Dear Attendees,

On behalf of the International Steering Committee, I am delighted and privileged to welcome you and your families to the major European conference on EMC, from 4 to 8 September in Angers, one of the best cities of good living in France. This great event is held and organized by ESEO, an Institute of Science and Technology with the cooperation of IETR (Institut d’Electronique et de Télécommunications de Rennes).

After Rome, Brugge, Gothenburg, Dresden and Wroclaw, France hosts EMC Europe for the first time, and we are proud to be chosen for the organization of this event.

Angers, located in the Loire Valley, is classified by UNESCO as a World Heritage for Humanity. For many centuries, it has evolved from an ancient city into a flagship of modern technology, receiving the FrenchTech label for its contribution to the Internet of Things while keeping its traditional character. In October 2017, Angers will be the world capital of electronics. The city has been chosen to host the next World Electronics Forum (WEF).

With over 250 submitted regular papers coming from 50 countries, accepted papers have been arranged into 40 oral and poster sessions. Moreover, we will have many great tutorials and workshops taking place on Monday 4th and Friday 8th. Do not forget to visit our exhibitors to get insight into industry trends, and to have access to the newest products and services. For this edition, additional topics have been introduced:

- Statistical EMC Modeling
- Topological Approaches in EMC
- EMC of Wireless Power Transfer Systems
- EMC Health Protection
- Intentional EMI on RF Links or Systems
- Emission Security
- Side-Channel Attacks
- EMC in the IoT
- EMC and Functional Safety
- EMC Validation of Large Systems (reliability, obsolescence)

Two keynote speeches will be given during the conference: Frédéric Théronnd from Airbus on EMC challenges on Modern Aircraft, and Alain Kehlhoffner from Valeo on Automated Driving.

As the General Chair of this conference, I would like to thank all the members of the Local Organizing Committee (LOC), my volunteering colleagues from ESEO and all those who have worked tirelessly on this conference.

I also would like to express special thanks to the International Steering Committee for the trust he has put in us for the organization of EMC Europe 2017. I would like to thank all the authors, chairmen, reviewers, conference partners, exhibitors and attendees.

Please enjoy the conference and the city of Angers. My colleagues and I will be all over the conference throughout the week and would like to personally meet and warmly welcome each and every one of you.

Sincerely

Mohamed RAMDANI
EMC Europe 2017 General Chair
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Conference Information

Venue

The whole EMC Europe 2017 symposium will take place in Angers (France) on the main campus of ESEO Graduate School of Engineering. It is located in the north of Angers, about 20 minutes by tram from the railway station and 5 minutes by car from the nearest exit of the A11 motorway from Paris.
Google Maps: https://goo.gl/maps/NXSZAfKQjHm

From the city centre, take tram line A to "Avrillé Ardenne". Get off at "Jean Moulin" station and follow the signs (ESEO is visible from the platform). You can also take bus line #5 and get off at "Jean Moulin" stop.

Oral sessions, poster sessions, workshops and tutorials will be held in the main building. A screen in front of each lecture room will dynamically inform you about the current session and the locations of other parallel sessions.

Transport in Angers

Trams, buses and taxis are available. A ticket (valid for trams and buses) costs 1.40€ (vending machines) or 1.50€ (on board, buses only). In all cases, fares do not depend on distance; connections and round trips are allowed with a single ticket within its validity period (one hour from the first validation). However, passengers must validate their ticket each time when boarding the bus/tram, even in a connection. Tickets are contactless and must not be folded.

Participants will be delivered a 7-day bus/tram pass at the registration desk, valid in the whole city and its suburbs. Likewise, this pass must be validated each time when boarding the bus/tram.

Additional 7-day passes for accompanying people can be bought from the Irigo shop (place Lorraine).

You can download the Irigo application (in French only) for iOS and Android from their respective stores, and browse the Irigo Web site (also in French only) at http://bustram.irigo.fr/.

Non-French speakers can also use the Destineo Web site (http://www.destineo.fr/en/) and choose "Irigo" among the available train/bus lines.
Badges

When registering at the reception desk, all delegates will receive a badge and, if included in their package, invitations for social events. Due to "Vigipirate" security measures in France, the whole conference building will be guarded night and day. Please wear your badge all the time throughout the conference and before your arrival on the following days. This will make it easier for you to enter the conference building.

Oral Sessions

Each paper assigned to an oral session is allowed about 15 minutes for presentation and about 5 minutes for questions and answers. 2-minute gaps between consecutive papers are dedicated to speaker changes. We kindly ask session chairs to comply with this timing. The detailed schedule of each oral session can be found in the final programme. Videoprojectors and computers (with Microsoft PowerPoint and Adobe Reader) are available for presentation in each lecture room.

Speakers must meet their session chair in the room at least 15 minutes before the beginning of the session. Each speaker must give a short biography to the chairperson and load the presentation into the computer, if he/she did not send it to the organizers before. Only presentations provided on USB key drives will be accepted for upload. The use of personal laptops for presentation is not allowed.

Lecture room Broglie (B007 – ground floor, in the middle of the building) is available to presenters for preparation and rehearsals.

A TV screen in front of each lecture room will dynamically inform you about the current session and the locations of other parallel sessions.

Poster presentations

Each poster board will be marked with the poster ID number, which can be found in the final conference programme as well. Authors are required to use only the board corresponding to their poster.

Presenters must hang their poster on the day of their presentation at least 15 minutes before the poster session begins. Authors are required to stand near their poster only during the poster session time slots of the day. They must remove them before the end of the conference day; posters left on the boards at the end of the conference day will not be returned by the organisers.

Posters should be fixed to the poster board using material (adhesive tape or drawing pins) which will be provided on site. The display area is suitable for portrait A0 posters (approx. 84.1cm wide and 118.9cm high).
Internet Access
Participants with WiFi computers and other mobile equipment will be able to take advantage of the wireless network facility installed in the main building and the exhibition pavilion. The dedicated wireless network for symposium participants is EMC-EUROPE-2017 with password emceurope2017. Participants from academic institutions can use the eduroam wireless network, which is also available in the whole building and pavilion, with their usual credentials.

Mobile Conference Assistants - Conference4me and Eventor
The Conference4me smartphone application provides you with the most comfortable tool for browsing the complete EMC Europe 2017 programme and planning your participation to this conference. The Conference4me application allows you to create your very own agenda on the fly directly from your phone or tablet. The Conference4me application is available for free for Android, iOS and Windows Phone devices. To download the mobile app, please visit [http://conference4me.eu/download](http://conference4me.eu/download) or search for “conference4me” in Google Play Store, iTunes App Store or Windows Phone Store, respectively, or scan the QR-codes below.

