul Dixon², Andy Degraeve³, Davy Pissoot⁴ and Mohammad Ali Khorrami², (1)Laird, Geel, Belgium, (2)Laird, Randolph, MA, (3)KULeuven, technologiecampus oostende, oostende, Belgium, (4)Technology Campus Ostend, KU Leuven, Ostend, Belgium

10:45 AM (ID 5555)

Layout modelling to predict compliance with EMC standards of power electronic converters

Anne-Sophie Podlejski¹, Arnaud Bréard², Christian Voltaire², Florent Morel³, Cyril Buttay⁴ and Eliana Rondon², (1)Laboratoire AMPERE, Université de Lyon - Ecole Centrale de Lyon, ECULLY, France, (2)Laboratoire Ampère, Ecully, France, (3)Ampere laboratory - Ecole Centrale de Lyon, Ecully, France, (4)Laboratoire Ampère, Villeurbanne, France

11:10 AM (ID 5614)

Field Coupling to Nonlinear Circuits in Resonating Structures

Thomas Wolfram¹, André Manicke¹, Hans Georg Krauthäuser¹, (1) Chair of Electromagnetic Theory and Compatibility, Dresden University of Technology, Dresden, Germany

11:35 AM (ID 5731)

Radiation of Input Decoupling Network for Switching DC-DC Converters

Raul Blecic^{1,2}, Renaud Gillon³, Bart Nauwelaers² and Adrijan Baric¹, (1)Faculty of Electrical Engineering and Computing, University of Zagreb, Zagreb, Croatia, (2)ESAT-TELEMIC, KU Leuven, Leuven, Belgium, (3)ON Semiconductor, Oudenaarde, Belgium

4.2 Track SS-4: EM Field Interaction with Transmission Lines

Chair: Jürgen Nitsch, Otto-von-Guericke University, Magdeburg, Germany

4.2.1 2:00 PM – 3:40 PM

2:00 PM (ID 5407)

On the Validity Limits of the Transmission Line Theory in Evaluating Differential-Mode Signals along a Two-Wire Line above a Ground Plane

Nicolas Mora¹, Gaspard Lugin¹, Farhad Rachidi², Isabelle Junqua³, Jean-Philippe Parmantier³, Sergey Tkachenko⁴, Marcos Rubinstein⁵, Markus Nyffeler⁶ and Pierre Bertholet⁶, (1)EMC Lab, Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland, (2)Electromagnetic Compatibility Laboratory, The Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland, (3)DEMR/CEM, ONERA – The French Aerospace Lab, F-31055, Toulouse, France, (4)Chair of EMC, Otto-von-Guericke University, Magdeburg, Germany, (5)Institute for Information and Communication Technologies, University of Applied Sciences Western Switzerland, Yverdon-les-Bains, Switzerland, (6)HPE Laboratory, Federal Department of Defence-Armasuisse, Thun, Switzerland

2:25 PM (ID 5658)

Network Analysis of Full Wave Multi-conductor Transmission Lines

Fabian Ossevorth¹, Hans Georg Krauthäuser¹, Jürgen Nitsch², (1)Electromagnetic Theory and Compatibility, Technical University Dresden, Dresden, Germany, (2)Otto-von-Guericke University, Magdeburg, Germany

2:50 PM (ID 5209)

Application of Generalized Reflection and Transmission Coefficients to Inhomogeneous Conductors at High Frequencies

Ronald Rambousky¹, Jürgen Nitsch², Sergey Tkachenko² (1)Electromagnetic Effects and HPEM, Bundeswehr Research Institute for Protective Technologies, Munster, Germany, (2)Otto-von-Guericke University, Magdeburg, Germany

3:15 PM (ID 5009)

Analytic Approximation of Natural Frequencies of Bent Wire Structures above Ground

Felix Middelstaedt¹, Sergey Tkachenko², Ronald Rambousky³, Ralf Vick¹, (1) Technical University, Darmstadt, Germany, (2) Chair of EMC, Otto-von-Guericke University, Magdeburg, Germany, (3)Electromagnetic Effects and HPEM, Bundeswehr Research Institute for Protective Technologies, Munster, Germany

4.2.2 4:00 PM – 5:40 PM

4:00 PM (ID 5177)

Numerical Simulation of the Stochastic Electromagnetic Field Coupling to Transmission Line Networks

Mathias Magdowski and Ralf Vick, Chair for Electromagnetic Compatibility, Otto-von-Guericke-University, Magdeburg, Germany

4:25 PM (ID 5367)

Statistical Properties of Low Frequency Voltages Induced by a Plane-Wave Field Across the Terminal Loads of a Random Wire-Bundle

Giordano Spadacini, Flavia Grassi and Sergio A. Pignari, Dept. of Electronics, Information and Bioengineering, Politecnico di Milano, Milan, Italy

4:50 PM (ID 5786)

On the Derivation of Generalized Transmission Line Equations of Cylindrical Waveguides with Irregular Deformed Surfaces

Wolfgang Mathis, Elektrotechnik und Informatik, Leibniz Universitaet Hannover, Hannover, Germany and Richard Mathis, Physics, Universitaet Goettingen, Goettingen, Germany

5:15 PM (ID 5528)

AutoCAD application for LPS, grounding and EMC problems

Dmitry Shishigin, Postgradual student, Vologda, Russia, Nikolay Korovkin, Head of theoretical electrical engineering department, St.-Petersburg, Russia and Sergey Shishigin, Head of electrical engineering department, Vologda, Russia

4.3 Track L: 8:20 AM – 5:40 PM

4.3.1 8:20 AM – 9:35 AM: TC-2: Immunity measurements I

Chair: Donald Heirman, Don HEIRMAN Consultants, Lincroft, New Jersey USA

8:20 AM (ID 5368)

An Experimental Study of Electrostatic Discharge Immunity Testing for Wearable Devices

Takeshi Ishida¹, Shuichi Nitta¹, Fengchao Xiao², Yoshio Kami³, Osamu Fujiwara⁴,
(1)Engineering dept., Noise Laboratory Co.,LTD, Sagamihara, Japan,
(2)Communication Engineering and Informations, University of Electro-
Communications, Tokyo, Japan, (3)Center of Industrial and Governmental Relation,
University of Electro-Communications, Tokyo, Japan, (4)Nagoya Institute of
Technology., Nagoya, Japan

8:45 AM (ID 5417)

Time-Domain Response of Bulk Current Injection Probes to Impulsive Stress Waveforms

Flavia Grassi, Giordano Spadacini and Sergio A. Pignari, Dept. of Electronics,
Information and Bioengineering, Politecnico di Milano, Milan, Italy

9:10 AM (ID 5491)

Design and Fabrication of Miniature Parallel Strip Line in PCB Technology for Immunity Testing

Umberto Paoletti¹, Tatsuji Noma¹, Nobumasa Nishiyama², (1)Hitachi, Ltd., Yokohama
Research Laboratory, Yokohama, Japan, (2)HGST Japan Ltd., Fujisawa, Japan,

4.3.2 10:20 AM – 11:35 AM: TC-2: Immunity measurements II

Chair: Donald Heirman, Don HEIRMAN Consultants, Lincroft, New Jersey USA

10:20 AM (ID 5355)