The EMC Europe 2017 programme is also available on the Eventor application (for iOS and Android).

Lunches and coffee breaks
Lunches (buffets) and coffee breaks are located in the exhibition area (ground floor - Fermi and Dirac rooms, outdoor pavilion). Please do not forget your badge which serves as your admission ticket. Bon appétit!
Welcome Reception: Tuesday, September 5th at 7:00 PM

The Local Organising Committee has the pleasure to invite you to the Welcome Reception, held in the Musée Jean Lurçat. It is a unique opportunity to meet with your colleagues and exhibitors in an informal atmosphere.

Google Maps: https://goo.gl/maps/bstjCDrfEKx

To go there, you may:
- From ESEO by tram: take tram line A to "Angers Roseraie", get off at "CHU Angers" station and walk to the museum (4 min. tram + 8 min. walk)
- From ESEO by foot: walk along the river Maine to the museum (about 25 min.)
- From the city centre: take bus line #3 to "Avrillé Adézière" or "Avrillé Salette" and get off at "St. Jean" bus stop (approx. 8 min.); the museum is in front of the bus stop. The same bus line in the opposite direction ("Mûrs Erigné") will take you back to the city centre.

Please do not forget to take your personal invitation(s) with you.
Symposium Banquet: Wednesday, September 6th at 7:00 PM

The Local Organising Committee warmly invites you to the Symposium Banquet in the Château du Plessis Bourré for an unforgettable evening. Please do not forget your camera or your mobile phone!

Google Maps: https://goo.gl/maps/Qy96ce6cfE82

Free shuttles will take you to the Château from ESEO (about 15km) and back to your hotels in the city centre:
- departure from ESEO: 6:30PM
- departure from the Banquet: 11:00PM (4 stops near the main hotels)

Please do not be late!

During the banquet, the Best Paper and the Best Student Paper will be awarded. Please do not forget to take your personal invitation(s) with you.
Welcome to EMC Europe 2018 in Amsterdam, The Netherlands

EMC week in Amsterdam

EMC Europe is the leading EMC Symposium in Europe and the 2018 edition will be held at the Beurs van Berlage in the heart of Amsterdam, the Netherlands, from 

August 27th till August 30th, 2018.

We wish to invite and encourage all those working in the field of electromagnetic compatibility to participate in this prestigious event.

Accepted papers will appear in IEEE Xplore

The Call for paper can be found on the website: www.emceurope2018.org

Symposium Venue

Amsterdam is the Netherlands’ capital, known for its artistic heritage, elaborate canal system and narrow houses with gabled facades, legacies of the city’s 17th-century Golden Age. Its Museum. District houses the Van Gogh Museum, works by Rembrandt and Vermeer at the Rijksmuseum, and modern art at the Stedelijk. Cycling is key to the city’s character, and there are numerous bike paths. The conference center, the Beurs van Berlage, is a building on the Damrak, in the center of the city. This former commodity exchange is one of the defining monuments of the Dutch capital.

Important Dates

• Special Sessions : 1 January, 2018
• Paper submission : 15 February, 2018
• Proposal for Workshops, Tutorials, Short Courses : 15 March, 2018
• Notification of acceptance : 15 April, 2018
• Final Paper Submissions: 15 May, 2018

Contact and Information : info@emceurope2018.org

Upcoming

EMC Europe Symposia

2018 - Amsterdam, The Netherlands
2019 - Barcelona, Spain

Upcoming

IEEE EMC Symposia

2018 - Long Beach, California, USA
2019 - New Orleans, Louisiana, USA
2020, Reno, Nevada, USA
Committees

International Steering Committee (ISC)

Chairman: A. C. Marvin (United Kingdom)
Vice-Chairman: J. Carlsson (Sweden)

P. Besnier (France)  F. Rachidi (Switzerland)
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J. Carlsson (Sweden) F. Sabath (Germany)
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M. D’Amore (Italy) F. Silva (Spain)
P. Degauque (France) D. Thomas (UK)
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M. Feliziani (Italy)
H. Garbe (Germany)
J.L. ter Haseborg (Germany)
Z. Joskiewicz (Poland)
M. Klingler (France)
F.B.J. Leferink (The Netherlands)
F. Maradei (Italy)
V. Mariani Primiani (Italy)
A. C. Marvin (United Kingdom)
G. Peres (France)
D. Pissoort (Belgium)

Local Organizing Committee

General Affairs
Mohamed Ramdani - Conference General Chair ESEO – RFEMC / IETR, France
Richard Perdriaux - Conference Vice Chair - ESEO – RFEMC / IETR, France

Exhibition
Mohamed Amellal - Exhibition Chair - ESEO – RFEMC / IETR, France

Special Sessions
Etienne Sicard - Special Sessions Chair - INSA Toulouse – GEI, France

Technical Program
Philippe Besnier - Technical Program Co-Chair - IETR, CNRS / INSA Rennes, France
Richard Perdriaux - Technical Program Co-Chair - ESEO – RFEMC / IETR, France

Workshops & Tutorials
Frédéric Lafon - Workshops & Tutorials Co-Chair - Valeo GEEDS, France
Marco Klingler - Workshops & Tutorials Co-Chair - PSA, France
International Reviewers’ Board