A new Conducted Immunity Test Device for Inter-laboratory Comparisons

Emrah Tas and Frédéric Pythoud, Laboratory EMC, Federal Institute of Metrology
METAS, Bern-Wabern, Switzerland

10:45 AM (ID 5721)

Stripline Injection Cell for High Frequency BCI Tests

Guillaume Andrieu, OSA department, XLIM Laboratory, Limoges, France and Alain
Reineix, XLIM Laboratory, Limoges, France

11:10 AM (ID 5557)

On the Validity and Statistical Significance of HEMP Test Standards

Lars Ole Fichte¹, Sven Knoth¹, Stefan Potthast², Frank Sabath², Marcus Stiemer¹,
(1)Helmut Schmidt University, Hamburg, Germany, (2)Directorate 300, Bundeswehr
Research Institute for Protective Technologies and NBC Protection, Munster,
Germany

4.3.3 2:00 PM – 3:15 PM: TC-2: Antennas

Chair: Andrew Marvin, University of York, York, UK

2:00 PM (ID 5374)

Antenna Factor Determination of a Shielded Standard Loop Antenna

Nino Richter¹, Alexander Küllmer², Achim Enders², Axel Junge¹, (1)EMC Section,
European Space Agency -ESTEC, Noordwijk, Netherlands, (2)Institute for
Electromagnetic Compatibility, TU Braunschweig, Braunschweig, Germany

2:25 PM (ID 5393)

Contactless calibration of loop antennas in comparison to traditional methods

Alexander Küllmer¹, Nino Richter¹, Martin Lahme¹, Achim Enders¹, Axel Junge²,
(1)Institute for Electromagnetic Compatibility, TU Braunschweig, Braunschweig,
Germany, (2)EMC Section, European Space Agency -ESTEC, Noordwijk,
Netherlands

2:50 PM (ID 5016)

A Detailed Study on TEM Waveguides' Field Distribution and Efficiency

David Hamann¹, Heyno Garbe¹, Thorsten Pusch², Michael Suhrke², (1)Institute of
Electrical Engineering and Measurement Technology, Leibniz Universität Hannover,
Hannover, Germany, (2)Electromagnetic Effects and Threats, Fraunhofer Institute for
Technological Trend Analysis INT, Euskirchen, Germany

4.3.4 4:00 PM – 5:40 PM: TC-2: Measurement Analysis

Chair: Jan Luiken ter Haseborg, Technical University Hamburg-Harburg, Germany

4:00 PM (ID 5464)

Prediction of Magnetic Field Radiation using Equivalent Current Distribution

Yinliang Diao¹, Weinong Sun¹, Peter Sai-Wing Leung¹, Timothy Yun-Ming Siu¹,
Kwok Hung Chan², (1)City University of Hong Kong, Hong Kong, Hong Kong,
(2)Hong Kong productivity council, Hong Kong, Hong Kong

4:25 PM (ID 5648)

EMI-Receiver Simulation Model with Quasi-Peak Detector

Timucin Karaca, Bernd Deutschmann and Gunter Winkler, Institute of Electronics,
Graz University of Technology, Graz, Austria

4:50 PM (ID 5339)

Estimation of Absorber Performance Using Reverberation Techniques and Artificial Neural Network Models

Corey Vyhldal¹, Vignesh Rajamani², Chuck Bunting², Praveen Damacharla³, Vijay
Devabakhtuni³, (1)Electrical and Computer Engineering, Oklahoma State University,
Stillwater, OK, (2)ECE, Oklahoma State University, Stillwater, OK, (3)Department of
Electrical Engineering and Computer Science, University of Toledo, Toledo, OH

4.4 Track M: 8:20 AM – 5:40 PM

4.4.1 8:20 AM – 10:00: TC 9: Modelling Applications and Uncertainty Analysis in Simulations I

Chair: Gilles Peres, Airbus Group Innovations, Toulouse, France

8:20 AM (ID 4994)

High Frequency Models of Toroidal Inductors for EMC Filtering

Felix Traub, Stanislav Skibin and Bernhard Wunsch, ABB Switzerland AG, Baden-
Dättwil, Switzerland

8:45 AM (ID 5716)

Mutual Couplings between EMI Filter Components

Gundars Asmanis¹, Deniss Stepins¹, Aivis Asmanis¹ and Leonids Ribickis²,
(1)Latvian Electronic Equipment Testing Center, Riga, Latvia, (2)Institute of Industrial
Electronics, Riga Technical University, Riga, Latvia

9:10 AM (ID 5066)

Field Uniformity in Radiated Field Immunity Tests

Bruno Audone, EMC Consultant, Torino, Italy, Roberto Colombo, IMQ S.p.A., Milan,
Italy and Michele Borsero, INRIM, Torino, Italy

9:35 AM (ID 5388)

**A Novel Approach for Noise-Immunity Analysis Using Channel Transfer
Impedance on the Power Delivery Network of a Large-Scale Integration Chip**

Sungwook Moon, Jihyun Lee and Jaeyoul Lee, System LSI Business Division,
Samsung Electronics Co. Ltd., Hwaseong-si, Gyeonggi-do, South Korea

**4.4.2 10:20 AM – 12:00 AM: TC 9: Modelling Applications and Uncertainty Analysis in
Simulations II**

Chair: Gilles Peres, Airbus Group Innovations, Toulouse, France

10:20 AM (ID 5065)

**Uncertainty Evaluation of Conducted Emission Measurements by Means of
Conformal Mapping**

Bruno Audone, EMC Consultant, Torino, Italy, Alberto Francesco Finizio, Politecnico
di Milano and Xi'an Jiaotong University, Milan, Italy and Roberto Colombo, IMQ
S.p.A., Milan, Italy

10:45 AM (ID 5083)

**Uncertainty Analysis in EMC Simulation Based on Stochastic Collocation
Method**

Bai Jinjun¹, Zhang Gang¹, Alistair Duffy, Chairman, IEEE EMC Society Standards
Development and Education Committee² and Wang Lixin¹, (1)Harbin Institute of
Technology, Harbin, China, (2)De Montfort University, Leicester, United Kingdom

11:10 AM (ID 5612)

Stochastic KRON's model inspired from the Random Coupling Model

Chaouki Kasmi, Dr.¹, Olivier Maurice, Dr.², Gabriele Gradoni³, Thomas Antonsen
Jr.⁴, Edward Ott⁴ and Steven Anlage⁴, (1)Wireless and Hardware Security Lab,
French Network and Information Security Agency, Paris, France, (2)GERAC
Electromagnétisme, Trappes, France, (3)School of Mathematical Sciences, The
University of Nottingham, Nottingham, United Kingdom, (4)Institute for Research in
Electronics and Applied Physics, University of Maryland, College Park, MD

11:35 AM (ID 5691)

**Waveguide Simulation Approach for Transmission Analysis of Reinforced
Concrete Wall Structures**

Simon Runke¹, Martin Zang², Joachim Streckert², Volkert Hansen² and Markus Clemens¹, (1)Chair of Electromagnetic Theory, Bergische Universität Wuppertal, Wuppertal, Germany, (2)Bergische Universität Wuppertal, Wuppertal, Germany

4.4.3 2:00 PM – 3:15 PM: TC-9: Practical Applications of Numerical Modelling I

Chair: Samuel Connor, IBM, Research Triangle Park, North Carolina, USA

2:00 PM (ID 5430)