Amellal Mohamed, FR
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Bienkowski Pawel, PL
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Boyer Alexandre, FR
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Cicchetti Renato, IT
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Duchamp Geneviève, FR
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Fiori Franco, IT
Frei Stephan, DE
Fujiwara Osamu, JP
Garbe Heyno, DE
Gillon Renaud, BE
Grcev Leonid, MK
Gronwald Frank, DE
Hanzelka Zbigniew Tadeusz, PL
Holloway Christopher, US
Hubing Todd, US
Joffe Elia B., IL
Jóśkiewicz Zbigniew, PL
Kami Yoshio, JP
Kamuda Kazimierz Wacław, PL
Karwowski Andrzej, PL
Klepacki Dariusz, PL
Klingler Marco, FR
Knighten Jim, US
Korovkin Nikolay, RU
Krawczyk Andrzej, PL
Kruse Klaus-Dieter, DE
Kubiak Ireneusz, PL
Kucharski Andrzej, PL
Kuznetsov Yury, RU
Lafon Frédéric, FR
Leferink Frank, NL
Lemoine Christophe, FR
levant jean-luc, FR
Machczynski Wojciech, PL
Maradei Francesca, IT
Mariani Primiani Valter, IT
Marshman Chris, UK
Marvin Andy, UK
Maslowski Grzegorz, PL
Mathis Wolfgang, DE
Maurice Olivier, FR
Mazzetti Carlo, IT
Michalak Marek Piotr, PL
Moglie Franco, IT
Namiotko Rafal, PL
Nowosielski Leszek, PL
Nuño Luis, ES
Orlandi Antonio, IT
Pande D.C., IN
Perdriaux Richard, FR
Peuteman Jo, BE
Plinsky Vladimir, UA
Pissoort Davy, BE
Pizzi Emanuele, IT
Podgorski Andrew, CA
Pommerenke David, J. US
Pues Hugo, BE
Rachidi Farhad, CH
Ramanujan Abhishek, IE
Ramdani Mohamed, FR
Ravelo Blaise, FR
Redoute Jean-Michel, AU
Roč’i Anne, NL
Roje Vesna, HR
Rostamzadeh Cyrus, US
Rubinstein Marcos, CH
Ruddle Alastair, UK
Sabat Wieslaw, PL
Sabath Frank, DE
Sadowski Jarosław, PL
Sarto Maria Sabrina, IT
Schlagenhauser Franz, AU
Schuster Christian, DE
Scully Robert, US
Serra Ramiro, NL
Sicard Etienne, FR
Silva Ferran, ES
Skrzyczynski Jacek, PL
Sowa Andrzej Edward, PL
Ter Haseborg Jan Luiken, DE
Thomas David, UK
Tucci Vincenzo, IT
van Deursen Alexander, NL
Varju Gyorgy, HU
Vick Ralf, DE
Wada Osami, JP
Welinder Jan, SE
Więcek Dariusz, PL
Wiklundh Kia, SE
Wilson Perry, US
Zielinski Ryszard, J. PL
Ziembas Robert, PL
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<tr>
<th>Paper ID</th>
<th>Title and authors</th>
<th>Session</th>
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</table>
| 31      | Study of the thermal aging effect on the conducted emission of a synchronous buck converter  
A. Boyer¹, M. A. Gonzalez Sentis¹,², C. Ghfiri¹,², A. Durier²  
¹CNRS, LAAS, Univ. de Toulouse, ²IRT Saint-Exupéry, Toulouse, France | O_We_D2     |
| 100     | Development of a Passive Impedance Network for Modeling Electric Vehicle Traction Batteries for EMI  
Dr.-Ing. S. Jeschke, Dipl.-Ing. M.Maarleveld, Dipl.-Ing. J.Baerenfaenger  
C. Waldera, Dr.-Ing. M.Obholz - Volkswagen AG, Wolfsburg, Germany  
Prof. Dr.-Ing. H.Hirsch, S.Tsiapenko - University of Duisburg-Essen Department of Power - Transmission and Storage, Duisburg, Germany | O_Th_C2     |
| 110     | Crosstalk Analysis of Printed Circuits with Many Uncertain Parameters Using Sparse Polynomial Chaos Metamodels  
Mourad Larbi, Igor S. Stievano¹, Flavio G. Canavero¹, and Philippe Besnier²  
¹Dipartimento di Elettronica, Politecnico di Torino, Italy  
²IETR, UMR CNRS 6164 : Institut d'Electronique et de Télécommunications de Rennes, INSA de Rennes, Rennes, France. | O_Th_B4     |
| 111     | Effect of Field Area on Disturbance Propagation through Silicon Substrates in SOI-BCD Process  
Ko Oyama¹, Yosuke Kondo¹, Daisaku Ikoma¹, Yasuyuki Ishikawa¹, Akitaka Murata¹, Shuji Agatsuma¹, Makoto Nagata²  
¹Semiconductor Circuit R&D Division, DENSO CORPORATION, Kariya, Japan  
²Graduate School of Science, Technology and Innovation, Kobe University, Japan | O_We_C2     |
| 125     | Efficient evaluation of communication system performance in complex interference situations  
Sara Orn Tengstrand, Erik Axell, Karina Fors, Sara Linder, Kia Wiklundh  
Swedish Defence Research Agency - Linköping Sweden | O_Tu_B4     |
| 142     | EMC Challenges for the Internet of Things  
Kia Wiklundh - Dept. of Robust Telecommunications - Linköping, Sweden  
Peter Stenumgaard - Dept. of Information Security & IT Architecture Linköping, Sweden | O_Tu_A4     |
| 235     | Design Approach and Analysis of a MOSFET with Monolithic Integrated EMI Snubber for Low Voltage Automotive Applications  
Hermon Afewerk¹, Christian Lautensack¹, Norman Böttcher², Ingmar Kalffass³  
¹Robert Bosch GmbH, Power Semiconductors and Modules, Reutlingen, Germany  
²Reutlingen University, Robert Bosch Center for Power Electronics (RBZ), Reutlingen, Germany  
³University of Stuttgart, Institute of Robust Power Semiconductor Systems (ILH), Stuttgart, Germany | O_We_B2     |
| 250     | Progress in Usage of Portable Electronic Devices on Aircraft, An Overview  
Dr.-Ing. Robert Kebel / Dr.-Ing. Thiemo Stadttler  
Airbus - EMC and Lightning Protection - Hamburg, Germany | O_Tu_C3     |
| 275     | Near-Field Scanning of Stochastic Fields Considering Reduction of Complexity  
¹David W. P. Thomas, ¹Mohd H. Baharuddin, ¹Christopher Smartt, ¹Gabriele Gradoni,  
¹Gregor Tanner, ²Stephen Creagh, (Nebojša Dončev) ³covy, ³Michael Haiderz and  
³Johannes A. Russerz  
¹Dept. Electrical and Electronic Engineering, The University of Nottingham, Nottingham, UK  
²Faculty of Electronic Engineering, University of Nis, Nis, Serbia  
³Institute for Nanoelectronics, Technische Universität München, Munich, Germany | O_Th_C4     |
<table>
<thead>
<tr>
<th>Paper ID</th>
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</tr>
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</table>
| 5        | Superposition of Shield Currents in Inverter-Fed AC-Motors  
Madhavi Sreenivasa Murthy - Institut für Energietechnik - Brandenburgische Technische Universität - Cottbus-Senftenberg, Germany  
Guido A. Rasek - Robert Bosch GmbH GS-PE/EHW6 - Tamm, Germany                                                                                      | O_Th_B2 |
| 23       | Robust Extreme Value Estimation for Full Time-Domain EMI Measurements  
Marco A. Azpúrua, José A. Oliva, Marc Pous, Ferran Silva  
Grup de Compatibilitat Electromagnètica (GCEM), Departament d'Enginyeria Electrònica (DEE) - Universitat Politècnica de Catalunya (UPO) - Barcelona, Spain | O_We_A1 |
| 53       | A new methodology to extract the ICEM-CE internal activity block of a FPGA  
C. Ghfiri¹, A. Durier¹, A. Boyer², S. Ben Dhia²  
¹IRT Saint-Exupéry, Toulouse, France - ²CNRS, LAAS, Toulouse, France - ³Univ. de Toulouse, INSA, LAAS, Toulouse, France | O_We_A2 |
| 83       | Broadband Foster-Type-Circuit Model of Non-Uniform and Radiating Transmission Lines  
Sebastian Südekum, Marco Leone  
Otto-von-Guericke University, Magdeburg, Germany                                                                                                         | O_Th_A1 |
| 114      | MoM-based Foster-type Circuit Model for Lossy Wire-Interconnection Structures  
Christian Bednarz and Marco Leone  
Otto-von-Guericke-University, Magdeburg, Germany                                                                                                        | O_We_C3 |
| 136      | Transient Co-Simulation of Electromagnetic Emissions caused by a SiC Traction Inverter  
P. Hillenbrand¹, M. Beltle¹, S. Tenbohlen¹, Jan Hansen²  
¹Institute of Power Transmission and High Voltage Technology - University of Stuttgart, Germany - ²Jan Hansen Automotive Electronics Robert Bosch GmbH, Schieberdingen, Germany | O_Th_C2 |
| 159      | Broadband Circuit Model for Electromagnetic-Interference Analysis in Cavities  
Christoph Lange and Marco Leone  
Otto-von-Guericke-University, Magdeburg, Germany                                                                                                        | O_Th_A1 |
| 175      | Channel Selective Adaption of PWM Frequencies for Undisturbed AM and FM Reception in Automobiles  
Andreas Bendicks¹, Stephan Frei¹, Norbert Hees², Marc Wiegand²  
¹TU Dortmund University, Dortmund, Germany, ²Leopold Kostal GmbH & Co. KG, Lüdenscheid, Germany                                                                 | O_Th_B2 |
| 182      | Simulation Techniques for EMC Compliant Design of Automotive IC Chips and Modules  
Akihiro Tsukioka¹, Makoto Nagata¹, Kohki Taniguchi¹, Daisuke Fujimoto¹, Rieko Akimoto², Takao Egami², Kenji Niinomi², Takeshi Yuhara², Sachio Hayashi², Rob Mathews³, Kartik Srinivasan³, Ying-Shiun Li³, Norman Chang³  
¹Kobe University, ²Toshiba Corporation, ³Semiconductor BU, ANSYS Inc.                                                                                   | O_Th_A2 |
## Schedule at a Glance