Characterisation of Radiated Fields from PCBs in the Time Domain

Dave Thomas, Chris Smartt and Steve Greedy, Electrical Systems and Optics, University of Nottingham, Nottingham, United Kingdom

2:25 PM (ID 5627)

Challenges of time domain measurement of field-field correlation for complex PCBs

Chris Smartt¹, Dave Thomas¹, Hayan Nasser¹, Mohd Baharuddin¹, Gabriele Gradoni², Gregor Tanner² and Stephen Creagh², (1)Electrical Systems and Optics, University of Nottingham, Nottingham, United Kingdom, (2)School of Mathematical Sciences, The University of Nottingham, Nottingham, United Kingdom

2:50 PM (ID 5694)

A Fast Prediction for Shielding Effectiveness of Double Enclosures

Liping Yan¹, Xiang Zhao¹, Yong Kan¹, Changjun Liu¹, Kama Huang¹ and Haijing Zhou², (1)College of Electronics and Information Engineering, Sichuan University, Chengdu, China, (2)Institute of Applied Physics and Computation Mathematics, Beijing, China

3:15 PM (ID 5447)

Simulation of conductive and radiated emissions from wiper motor according to CISPR 25 standard

Irina Oganezova^{1,2}, Robert Kado³, Badri Khvitia^{1,2}, Anna Gheonjian^{1,2} and Roman Jobava², (1)Tbilisi State University, Tbilisi, Georgia, (2)EMCoS Ltd., Tbilisi, Georgia, (3)Electromagnetic Compatibility (EMC), Fiat Chrysler Automobiles (FCA), Auburn Hills, MI

4.4.4 4:00 PM – 5:40 PM: TC-9: Practical Applications of Numerical Modelling II

Chair: Ronald Rambousky, Bundeswehr Research Institute for Protective Technologies and NBC-Protection (WIS), Munster, Germany

4:00 PM (ID 5002)

Delay-Rational Model of Lossy and Dispersive Multiconductor Transmission Lines

Maria De Lauretis, Computer Science, Electrical and Space Engineering, Luleå University of technology, Luleå, Sweden, Giulio Antonini, Dipartimento Ingegneria Industriale e dell'Informazione e di Economia, Università degli Studi dell'Aquila, L'Aquila, Italy and Jonas Ekman, Department of Computer Science, Electrical and Space Engineering, Luleå University of Technology, Luleå, Sweden

4:25 PM (ID 5329)

Efficient Analytical Calculation of the Plane Wave Coupling to Uniform Transmission Lines With Arbitrary Load Resistances in Time Domain

Mathias Magdowski and Ralf Vick, Chair for Electromagnetic Compatibility, Otto-von-Guericke-University, Magdeburg, Germany

4:50 PM (ID 5814)

Modeling the Influence of Corona Discharge on High-Voltage Surges Propagating along Transmission Lines using TLM

John Evans¹, Dave Thomas² and Steve Greedy², (1)University of Nottingham, Nottingham, United Kingdom, (2)Electrical Systems and Optics, University of Nottingham, Nottingham, United Kingdom

5:15 PM (ID 5635)

Coupled Arc Discharge Models in the TLM Method

Ahmed Elkalsh, Ana Vukovic, Phillip Sewell and Trevor Benson, Univeristy of Nottingham, George Green Institute for Electromagnetics Research, Nottingham, United Kingdom

4.5 Track N: 8:20 AM – 5:40 PM

4.5.1 8:20 AM – 10:00: TC 10 Signal and Power Integrity V

Chair: Bill Chen, Yangtze Delta Region Institute of Tsinghua University, China.

8:20 AM (ID 5540)

Compact Hybrid Open Stub EBG Structure for Power Noise Suppression in WLAN Band

Chi-Kai Shen, and Tzong-Lin Wu, National Taiwan University, Taipei City, Taiwan

8:45 AM (ID 5375)

Noise Immunity Design for Multilayer Printed Circuit Boards Using Electromagnetic Simulation

Mamoru Kamikura, Dr., Norihiko Akashi and Yuichiro Murata, Dr., Advanced Technology R&D Center, Mitsubishi Electric Corporation, Amagasaki, Japan

9:10 AM (ID 5181)

A Black-Box Measurement-Based Modeling Method for the RF Emission and Immunity Behavior of Integrated Circuits

Hugo Pues and Celina Gazda, Melexis, Tessengerlo, Belgium

9:35 AM (ID 5625)

Analysis of intra-chip degital noise coupling path in fully LTE compliant RF receiver Test Chip

Masahiro Yamaguchi¹, Peng Fan¹, Satoshi Tanaka¹, Sho Muroga, Dr.² and Makoto Nagata³, (1)Department of Electrical Engineering, Tohoku University, Sendai, Japan, (2)Department of Electrical and Electronic Engineering, National Institute of Technology, Toyota College, Toyota, Japan, (3)Graduate School of System Informatics, Kobe University, Kobe, Japan

4.5.2 10:20 AM – 11:35 AM: TC 10 Signal and Power Integrity VI

Chair: Bill Chen, Yangtze Delta Region Institute of Tsinghua University, China.

10:20 AM (ID 5156)

Conducted emission characteristics of CCM boost converter with SiC schottky barrier diode

Takaaki Ibuchi and Tsuyoshi Funaki, Osaka University, Suita, Osaka, Japan

10:45 AM (ID 5334)

Susceptibility of Chopper OpAmps to EMI

Franco Fiori, DET, Politecnico di Torino, Torino, Italy

11:10 AM (ID 5760)

LF H-field immunity surface scan method

Mart Coenen, BSc, Mgt, EMCMCC, Breda, Netherlands and Bharat Kathari, MSc, IBI Group, New Delhi, India

4.5.3 2:00 PM -3:40 PM: TC-11: Nanotechnology and Advanced Materials in EMC I

Co-Chair: Sabrina Sarto, Sapienza University of Rome, Rome, Italy

Marina Koledintseva, Oracle, EMC Hardware Design, USA

2:00 PM (ID 5722)

MWCNTs Nanocomposites for space applications

Marco Nicoletto¹, Demis Boschetti¹, Mauro Giorcelli² and Patrizia Savi², (1) Electrical System and EMC, Thales Alenia Space, Torino, Italy, (2)Politecnico di Torino, Torino, Italy

2:25 PM (ID 5353)

Optimal Terahertz Shielding Performances of Flexible Multilayer Screens Based on Chemically Doped Graphene on Polymer Substrate

Alessandro Giuseppe D'Aloia¹, Marcello D'Amore¹ and Maria Sabrina Sarto², (1)Sapienza University of Rome, Roma, Italy, (2) DIAEE, Sapienza University of Rome, Roma, Italy

2:50 (ID 5048)

Modelling of Multilayer Graphene (MLG)-Based Structures at Different Temperatures

Da-Wei Wang¹, Wen-Sheng Zhao², Wenchao Chen¹, Wen-Yan Yin Sr.³ and Hong-Ke Ma⁴, (1)Zhejiang University, Hangzhou, China, (2)Hangzhou Dianzi University, Hangzhou, China, (3)Centre for Optical and EM Research (COER), Zhejiang University, Hangzhou, China, (4)Science and Technology on High Power Microwave Lab, Institute of Applied Electronics, Mianyang, China

3:15 PM (ID 5597)

Electromagnetic Shielding Properties of Nano Carbon Filled Silicone Rubber Composites

Joseph Vas and Joy Thomas, Indian Institute of Science, Bangalore, India

4.5.4 4:00 PM -4:50 PM: TC-11: Nanotechnology and Advanced Materials in EMC II

Co-Chair: Sabrina Sarto, Sapienza University of Rome, Rome, Italy

Marina Koledintseva, Oracle, EMC Hardware Design, USA

4:00 PM (ID 4993)

Dynamically Reconfigurable Metamaterials for Shielding and Absorption in the GHz Range

Francesco de Paulis¹, Carlo Rizza², Alessandro Ciattoni³, Elia Palange⁴ and Antonio Orlandi¹, (1)Industrial and Information Engineering and Economics, University of L'Aquila, L'Aquila, Italy, (2)Department of Science and High Technology, University of Insubria, Como, Italy, (3)National Research Council, CNR-SPIN, L'Aquila, Italy, (4)Department of Physics and Chemistry, University of L'Aquila, L'Aquila, Italy

4:25 PM (ID 5349)

HF Characteristics of Laminated Structure Consisting of Negative Permittivity and High Permittivity Materials

Shinichiro Yamamoto¹, Masayoshi Okita¹, Kenichi Hatakeyama¹ and Takanori Tsutaoka², (1)Graduate School of Engineering, University of Hyogo, Himeji, Japan, (2)Graduate School of Education, Hiroshima University, Higashi-Hiroshima, Japan

4.6 Track O: 8:20 AM – 12:00 AM: SS-5 Intentional Electromagnetic Interference (IEMI) Protection of Critical Infrastructures

Chair: Frank Sabath, Bundeswehr Research Institute for Protective Technologies and NBC-Protection (WIS), Munster, Germany

4.6.1 8:20 AM – 10:00 AM

8:20 AM (ID 5020)

HPEM-Testing of Electronic Equipment in Critical Infrastructure Surrounding

R. Rambousky, A. Bausen, and F. Sabath, Bundeswehr Research Institute for Protective Technologies and NBC-Protection (WIS), Munster, Germany

8:45 AM (ID 5354)

Analysis of IEMI Effects on a Computer Network in a Realistic Environment

M. Kreitlow¹, H. Garbe² and F. Sabath¹, (1) Bundeswehr Research Institute for Protective Technologies and NBC-Protection (WIS), Munster, Germany, (2) Leibniz Universität Hannover, Hannover, Germany

9:10 AM (ID 5459)

HPEM Vulnerability of Radiation Meters Used in Security Relevant Scenarios

C. Adami, W. Berky, M. Joester, M. Suhrke and T. Pusch, Fraunhofer Institute for Technological Trend Analysis (INT), Euskirchen, Germany

9:35 AM (ID 5495)

Uncertainty Analysis in System-level Vulnerability Assessment for IEMI

C. Mao, Northwest Institute of Nuclear Technology, Xi'an, China

4.6.2 10:20 AM – 12:00 AM

10:20 AM (ID 5551)

A Fuzzy Approach for IEMI Risk Analysis of IT-Systems with Respect to Transient Disturbances

T. Peikert¹, S. Potthast² and H. Garbe¹, (1) Leibniz Universität Hannover, Hannover, Germany, (2) Bundeswehr Research Institute for Protective Technologies and NBC-Protection (WIS), Munster, Germany

10:45 AM (ID 4889)

Assessing the Likelihood of various Intentional Electromagnetic Environments

F. Sabath¹, and H. Garbe², (1) Bundeswehr Research Institute for Protective Technologies and NBC-Protection (WIS), Munster, Germany, (2) Leibniz Universität Hannover, Hannover, Germany

11:10 AM (ID 5626)

Method for detecting jamming signals superimposed on a radio communication- Application to the surveillance of railway environments

M. Heddebaut, V. Deniau, J. Riout, G. Copin and S. Mili, COSYS, IFSTTAR, Villeneuve d'Ascq, France

11:35 AM (ID 5449)

The European Project STRUCTURES: challenges and results

S. van De Beek¹, J. Dawson², L. Dawson², I. Flintoft², H. Garbe³, F. Leferink^{1,4}, B. Menssen³, N. Mora⁵, F. Rachidi⁵, M. Righero⁶, M. Rubinstein⁷ and M. Stojilovic⁷, (1) University of Twente, Enschede, Netherlands, (2) University of York, York, UK, (3) Leibniz Universität Hannover, Hannover, Germany, (4) Thales Nederland B.V., Hengelo, Netherlands, (5) Swiss Federal Institute of Technology, Lausanne, Switzerland, (6) Istituto Superiore Mario Boella, Torino, Italy, (7) University of Applied Sciences and Arts Western Switzerland, Yverdon-les-Bains, Switzerland

4.7 Track O: 2:00 PM – 5:40 PM

4.7.1 2:00 PM – 3:40 PM: TC 5 HPEM Testing and Analysis

Chair: William Radasky¹, Frank Sabath², (1) Metatech Corporation, Goleta, California, USA, (2) Bundeswehr Research Institute for Protective Technologies and NBC-Protection (WIS), Munster, Germany

2:00 PM (ID 5251)

ESD Performance Evaluation of Powered High-Speed Interfaces

Sebastian Koch¹, Harald Gossner¹, Horst Gieser² and Linus Maurer^{2,3}, (1) Intel Deutschland GmbH, Neubiberg, Germany, (2) Fraunhofer-Einrichtung für Mikrosysteme und Festkörper-Technologien EMFT, München, Germany, (3) Universität der Bundeswehr München, Neubiberg, Germany

2:25 PM (ID 5129)

Using an In-line Uninterruptable Power Supply as TEMPEST 'Filter' for Naval Vessels

Frank Leferink^{1,2}, Hans Bergsma¹, (1) Thales Nederland B.V., Hengelo, The Netherlands; (2) University of Twente, Enschede, The Netherlands

2:50 PM (ID 5420)

Development of a Surge Simulation Code VSTL REV Based on the 3D FDTD Method

Akiyoshi Tatematsu, Electric Power Engineering Research Laboratory, Central Research Institute of Electric Power Industry, Yokosuka, Japan

3:15 PM (ID 4500)

EMC Analysis and Characterization of New Nanocomposite Laminates for Aeronautic

En-Xiao Liu¹, Bui Viet Phuong¹, Warintorn Thitsartarn², Chaobin He² and Jayven Yeo², (1) Electronics & Photonics Department, Institute of High Performance Computing (IHPC), A*STAR, Singapore, Singapore, (2) Synthesis & Integration, Institute of Materials Research and Engineering, A*STAR, Singapore, Singapore

4.7.2 4:00 PM – 18:05 PM: TC 5 IEMI Pulsers and Effects Evaluations

Chair: William Radasky¹, Frank Sabath², (1) Metatech Corporation, Goleta, California, USA, (2) Bundeswehr Research Institute for Protective Technologies and NBC-Protection (WIS), Munster, Germany

4:00 PM (ID 5600)

Experimental Investigations on the Pulsed Power Switch of a HIRA based UWB System

Vijay Bhosale¹, Joy Thomas M.², D.C. Pande³ and Joseph Vas², (1) DRDO, LRDE, Bangalore, India, (2) Electrical Engineering, Indian Institute of Science, Bangalore, India, (3) ÉMI-EMC, LRDE, Bangalore, India