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
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<tbody>
<tr>
<td>9:00</td>
<td>Opening Ceremony</td>
<td>Plenary Session</td>
<td>Oral Sessions</td>
<td>Plenary Session</td>
<td>Workshop &amp; Tutorials</td>
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<td>Symposium Banquet</td>
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**EMC EUROPE 2017 ANGERS, FRANCE - Final Programme**
**Monday, 4th September 2017 - Workshops & Tutorials**

<table>
<thead>
<tr>
<th>Time</th>
<th>ANJOU</th>
<th>MEETING COST Action 1407 Private Meeting</th>
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<td>REGISTRATION (MAIN ENTRANCE)</td>
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<td>15:30</td>
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<td>COFFEE BREAK (FERMI DIRAC + PAVILION)</td>
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<td>MEETING SC 77B/ CISPR-A JWG REV MEETING</td>
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Workshops

WT_Mo_1  WORKSHOP 1  Time: 14:00 - 17:30  Room: ANJOU

VIRTUAL ENVIRONMENTS FOR SYSTEM-LEVEL AUTOMOTIVE EMC TESTING

Chaired by: Dr. Henrik TOSS - RISE, Research Institutes of Sweden, Sweden

Speakers Bjorn Bergqvist (Volvo Cars, Sweden), Andreas Reil (Rohde & Schwarz, Germany), Jan Carlsson (Provinn AB, Sweden), Martin Aidam (Daimler AG, Germany), Henrik Toss (RISE Research Institutes of Sweden, Sweden), Garth D’Abreu (ETS- Lindgren, Cedar Park, Texas)

Programme:

WT_Mo_A1 session  Time: 14:00 - 15:30

Challenges of Simultaneous Testing of ACC and LKA in Semi-Anechoic Chamber
Bjorn Bergqvist - Volvo Cars, Sweden

The Best Automotive Radars Handle Interference Well
Andreas Reil - Rohde & Schwarz, Germany

Simulated GNSS/GPS for Autonomous Drive Testing
Jan Carlsson¹, Torbjörn Persson¹, Alain Caignault²
¹Provinn AB, Sweden; ²Spirent Communications, France

WT_Mo_B1 session  Time: 16:00 - 17:30

Martin Aidam - Daimler AG, Germany

AWITAR - semi-anechoic chamber for high level EMC and communication
Henrik Toss - RISE Research Institutes of Sweden, Sweden

Chambers for Full Vehicle OTA Performance
Garth D’Abreu - ETS- Lindgren, Cedar Park, Texas
WORKSHOP 2
EMI ISSUES AROUND FLYBACK CONVERTERS
AND DC/DC ISOLATED CONVERTERS

Chaired by: Alain LAFUENTE, WÜRTH Elektronik, France

Speakers
Alain Lafuente (Würth Elektronik, France), Sylvain LE BRAS (Würth Elektronik, France), Timur Uludag (Würth Elektronik eiSos GmbH & Co. KG, Germany)

Programme:

WT_Mo_A2 session
EMC and Switch Mode Power Supply: Important Parameters of Most Common Useful Components and Guidelines to Deal with Insertion Loss
Alain Lafuente - Würth Elektronik, France

Flyback Converter Most Critical Points Regarding Capacitor Selection and EMI Issues
Alain Lafuente - Würth Elektronik, France

WT_Mo_B2 session
Flyback Converter Most Critical Points Regarding EMI Issues
Sylvain LE BRAS - Würth Elektronik, France