4:25 PM (ID 5043)

High Power Radiators and E-Field Sensors for Sub-Nanosecond Electromagnetic Pulses

Vladimir Fedorov, Lab. of Power EM-impacts, Joint Institute for High Temperatures of Russian Academy of Sciences, Moscow, Russia

4:50 PM (ID 5258)

Destructive High-Power Microwave Testing of Simple Electronic Circuit in Reverberation Chamber

Tomas Hurtig, Leif Adelöw, Mose Akyuz, Mattias Elfsberg, Anders Larsson and Sten E Nyholm, Swedish Defence Research Agency, Norra Sorunda, Sweden

5:15 PM (ID 5406)

Effect of Pulsed Interference on an ASK Receiver

Stefan van De Beek¹, Silvo Jeunink¹ and Frank Leferink^{1,2}, (1) University of Twente, Enschede, The Netherlands, (2) Thales Nederland B.V., Hengelo, The Netherlands

17:40 (ID 5766)

Status and Progress of IEC SC 77C High-Power Electromagnetics Publications in 2015

William Radasky¹, Richard Hoad², (1) Metatech Corporation, Goleta, CA, USA, (2) QinetiQ, Farnborough, United Kingdom

4.8 SS-3: EMC Diagnostics of Complex Systems

Chair: Vladimir Mordachev, Belarusian State Univ. of Informatics and Radioelectronics, Minsk, Belarus

4.8.1 2:00 PM – 3:40 PM

2:00 PM (ID 5090)

Worst-Case Estimation of Electromagnetic Background Near Ground Surface Created by Heterogeneous Radioelectronic Environment

Vladimir Mordachev, R&D Department, Belarusian state university of informatics and radioelectronics, Minsk, Belarus

2:25 PM (ID 5093)

Reduction of the Radiated Power of Cellular Base Stations on Urban Area at High Intrasystem EMC Requirements

Vladimir Mordachev, R&D Department, Belarusian state university of informatics and radioelectronics, Minsk, Belarus

2:50 PM (ID 5308)

Investigation of the Transmitter Susceptibility to Reverse Intermodulation by the Use of Double-Frequency Diagrams

Eugene Sinkevich, EMC R&D Laboratory, Belarusian State University of Informatics and Radioelectronics, Minsk, Belarus

3:15 PM (ID 5646)

Computationally-Effective Worst-Case Estimation of Currents in Transmission Lines for EMC Diagnostics of Big Systems

Dzmitry Tsyantenka¹, Eugene Sinkevich¹, Yauheni Arlou¹ and Sergei Maly², (1)EMC R&D Laboratory, Belarusian State University of Informatics and Radioelectronics, Minsk, Belarus, (2)The Faculty of Radiophysics and Computer Technologies, Belarusian State University, Minsk, Belarus

4.8.2 4:00 PM – 4:50 PM

4:00 PM (ID 5484)

Computationally-Effective Wideband Worst-Case Model of Transmission Line Radiation

Dzmitry Tsyankenka¹, Yauheni Arlou¹, Eugene Sinkevich¹ and Sergei Maly²,
(1)EMC R&D Laboratory, Belarusian State University of Informatics and
Radioelectronics, Minsk, Belarus, (2)The Faculty of Radiophysics and Computer
Technologies, Belarusian State University, Minsk, Belarus

4:25 PM (ID 5671)

**A Tool for Coexistence Planning in Complex Radio Communication
Environments**

Sara Linder¹, Kia Wiklundh¹, Peter Stenumgaard¹, Karina Fors¹ and Leif Junholm²,
(1)Robust Telecommunications, Swedish Defence Research Agency, Linköping,
Sweden, (2)AL Command and Control, Swedish Defence Material Administration
(FMV), Östersund, Sweden

DRAFT

5 Poster Sessions

5.1 Tuesday, August 18

Chair: Mauro Feliziani, President International Steering Committee EMC Europe

- 4624 Investigation on the Effect of Impedance Changes in Broadband Antennas with Varying Antenna Height on Radiated Emission Measurement Below 1 GHz
Shinichi Okuyama, Kakegawa EMC Center, NEC Platforms, Ltd., Kakegawa, Japan, Ikuo Makino, Fujitsu General EMC Laboratory, Ltd., Kawasaki, Japan, Hiroyuki Shimano, S-Tech Inc., Kawasaki, Japan and Hidenori Muramatsu, VCCI Council, Tokyo, Japan
- 4826 A Measurement System for Radiated Transient Electromagnetic Interference Based on General Purpose Instruments
Marco Azpurua, Grup de Compatibilitat Electromagnètica, Universitat Politècnica de Catalunya, Barcelona, Spain, Ferran Silva, Universitat Politècnica de Catalunya, Grup de Compatibilitat Electromagnètica, Barcelona, Spain and Marc Pous, Universitat Politècnica de Catalunya, Barcelona, Spain
- 4858 Compensation method for the coupling error between the EUT and TEM cell in E-field probe isotropic calibration
Huan Wang, Ph.D., China Academy of Information and Communications Technology, Beijing, China and Zhong Chen, ETS-Lindgren, Cedar Park, TX
- 5194 On the Quality of a Real Open Area Test Site
Inès Barbary¹, Reiner Pape², Lars-Ole Fichte¹, Sebastian Lange³, Thomas Kleine-Ostmann², Thorsten Schrader², Martin Schaarschmidt³ and Marcus Stiemer¹, (1)Helmut Schmidt University, Hamburg, Germany, (2)Physikalisch-Technische Bundesanstalt, Braunschweig, Germany, (3)Scientific Computing, Bundeswehr Research Institute for Protective Technologies and NBC Protection, Munster, Germany
- 5250 Analytical Prediction of Common Mode Noise in a Source Stirred Reverberation Chamber
Alfredo De Leo, Valter Mariani Primiani, Paola Russo and Graziano Cerri, Dipartimento di Ingegneria dell'Informazione, Università Politecnica delle Marche, Ancona, Italy
- 5293 EMC Analysis Including Receiver Characteristics - Pantograph Arcing and the Instrument Landing System
Robert Geise, Oliver Kerfin, Björn Neubauer, Georg Zimmer and Achim Enders, Institute for Electromagnetic Compatibility, University of Braunschweig, Braunschweig, Germany
- 5316 An Interlaboratory Comparison for Mobile Phone SAR
Andrei Marinescu, ICMET, Craiova, Romania, Yahya Emre Gülersoy, ICTA MSL Directorate, Ankara, Turkey and Gernot Schmid, Seibersdorf Labor GmbH, Seibersdorf, Austria
- 5327 Various Estimations of Composite Q-factor with Antennas in a Reverberation Chamber
Philippe Besnier¹, Christophe Lemoine² and Jerome Sol², (1)IETR-CNRS-