FISM Power Module – How to Choose the Right Filter
Timur Uludag - Würth Elektronik eiSos GmbH & Co. KG, Germany
NEAR-FIELD MEASUREMENT TO REDUCE RADIATED EMISSION TESTING ISSUES

Chaired by: Sebastien SERPAUD - NEXIO, France

Speakers
Thi Quynh Van HOANG (Valeo, France), Zouheir RIAH¹, Nimisha SIVARAMAN² (ESIGELEC, France; IMEP, France), Jean-Philippe TIGNERES (Esterline, France), Samuel LEMAN (Nexio, France)

Programme:

**WT_Mo_A3** session Time: 14:00 - 15:30

**Summary of the last developments of near field measurement methods (vector, in time domain)**
Thi Quynh Van HOANG¹, Frederic LAFON¹, Bertrand VRIGNON², Adrien DORIDANT², Nicolas BAPTISTAT²
¹Valeo, France; ²NXP, France

**Extrapolation algorithms from near field measurement to predict radiated emission at equipment level**
ZOUHEIR RIAH¹, NIMISHA SIVARAMAN²
¹ESIGELEC, France; ²IMEP, France

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**WT_Mo_B3** session Time: 16:00 - 17:30

**Presentation of the correlation between near field measurement results and normative radiated emission results done on several industrial equipment**
Jean-Philippe TIGNERES - ESTERLINE, France

**Open talk about the use of near-field measurement results to evaluate the risk of non-compliance during Radiated Emission test**
Samuel LEMAN - NEXIO, France
EXPERIMENTS FOR EMC EDUCATION AND AWARENESS (PART I)

Chaired by: Frits BUESINK, University of Twente, The Netherlands,

Speakers Frits BUESINK - University of Twente, Netherlands, The

Sessions Abstract: Over a career of 30 years in EMC education, many experiments have been collected, re-engineered and designed to demonstrate the mechanisms of electromagnetic interference (EMI) stripped of all complexity to make them accessible to electrical engineers but also to their mechanical colleagues: EMC is all about geometries of interconnections. In this first part of the tutorial “Experiments for EMC education and awareness" the basic mechanisms responsible for EMI are explained. The possible construction and operation of simple home-made magnetic and electric field transducers used to perform the experiments is also shown.

Programme:

WT_Mo_A4 session Time: 14:00 - 15:30

Tutorial 1A - Experiments for EMC Education and Awareness (half-day 1)
Frits BUESINK - University of Twente, The Netherlands

WT_Mo_B4 session Time: 16:00 - 17:30

Tutorial 1B - Experiments for EMC Education and Awareness (half-day 1)
Frits BUESINK - University of Twente, The Netherlands
Meetings

MEETING
COST ACTION 1407 PRIVATE MEETING

Chaired by: Prof. David Thomas,
The University of Nottingham, United Kingdom

Time: 9:00 - 12:00
Room: ANJOU

MEETING
SC 77B/CISPR-A JWG REV PRIVATE MEETING

Chaired by: Dr. Mathias MAGDOWSKI,
Otto von Guericke University, Germany

Time: 17:30 - 18:30
Room: AFRIQUE
### Tuesday, 5th September 2017 - 1st Symposium day

<table>
<thead>
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<th>Time</th>
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<tbody>
<tr>
<td>8:00</td>
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<tr>
<td>9:00</td>
<td>Opening Ceremony (JeanneTeau + Anjou)</td>
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<td>9:45</td>
<td>Plenary Session 1 (JeanneTeau + Anjou)</td>
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<td>Coffee Break (Fermi Dirac + Pavilion)</td>
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<td>11:00</td>
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<td>O_Tu_A1: EMC Analysis, Modelling and Prediction 1</td>
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<td>O_Tu_A2: Reverberation Chambers 1</td>
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<td>O_Tu_A3: Intentional EMI</td>
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<td>O_Tu_A4: Emerging Topics</td>
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<td>O_Tu_A5: EMC and Radio Links</td>
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<td>12:30</td>
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<td>O_Tu_B3: Lightning and EMP</td>
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<td>O_Tu_B4: EMC of Complex Systems</td>
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<td>O_Tu_C3: Aircraft EMC</td>
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<td>S_Tu_C4: EMC Diagnostics of Complex Systems (Special Session)</td>
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<td>19:00</td>
<td>Welcome Reception - Musée Jean Lurçat et de la Tapisserie Contemporaine</td>
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**OPENING CEREMONY**

Chaired by: **Olivier Paillet** - Groupe ESEO, France,  
**Prof. Andy Marvin** - York EMC Services Ltd, United Kingdom

Welcome addresses:

**Prof. Mohamed Ramdani**,  
EMC Europe 2017 Angers Symposium Chair -  
*Groupe ESEO, Angers, France*

**Olivier Paillet**,  
Managing Director - *Groupe ESEO, Angers, France*

**Prof. Heyno Garbe**,  
Vice President of the IEEE EMC Society (Communication Services) -  
*Leibniz University of Hannover, Germany*

**Prof. Andy Marvin**,  
Chairman of the International Steering Committee (ISC) of EMC Europe -  
*University of York / York EMC Services Ltd, United Kingdom*

**Prof. Frank Leferink**,  
EMC Europe 2018 Amsterdam Symposium Chair - University of Twente / THALES, The Netherlands

**Prof. Richard Perdriau**,  
EMC Europe 2017 Angers Symposium Vice-Chair - *Groupe ESEO, Angers, France*

**Keynote**

**PL_Tu**  
**KEYNOTE 1**  
**PLENARY SESSION 1**

Chaired by: **Prof. Mohamed RAMDANI**, ESEO, France

**EMC Challenges on Modern Aircraft – History and Future Prospects**  
Frédéric THEROND, *AIRBUS, France*

Abstract:
- Recap on recent development - Key figures
- The EMC/EMH dimension within an aircraft development process
- Perspective on technical aspects
- Where next?
**Oral Sessions**

**O_Tu_A1**  
**ORAL SESSION**  
**REVERBERATION CHAMBERS 1**  
**Chaired by:**  
Prof. Frank LEFERINK, University of Twente, THALES, Netherlands, The Netherlands

- **Analytical Formulation for shielding effectiveness calculation of a lossy enclosure containing holes**  
  Amélie RABAT, Pierre BONNET, Khalil EI KHAMLICHIDRISSI, Sébastien GIRARD  
  *Institut Pascal, France*

- **Electromagnetic modeling of an enclosure with an aperture excited by a thin wire as an external source**  
  Akram Ramezani, Mojtaba Joodaki  
  *Ferdowsi University of Mashhad, Iran, Islamic Republic of Iran*