- Institut National des Sciences Appliquées de Rennes, Rennes, France, (2)IETR-
Institut National des Sciences Appliquées de Rennes, Rennes, France
- 5338 Feasibility Study of Multi-Frequency Test in a Single Rotation of Mode Stirred
Reverberation Chamber
Vignesh Rajamani, PhD, ECE, Oklahoma State University, Stillwater, OK and
Gustav Freyer, Consultant, Monument, CO
- 5361 Limitations of a Stripline for Immunity Tests on Road Vehicle components
Moawia Al-Hamid¹, Ralf Vick², Martin Krüger² and Philipp Wollmann³,
(1)Chair for Electromagnetic Compatibility, Otto-von-Guericke-University
Magdeburg, Magdeburg, Germany, (2)Chair for Electromagnetic
Compatibility, Otto-von-Guericke-University, Magdeburg, Germany, (3)Otto-
von-Guericke University of Magdeburg, Magdeburg, Germany
- 5384 Optimization of Experiment Requirement in EMC using re-sampling
techniques
Chaouki Kasmi, Dr.1, Emmanuel Prouff, Dr.2, Sébastien Lalléchère, Dr.3,
Sébastien Girard³, Françoise Paladian⁴ and Pierre Bonnet⁵, (1)Wireless and
Hardware Security Lab, French Network and Information Security Agency,
Paris, France, (2)Wireless and Hardware Security Lab, French Network and
Information Security Agency, 75007, France, (3)CNRS UMR 6602, Institut
Pascal Clermont université, Université Blaise Pascal, Aubière, France,
(4)Physics Department -Pascal Institute - CNRS, UMR 6602 PHOTON axis -
EMC group, Blaise Pascal University, Aubière, France, (5)Physics Department
Pascal Institute - CNRS, UMR 6602 PHOTON axis - EMC group, Blaise Pascal
University, Aubière, France
- 5593 Alternative Conducted Emission Measurements with LISN Simulation &
CISPR 16 Voltage Probe
Osman Sen, Soydan Cakir, Savas Acak and Mustafa Cetintas, TUBITAK UME,
Kocaeli, Turkey
- 5652 Direct Power Injection (DPI) simulation framework and postprocessing
Andrea Lavarda and Bernd Deutschmann, Institute of Electronics, Graz
University of Technology, Graz, Austria
- 5654 Adapter and method for improving the LISN input impedance measurement
accuracy
François Ziadé¹, Mohamed Ouameur², Miha Kokalj³, André Poletaëff¹,
Borut Pinter³ and Djamel Allal¹, (1)Electrical Department, Laboratoire
National de Métrologie et d'Essais (LNE), Trappes, France, (2)Polytech
Clermont Ferrand, Clermont Ferrand, France, (3)Slovenian Institute of
Quality and Metrology (SIQ), Ljubljana, Slovenia
- 5664 Alternative Conducted Immunity Testing with Multiple CDNs and Wire
Winding
Soydan Cakir, Osman Sen, Savas Acak and Mustafa Cetintas, TUBITAK UME,
Kocaeli, Turkey
- 5700 WIDE BAND MEASUREMENTS IN TIME-DOMAIN WITH CURRENT AND
VOLTAGE PROBES FOR POWER LOSSES EVALUATION AND EMC
MEASUREMENTS ON POWER CONVERTERS
Kevin Loudiere¹, Arnaud Bréard¹, Christian Voltaire¹, François Costa²,
Houmam Moussa³ and Régis Meuret³, (1)Laboratoire Ampère, Ecully,
France, (2)Université Paris-Est SATIE-CNRS, Cachan, France, (3)Labinal Power

- Systems, Réau, France
- 5724 Time-Frequency Processing Adapted for the Different Electromagnetic Compatibility Issues in the Railways Domain
Mohamed Raouf Kousri^{1,2,3}, Virginie Deniau, Dr², Sylvie Baranowski³, Marc Heddebaut² and Jean Rioult², (1)Technological Research Institute, Railenium, Famars, France, (2)COSYS, IFSTTAR, villeneuve d'ascq, France, (3)IEMN, University Lille1 Sciences and Technologies, Villeneuve d'Ascq, France
- 5785 Broadband Phase Estimation Using Non-Coherent Measurement using a Spectrum Analyzer for EMI Applications
Zongyi Chen¹, Shubhankar Marathe², Hamed Kajbaf³, Stephan Frei⁴ and David Pommerenke², (1)On-board Systems Lab - TU Dortmund, Dortmund, Germany, (2)EMC Laboratory, Missouri University of Science and Technology, Rolla, MO, (3)Amber Precision Instruments, San Jose, CA, (4)TU Dortmund University, Dortmund, Germany
- 5840 Spark-less Electrostatic Discharge (ESD) on Display Screens
Atieh Talebzadeh¹, Yingjie Gan², Ki-Hyuk Kim¹, Yiqiang Zhang³ and David Pommerenke¹, (1)EMC Laboratory, Missouri University of Science and Technology, Rolla, MO, (2)School of Science, Wuhan University of Technology, Wuhan, MO, China, (3)Nokia, Communication Company, Beijing, China
- 4855 Study on Triangular EBG Unit Cell Structures for Suppression of SSN in Power/Ground Planes
Jong Hwa Kwon, Radio Technology Research Department, ETRI, Daejeon, South Korea
- 5024 Nonlinear Loaded Microstrip Interconnect Analysis with Temperature Effect
Blaise Ravelo, Dr., Electronics, IRSEEM, Saint Etienne du Rouvray, France
- 5278 CSRR Common-Mode Filtering Structures in Multilayer Printed Circuit Boards
Sang Goo Kang, Garrett Shaffer, Christopher Kodama, Christopher O'Daniel and Edward Wheeler, Electrical and Computer Engineering, Rose-Hulman Institute of Technology, Terre Haute, IN
- 5395 Passive device degradation models for a electromagnetic emission robustness study of a buck DC-DC converter
He Huang, Alexandre Boyer and Sonia Ben Dhia, LAAS CNRS, Toulouse, France
- 5584 Calculation of Power-Supply-Induced Jitter at a 3-D IC channel including ESD Protection Circuits
Eunhyeong Park¹, Jongjoo Lee², Youngwoo Park² and Jinguok Kim¹, (1)Ulsan National Institute of Science and Technology, Ulsan, South Korea, (2)Samsung Electronics, Hwaseong, South Korea
- 5591 An Application of the Preference Set-based Design Method to Filter Designs
Kawakami Masashi¹, Fengchao Xiao, Doctor², Kami Yoshio³ and Ishikawa Haruo³, (1)Dept. of Communication Engineering and Informatics, The University of Electro-Communications, Tokyo, Japan, (2)Communication Engineering and Informations, University of Electro-Communications, Tokyo, Japan, (3)The University of Electro-Communications, Tokyo, Japan
- 5619 Verification of Novel Extended Mixed-Mode S-parameters on Three-conductor lines

- Nan Zhang, School of Electric and Electromechanical Engineering, Sungkyunkwan University, Suwon, South Korea and Wansoo Nah, Department of Electrical and Electronics Engineering, Sungkyunkwan University, Suwon, South Korea
- 5734 Signal Integrity - EMI affects the reliability of embedded electronic systems
Kirsten Weide-Zaage, RESRI IMS-AS, Leibniz Universität Hannover, Hannover, Germany
- 5767 A Methodology to Characterize USB3 IO Link Signal Margin Variation in High Volume Manufacturing
Steven Ji¹, Xiaoning Qi¹ and Sudeep Puligundla², (1)Intel Corporation, Santa Clara, CA, (2)Intel Corporation, Hillsboro, OR
- 5777 Stochastic Macromodeling for Hierarchical Uncertainty Quantification of Nonlinear Electronic Systems
Giulio Antonini¹, Tom Dhaene², Luc Knockaert³, Domenico Spina⁴, Francesco Ferranti⁵, Georges Gielen⁶ and Dimitri De Jonghe⁶, (1)Dipartimento Ingegneria Industriale e dell'Informazione e di Economia, Università degli Studi dell'Aquila, L'Aquila, Italy, (2)Dept. of Information Technology, Ghent University, Ghent, Belgium, (3)Information Technology, Ghent University, Ghent, Belgium, (4)Information Technology, Ghent University - iMinds, Ghent, Belgium, (5)Department of Fundamental Electricity and Instrumentation, Vrije Universiteit Brussel, Brussels, Belgium, (6)Elektrotechniek ESAT-MICAS, KU Leuven, Leuven, Belgium