- **Broadband Circuit Model for Electromagnetic-Interference Analysis in Cavities**  
  Christoph Lange, Marco Leone - *Otto-von-Guericke University, Germany*

- **A Study on Wideband Suppression of Noise Radiated from Switching Power Supply**  
  Dai Sakamoto¹, Akihisa Tsuchiya², Ryosuke Suga¹, Hideaki Sugama², Osamu Hashimoto¹ - ¹*Aoyama Gakuin University, Japan; ²Kanagawa Industrial Technology Center, Japan*

**O_Tu_A2**  
**ORAL SESSION**  
**EMC ANALYSIS, MODELLING AND PREDICTION 1**  
**Chaired by:**  
Prof. Mohamed RAMDANI, ESEO, France

- **Analytical Formulation for shielding effectiveness calculation of a lossy enclosure containing holes**  
  Amélie RABAT, Pierre BONNET, Khalil EI KHAMLICHIDRISSI, Sébastien GIRARD  
  *Institut Pascal, France*

- **Electromagnetic modeling of an enclosure with an aperture excited by a thin wire as an external source**  
  Akram Ramezani, Mojtaba Joodaki  
  *Ferdowsi University of Mashhad, Iran, Islamic Republic of Iran*

- **Broadband Circuit Model for Electromagnetic-Interference Analysis in Cavities**  
  Christoph Lange, Marco Leone - *Otto-von-Guericke University, Germany*

- **A Study on Wideband Suppression of Noise Radiated from Switching Power Supply**  
  Dai Sakamoto¹, Akihisa Tsuchiya², Ryosuke Suga¹, Hideaki Sugama², Osamu Hashimoto¹ - ¹*Aoyama Gakuin University, Japan; ²Kanagawa Industrial Technology Center, Japan*
O_Tu_A3  ORAL SESSION

INTENTIONAL EMI

Chaired by:  Prof. Jan Luiken ter HASEBORG,
Technische Universität Hamburg, Germany

HPEM Vulnerability of Smart Grid Substations
Marian Lanzrath, Michael Suhrke, Michael Joester, Thorsten Pusch, Christian Adami, Grzegorz Lubkowski, Benjamin Joerres - Fraunhofer INT, Germany

Network-level HEMP Effect Evaluation on Fully-Connected Wireless Networks  Chuanbao DU, Congguang MAO
Northwest Institute of Nuclear Technology, China, People's Republic of

Effects of Intentional Electromagnetic Interference on an Adaptive Predistortion Algorithm
Emmanuel COTTAIS, José LOPES-ESTEVES, Valentin HOUCHOUAS, Chaouki KASMI - Wireless Security Lab, ANSSI, France

A Miniaturized Self-actuated Bandpass Protection Structure Based on Energy Low-pass Mechanism
Ke Wang, Peiguo Liu, Yujian Qin, Jijun Huang, Bo Yi
National University of Defense Technology (NUDT), China, People's Republic of

O_Tu_A4  ORAL SESSION

EMERGING TOPICS

Chaired by:  Dr. Richard Xian-Ke GAO,
Institute of High Performance Computing, Singapore

EMC Challenges for the Internet of Things
Kia Wiklundh, Peter Stenumgaard - Swedish Defence Research Agency, FOI, Sweden

Electromagnetic Analysis : radiated Emission of IoT Applications close to an Anthropomorphic Phantom
Arnaud Guena¹, Stephane Lamesch¹, Nathanael muot², Vincent Forte¹, Thomas Strub², Dominique Halley¹, Bruno Weber², Pierre Muris¹, Christophe Girard², Marc Viguier¹ - ¹Thales, France; ²Axessim, France

Development and Validation of a Deterministic Propagation Model for MeerKAT
Temwani Joshua Phiri, P. Gideon Wiid, David B. Davidson
Stellenosch University, South Africa

Zhaoyang Wang¹, Asia Codino², Reza Razzaghi³, Mario Paolone³, Farhad Rachidi¹
¹Electromagnetic compatibility (EMC) Laboratory, Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland; ²Department of Astronautic, Electrical, and Energy Engineering, Sapienza University of Rome, Italy; ³Distributed Energy System Laboratory (DESL), Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland
**O_Tu_A5**  **ORAL SESSION**

**EMC AND RADIO LINKS**

Chaired by: **Prof. Ferran SILVA,**
Universitat Politecnica Catalunya, Spain

**Time:** 11:00 - 12:30
**Room:** MEITNER

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**APD Outdoors Time-Domain Measurements for Impulsive Noise characterization**
Marc Pous, Marco A. Azpúrua, Ferran Silva - *GCEM-UPC, Spain*

**Results from Measuring Campaign of Electromagnetic Interference in GPS L1-band**
Patrik Eliardsson¹, Mikael Alexandersson¹, Michael Pattinson², Steve Hill³, Åsa Waern¹, Yeqiu Ying², Dimitrios Fryganiotis² /³*Dept. of Robust Telecommunications, Swedish Defence Research Agency, Sweden; Nottingham Scientific Ltd, England; Satellite Applications Catapult Limited, England*

**Over-the-Air Methods for Determining the Radiated Power of Radio Station**
Georgij Jefimovic Leontjev - *Communications Regulatory Authority of the Republic of Lithuania, Lithuania*

**Low Frequency Electric Field Radiated Emissions for the Antenna Pointing Subsystems in Space Missions**
Alfonso Muñoz, Jose Gala, Alejandro Arnau, Jose Fernandez - *SENER, Spain*

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**O_Tu_B1**  **ORAL SESSION**

**EMC ANALYSIS, MODELLING AND PREDICTION 2**

Chaired by: **Prof. Jan CARLSSON,**
Provinn AB, Sweden

**Time:** 14:00 - 15:30
**Room:** JEANNETEAU

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**Optimizing the Inductance Cancellation Behavior in an EMI Filter Design with the Help of a Sensitivity Analysis**
Sebastian Schuhmacher¹, Andreas Klaedtke¹, Christoph Keller¹, Wolfgang Ackermann², Herbert De Gersem² /¹*Robert Bosch GmbH, Germany; TU Darmstadt*

**Determination of the Coupling Model of Common Mode Chokes Using a TEM Cell**
Marine Stojanovic¹, Frédéric Lafon¹, Richard Perdriaux², Mohamed Ramdani² /¹Valeo, France; ²ESEO - RFEMC/IETR*

**Computing the Electromagnetic Emission Spectrum of Pulses by Convolution in Frequency Domain**
Herbert Hackl¹, Bernd Deutschmann² /¹NXP Semiconductors Austria, Austria; ²Graz University of Technology, Austria*

**Frequency Domain Simulation of Conducted EMI in Power Electronic Converters Considering Internal Near Field Couplings by FEM**
Keita Takahashi¹, Takaaki Ibuchi¹, Tsuyoshi Funaki¹ /¹Mitsubishi Electric Corporation, Japan; ²Osaka University, Japan*
**O_Tu_B2**  ORAL SESSION

**REVERBERATION CHAMBERS 2**

**Chaired by:** Prof. Valter MARIANI PRIMIANI, Università Politecnica delle Marche, Italy

**Time:** 14:00 - 15:30  **Room:** ANJOU

---

**Performance Characterization of the Oscillating Wall Stirrer**

Dimitrios Barakos, Ramiro Serra  
*Eindhoven University of Technology, The Netherlands*

**Reverberation Chambers Deformed by Spherical Diffractors**

Luca Bastianelli, Gabriele Gradoni, Franco Moglie, Valter Mariani Primiani  
1 Università Politecnica delle Marche, Italy; 2 School of Mathematical Sciences, University of Nottingham, Nottingham, UK; 3 George Green Institute for Electromagnetics Research, University of Nottingham, Nottingham, UK

**Finding frequencies of enhanced electromagnetic coupling to electronic devices by the use of mode stirred reverberation chambers**

Niklas Wellander, Mattias Elfsberg, Tomas Hurtig - *Swedish Defence Research Agency, Sweden*

**Theoretical and experimental analysis of the stochastic electromagnetic field coupling to multiconductor transmission lines above a ground plane**

Johanna Kasper, Mathias Magdowski, Mohammad Ali, Ralf Vick  
*Otto von Guericke University Magdeburg, Germany*

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**O_Tu_B3**  ORAL SESSION

**LIGHTNING AND EMP**

**Chaired by:** Prof. Alexander VAN DEURSEN, Eindhoven University of Technology, The Netherlands

**Time:** 14:00 - 15:30  **Room:** AMERIQUES

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**Lightning Current Distribution and Hard Radiation in Aircraft, Measured In-Flight**

Alexander van Deursen, Pavlo Kochkin, Alte de Boer, Michel Bardet, C Allasia, Jean-François Boissin, Franck Flourens - *Eindhoven University of Technology, Netherlands, The; University of Bergen, Norway; Netherlands Aerospace Centre, Amsterdam, Netherlands, The; Airbus, Toulouse, France*

**Electromagnetic Behavior Analysis of Aircraft Composite under Lightning Direct Effect**

Richard Xian-Ke Gao, Hui Min Lee, Si-Ping Gao - *Institute of High Performance Computing, Singapore*

**Electromagnetic Shielding Analysis of Buildings for Different Models of Lightning Strike**

Ali Aghabarati, Rouzbeh Moini, Simon Fortin, Farid Paul Dawalibi, Francois Grange - 1 Safe Engineering Services and Technologies, Canada; 2 SES-EUROPE

**Research on aircraft radome lightning protection based on segmented diverter strips**

Yan-chao DUAN, Xiu XIONG, Ping-dao HU - 1 Lightning and Electromagnetic Environmental Laboratory of Xi’an Airborne Electromagnetic Technology Co., Ltd, China, People’s Republic of; 2 The First Aircraft Institute of AVIC, China, People’s Republic of
Cost-Effective Electromagnetic Compatible Installation on Ships using a Risk Based Approach
Cornelis Jan Jacobus van der Ven1, Bart van Leersum2, Merlijn van Rij1, Frank Leferink3 - 1RH Marine, Netherlands, The; 2Defence Materiel Organisation; 3University of Twente

Efficient evaluation of communication system performance in complex interference situations
Sara Örn Tengstrand, Erik Axell, Karina Fors, Sara Linder, Kia Wiklundh
Swedish Defence Research Agency (FOI), Sweden

Topology Identification Method for Unknown Indoor PLC Home Networks
Ismail AOUICHAK, Kassim KHALIL, Imene ELFEKI, Jean-Charles LE BUNETEL, Yves RAINGEAUD - Université de Tours, GREMAN, UMR 7347, France

Multilayer Power Delivery Network Modeling with Modified Kron’s Method (MKM)
Zhifei Xu, Yang Liu, Blaise Ravelo, Olivier Maurice
Normandy University UNIROUEN, ESIGELEC, IRSEEM, F-76000 Rouen, France
ORAL SESSION

EMC ANALYSIS, MODELLING AND PREDICTION 3

Chaired by: Prof. Ferran SILVA,
Universitat Politecnica Catalunya, Spain

Time: 16:00 - 17:30
Room: JEANNETEAU

Dependence of an OATS’ Site Insertion Loss on the Admitted Parameter Tolerances
Inès Barbary1, Reiner Pape2, Michael Hagel1, Thomas Kleine-Ostmann2, Thorsten Schrader2, Marcus Stiemer1
1Helmut Schmidt University, Hamburg, Germany; 2Physikalisches-Technische Bundesanstalt (PTB), Braunschweig, Germany

2D FEM model for BCI probe-to-cables coupling with several conductors at the secondary winding
Mor Sokhna DIOP1, Hassan CHEAITO2, Edith CLAVEL1, Christian VOLLAIRE2, Enrico VIALARDI3, Erwan GALL13, Leonce MUTEL4, Bruno GAINETDINOFF5
1Grenoble INP*, G2Elab, F-38000, France; 2Laboratoire Ampère-CNRS UMR5005; 3Altair, Meylan, France; 4AVNIR ENGINEERING, Valence; 5Grenoble INP – Esisar - Plateforme Esynov, Valence, France

Magnetic Field Behavior in a Carbon-Fiber Electrical Vehicle Charged by a Wireless Power Transfer System
Tommaso Campi1, Silvano Cruciani1, Valerio De Santis1, Francesca Maradei2, Mauro Feliziani1 - 1University of L’Aquila, Italy; 2University of Rome La Sapienza, Italy

Unshielded Cable modeling for Conducted Emissions Issues in Electrical Power Drive Systems
Victor Dos Santos1,2, Nicolas Roux2, Bertrand Revol3, Bruno Sarani2, Bernardo Cougo1, Jean-Pierre Carayon1
1IRT Saint Exupery, France; 2Université de Toulouse, LAPLACE, UMR CNRS-INP-UPS; 3SATIE – ENS Paris Saclay
O_Tu_C2  ORAL SESSION
TEST SITES, CHAMBERS AND CELLS