5.2 Wednesday, August 19

Chair: Hans Georg Krauthäuser, General Chair EMC Dresden 2015

- 5282 Design Considerations of a Damped Sinewave Generator
Karl Thorup, MSEE, EMC, MOOG Inc., Salt lake City, UT
- 5642 Evaluation of The Electric-Field Transfer Functions Between IEMI Sources and Banking IT Equipment
Simon Runke¹, Mirjana Stojilović², Sana Sliman², Marcos Rubinstein³, Markus Clemens¹, Nicolas Mora⁴ and Farhad Rachidi⁵, (1)Chair of Electromagnetic Theory, Bergische Universität Wuppertal, Wuppertal, Germany, (2)Institute of Information and Communication Technologies, University of Applied Sciences Western Switzerland, Yverdon-les-Bains, Switzerland, (3)Institute for Information and Communication Technologies, University of Applied Sciences Western Switzerland, Yverdon-les-Bains, Switzerland, (4)EMC Lab, Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland, (5)Electromagnetic Compatibility Laboratory, The Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland
- 5668 A Combined Time and Frequency Domain Characterization Method for Modeling of Overvoltage Protection Elements
Stanislav Scheier¹, Dominik Deelmann¹, Stephan Frei², Christian Widemann³ and Wolfgang Mathis³, (1)On-board Systems Lab - TU Dortmund University, Dortmund, Germany, (2)TU Dortmund University, Dortmund, Germany, (3)Leibniz Universität Hannover, Hannover, Germany
- 5818 Mathematical Expression of Electromagnetic Pulse in Immunity Standards
Corneliu Ursachi¹, Elena Helerea², Elena Larisa Mariut² and Marius Daniel Calin³, (1)Electric Engineering and Applied Physics, Transilvania University of Brasov, Brasov, Romania, (2)Transilvania University, Brasov, Romania, (3)Electrical Engineering and Applied Physics, Transilvania University of Brasov, Brasov, Romania
- 4978 A characterization of EM coupling in a fully electric 4-wheel drive vehicle
Ivan Echeverria¹, Mateo Iglesias¹, Fernando Arceche¹, Francisco Javier Piedrafita¹, Álvaro Pradas¹, Francisco Javier Arcega² and Jasper De Smet³, (1)ITAINNOVA, Zaragoza, Spain, (2)Universidad de Zaragoza, Zaragoza, Spain, (3)FLANDERS' DRIVE, Lommel, Belgium
- 5203 Design of Conductive Shield for Wireless Power Transfer System for Electric Vehicle Considering Automotive Body
Hongseok Kim, Chiuk Song, Dong-Hyun Kim, Yeonje Cho and JoungHo Kim, Korea Advanced Institute of Science and Technology (KAIST), Daejeon, South Korea
- 5651 BER Performance of GSM/EDGE Receiver under the Influence of adjacent Channel Interference
Zhaohai Jiang, 17664987239, Universität der Bundeswehr München, Neubiberg, Germany, Harald Gossner, Intel Deutschland GmbH, Neubiberg, Germany and Walter Hansch, Faculty of Electrical Engineering and Information Technology, Universitaet der Bundeswehr, Neubiberg, Germany
- 4935 MODELING OF RECTIFIERS FOR RESONANCE STUDIES: A PIVOTAL APPROACH
Felix Kalunta, M.SC, Electrical/Electronic Department, Electrical/Electronic Department, University of Lagos,, Nigeria, Lagos, Nigeria and Frank Okafor,

- Ph.D, PROFESSOR, Electrical/Electronic engineering Department, University of Lagos, Lagos, Nigeria
- 5126 Some EMC Aspects of a 2 MV Marx Generator with sensitive diagnostic equipment in the immediate vicinity
Alexander van Deursen and Pavlo Kochkin, Electrical Engineering, Eindhoven University of Technology, Eindhoven, Netherlands
- 5166 Filter for the Measurement of Supraharmonics in Public Low Voltage Networks
Matthias Klatt¹, Jan Meyer¹, Robert Wolf², Peter Schegner¹ and Bernhard Wittenberg³, (1)Institute of Electrical Power Systems and High Voltage Engineering, Technische Universität Dresden, Dresden, Germany, (2)Institute of Circuits and Systems, Technische Universität Dresden, Dresden, Germany, (3)Technology Innovation, Netze BW GmbH, Stuttgart, Germany
- 5168 Research on Twelve-phase Round-Shaped Transformers Applied in Rectifier Systems
Tiejun Wang, Fang Fang, Xiaoyi Jiang and Lv Yang, Naval University of Engineering, Wuhan, China
- 5534 Wideband Characterization and Modeling of Coupled Inductors under Temperature Variations
Fahim Hami^{1,2}, Habib Boulzazen² and Moncef Kadi³, (1)VeDeCoM, Versailles, France, (2)IRSEEM/ESIGELEC, Saint Etienne du Rouvray, France, (3)Electronics and Systems, IRSEEM/ESIGELEC, Rouen, France
- 5542 Electromagnetic Interfering Characteristics into the Air by a Buried Conductor as a Secondary ELF Line Source
Sangmu Lee¹, Pyung-Dong Cho¹ and Dongho Kim², (1)Protocol Engineering Center, Electronics and Telecommunications Research Institute, Daejeon, South Korea, (2)Sejong University, Seoul, South Korea
- 5661 Predicting the Conducted Emissions of Switched-Mode Power Converters Including Component and Printed Circuit Board Parasitics
Sören Weßling, Faculty of Electrical Engineering, Helmut Schmidt University / University of the Federal Armed Forces Hamburg, Hamburg, Germany and Stefan Dickmann, Institute of Fundamentals of Electrical Engineering, Helmut Schmidt University / University of the Federal Armed Forces Hamburg, Hamburg, Germany
- 5697 Modeling the common mode impedance of motor drive systems using the antenna wire concept
Rob Mestrom, Department of Electrical Engineering, Electromagnetics Group, Eindhoven University of Technology, Eindhoven, Netherlands, Anne Roc'h, Electrical Engineering Faculty - Electromagnetics, Eindhoven University of Technology, Eindhoven, Netherlands and Yingzhe Xi, Eindhoven University of Technology, Eindhoven, Netherlands
- 5774 Electric Current Exposure Evaluation of Hand in Current Perception Threshold Measurement
Yoshitsugu Kamimura, Information Science, Utsunomiya University, Utsunomiya-shi, Japan
- 5836 Behavior of Fast Variable Loads at the Connection to the Power Supplying Source

- Petre-Marian Nicolae, Electrical Engineering, Energetic, and Aeronautics, University of Craiova, Craiova / Dolj County, Romania, Ileana-Diana Nicolae, Computer Science and Information Technology, University of Craiova, Craiova / Dolj County, Romania, Dinut - Lucian Popa, Electrical Engineering, Energetic, and Aeronautics, University of Craiova, Craiova, Romania and Marian - Stefan Nicolae, Electromechanics, Environment, and Industrial Informatics, Craiova, Romania
- 5039 Statistical Estimation of Maximum Electric Field in Electrically Large Cavity using Extreme Value Theory
Tarek Bdour, OSA Department, XLIM Research Institute, Limoges, France and Alain Reineix, XLIM Laboratory, Limoges, France
- 5082 Evaluation of Uncertainty Analysis Results in EMC Simulation
Wang Lixin¹, Bai Jinjun¹, Alistair Duffy, Chairman, IEEE EMC Society Standards Development and Education Committee² and Zhang Gang¹, (1)Harbin Institute of Technology, Harbin, China, (2)De Montfort University, Leicester, United Kingdom
- 5143 Processing of EMC Data with Factor Analysis
Onofrio Losito, R&D, ITEL Telecomunicazioni srl, Ruvo Di Puglia (BA), Italy, Bruno Audone, Audone Consulting, Torino, Italy and Vincenzo Dimiccoli, ITEL Telecomunicazioni srl, Ruvo di Puglia, Italy
- 5409 Propagation Effects on Lightning Magnetic Fields Over Hilly and Mountainous Terrain
Dongshuai Li^{1,2}, Javad Paknahad³, Farhad Rachidi², Marcos Rubinstein⁴, Keyhan Sheshyekani³, Zhenhui Wang¹ and Qilin Zhang¹, (1)Collaborative Innovation Center on Forecast and Evaluation of Meteorological Disasters, Nanjing University of Information Science and Technology (NUIST), Nanjing, China, (2)Electromagnetic Compatibility Laboratory, The Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland, (3)Shahid Beneshti University, Tehran, Iran, (4)Institute for Information and Communications Technologies, HEIG-Vd, Switzerland, Yverdon-les-bains, Switzerland
- 5435 VHDL-AMS for Calculating the Radiated Field in Circuit Simulators
Walid Labiedh and Jaleddine Ben Hadj Slama, SAGE, National Engineering School of Sousse, (ENISo), Sousse, Tunisia
- 5673 An Accurate method using High-Order Basis Functions for Time-Domain Bodies of Revolution
Yang Su¹, Weixing Sheng² and Yubing Han², (1)Electronical and Optical Engineering, Nanjing University of Science and Technology, Nanjing, China, (2)Nanjing University of Science and Technology, Nanjing, China
- 5693 Calculation of Electromagnetic Emission Using Discontinuous Galerkin Time Domain Method
Iskander Badzagua^{1,2}, Diana Eremian¹, Badri Khvitia^{1,2}, Zviad Kuchadze³, Giorgi Chiqovani¹, Zurab Sukhiashvili¹, Anna Gheonjian^{1,2} and Roman Jobava¹, (1)EMCoS Ltd., Tbilisi, Georgia, (2)Tbilisi State University, Tbilisi, Georgia, (3)EMCoS Research Laboratory, EMCoS Ltd., Tbilisi, Georgia
- 5714 Time Domain Electromagnetic Inverse Method for Non-Sinusoidal Circuits
Zitouna Bessem, electrical engineer, SAGE, Sousse, Tunisia and Ben Hadj Slama Jaleddine, PhD, Industrial Electronics- ENISo, Advanced Systems in Electrical Engineering (SAGE), Sousse, Tunisia

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5.3 Thursday, August 20

Chair: Bob Scully, President IEEE EMC Society

- 4850 Reformation of the Japanese Guidelines for Cellular Phone Use in Hospitals
Eisuke Hanada, Department of Information Science, Saga University Graduate School, Saga, Japan and Takashi Kano, Faculty of Health and Medical Care, Saitama Medical University, Hidaka, Japan
- 5460 Grounded Theory and EMC immunity test
Per Thaastrup Jensen, Mr., DELTA, Hoersholm, Denmark
- 5793 Can the New EMC Directive, 2014/30/EU, Stem the Tide of Non-Compliant Products
Nick Wainwright, York EMC Services Ltd, York, United Kingdom
- 5124 MRI Image Distortion due to Magnetic Materials in Medical Implants
Dick Harberts, EMC Consultancy, Philips Innovation Services, Eindhoven, Netherlands and Mark van Helvoort, Philips Healthcare, Best, Netherlands
- 5578 Directivity and Effective Radius of an Electrically Large EUT with Attached Wires
Xiaowei Wang, OVGU University Magdeburg, Magdeburg, Germany
- 4561 Identification of Electromagnetic Radiation Source with Support Vector Machines
Dan Shi¹, Junjian Bi², Chao Li³, Zhiliang Tan², Hongbo Wang⁴ and Yougang Gao⁵, (1)beijing university of posts and telecommunications, Beijing, China, (2)Shijiazhuang Mechanical Engineering, Shijiazhuang, China, (3)ministry of industry and information technology, Beijing, China, (4)ministry of industry and information technology, beijing, China, (5)beijing university of posts and telecommunications, beijing, China
- 4897 Protection Against Common Mode Currents on Exposed Cables
B.J.A.M. (Bart) van Leersum^{1,2}, C.C.J. (Jan-Kees) van der Ven³, F.J.K. (Frits) Buesink¹ and F.B.J. (Frank) Leferink^{1,4}, (1)University of Twente, Enschede, Netherlands, (2)Defence Materiel Organisation, Ministry of Defence, The Hague, Netherlands, (3)Imtech Marine Netherlands B.V., Rotterdam, Netherlands, (4)Thales Nederland B.V., Hengelo, Netherlands
- 4946 Prediction of PCB Radiated Emission in Shielding Cavity Using Equivalent Dipole Modeling
WenJie Kong, Zhejiang University, HangZhou, China and Er-Ping Li, Zhejiang University, Hangzhou, China
- 4966 Diagnosis and Suppression of the Electromagnetic Interference in Vehicle Co-site Radio System
Xie Ma, Southwest Communication Institute, Chengdu, China
- 4981 Analysis of a Healthcare Platform RF Emission in Indoor Environment
Blaise Ravelo, Dr.¹, Jorge Miranda², Jorge Cabral², Stefan Wagner³, Christian Pedersen³, Mukthiar Memon³, Morten Mathiesen⁴ and Adam Jastrzebski⁵, (1)Electronics, IRSEEM, Saint Etienne du Rouvray, France, (2)Centro Algoritmi, University of Minho, Guimarães, Portugal, (3)Dept. of Engineering, Aarhus University, Aarhus, Denmark, (4)Sekoia, Aarhus, Denmark, (5)University of Kent, Canterbury, United Kingdom
- 5152 Grounding Design for Low-Cost Ball Grid Array Package with High Shielding Effectiveness

- Keiju Yamada, Research Scientist, Corporate Research & Development Center, Toshiba Corporation, Kawasaki, Japan, Masaaki Ishida, Chief Research Scientist, Toshiba Corporation, Kawasaki, Japan and Tomohiro Iguchi, Senior Research Scientist, Toshiba Corporation, Yokohama, Japan
- 5309 Statistical Approach to the Result of FM Broadcast Frequency Deviation Measurements
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