Chaired by:  Prof. Heyno GARBE, Leibniz Universität Hannover, Germany

Measuring the Transfer Function of a TEM Waveguide
Niklas Briest¹, Heyno Garbe¹, Martin Schaarschmidt²
¹Leibniz Universität of Hannover, Germany; ²Bundeswehr Research

Design of a Reference Device for Radiated Immunity Inter-laboratory Comparison
Frederic Pythoud, Emrah Tas - Swiss Federal Institute of Metrology METAS, Switzerland

Experimental Analysis of the Effects of Antenna Tilting on Antenna Types and Test Results in Consideration of Measurement Uncertainty
Sezgin Hilavin, Samet Develi, Cem Cengiz Keskin, Nisa Kılıç, Anıl Korkmaz
Vestel Trade Co., Turkey

O_Tu_C3  ORAL SESSION
AIRCRAFT EMC

Chaired by:  Frédéric THEROND, AIRBUS, France

Study of Electromagnetic Environmental Effects on the Airworthiness Certification for Performance Improvement Aircraft
JungAun LEE, YounJung SONG - Koreanair R&D Center, Korea, Republic of (South Korea)

Characteristic mode analysis of HIRF- and DCI-excitations of an aircraft structure
Markus Rothenhäuser¹, Frank Gronwald²
¹Airbus Defence and Space GmbH, Germany; ²University of Siegen, Germany

Progress in Usage of Portable Electronic Devices on Aircraft, An Overview
Robert Kebel, Thiemo Stadtler - Airbus, Germany

Comparison of Stored Electromagnetic Field Energy Between Carbon Fiber Reinforced Plastic Structures and All-Metallic Structures -Evaluation of Microwave Quality Factors Using a Reverberation Chamber-
Shunichi Futatsumori - Electronic Navigation Research Institute, Japan
System-Level Estimation of Prevaling Levels of EM Fields of Mobile Phones Considering Near-Field Zone Limitations of Their Antennas
Vladimir Mordachev
Belarusian State University of Informatics and Radioelectronics, Belarus

Simulation of Nonlinear Interference in Aircraft Systems Operating in Complex Electromagnetic Environment Created by Land-Based and Air-Based Wireless Systems
Vladimir Mordachev¹, Eugene Sinkevich¹, Yuri Yatskevich¹, Andrey Krachko¹, Pavel Zaharov², Xie Ma³
¹Belarusian State University of Informatics and Radioelectronics, Belarus; ²Aerosystema, Ltd., Minsk, Belarus; ³China Electronics Technology Cyber Security Co., Ltd

Wideband Worst-Case Model of Electromagnetic Field Shielding by Metallic Enclosure with Apertures
Dzmitry Tsyanenka¹, Eugene Sinkevich¹, Yauheni Arlou¹²
¹Belarusian State University of Informatics and Radioelectronics, Belarus; ²Faculty of Radiophysics and Computer Technologies, Belarusian State University, Minsk, Belarus

Worst-case model of spurious resonances appearing in radio-frequency cables and degrading electromagnetic compatibility characteristics of wireless equipment at out-of-band frequencies
Yauheni Arlou¹², Eugene Sinkevich¹, Dzmitry Tsyanenka¹, Yury Yatskevich¹
¹Belarusian State University of Informatics and Radioelectronics, Belarus; ²Belarusian State University, Belarus

Validation of Empirical Radiowave Propagation Models for Diagnostics of Intrasystem EMC and Electromagnetic Safety of Microcellular Radio Networks
Aliaksandr Svistunou
Belarusian State University of Informatics and Radioelectronics, Belarus

Extraction of Frequency Response of Receiver Input Filter from Characteristic of Receiver Susceptibility to Third-Order Intermodulation
Eugene Sinkevich
Belarusian State University of Informatics and Radioelectronics, Belarus
<table>
<thead>
<tr>
<th>P1</th>
<th>Poster Title</th>
<th>Authors</th>
</tr>
</thead>
</table>
| P1 | Simulation and experimental investigations of a TEM horn antenna for RF radiated immunity testing in close proximity | Holger Hirsch\(^1\), Ralf Heinrich\(^2\)  
\(^1\)University of Duisburg-Essen, Electrical Power Transmission and EMC; \(^2\)Ametek Teseq GmbH, Germany                                                                                           |
| P1 | Characteristic Improvement on Conducted Disturbance Measuring Apparatus Using TEM cells | Ryosuke Tani\(^{1,2}\), Ifong Wu\(^2\), Kaoru Gotoh\(^2\), Yasushi Matsumoto\(^2\), Shinobu Ishigami\(^{2,3}\)  
Ryosuke Suga\(^1\), Osamu Hashimoto\(^1\)  
\(^1\)Aoyama gakuin university, Japan; \(^2\)National institute of information and communications technology; \(^3\)Tohoku gakuin university                             |
| P1 | Antenna factor measurement of folded rhombic antenna for using microwave frequency range | Shinobu Ishigami, Yoshihiko Kato, Ken Kawamata  
Tohoku Gakuin University, Japan                                                                                     |
| P1 | Anti-interference Effect Test and Analysis for the Fiber Converter under the Intense Electromagnetic Pulse | Weidong Zhang\(^1\), Xiaoxun Chen\(^1\), Jiangchuan Lin\(^2\), Hui Hao\(^1\), Zidong Chen\(^1\)  
\(^1\)North China Electric Power University, China, People’s Republic of; \(^2\)China Academy of Engineering Physics, China, People’s Republic of |
| P1 | Methods of High Intensity Radiated Field Testing for Civil Aircraft | Guochang Shi, yi Liao, Yuan Zhang, Xiaojun Ying  
Shanghai Key Laboratory of Electromagnetic Environmental Effects for Aerospace Vehicle, China, People’s Republic of |
| P1 | Monte Carlo Simulation of the Statistical Uncertainty of Emission Measurements in an Ideal Reverberation Chamber | Mathias Magdowski, Ralf Vick  
Otto von Guericke University, Germany                                                                                     |
| P1 | An Alternative Polarimetric Representation of the Electromagnetic Field in a Reverberating Environment | Antonio Sorrentino\(^1\), Josè Gil\(^2\), Sergio Cappa\(^1\), Maurizio Migliaccio\(^1\), Giuseppe Ferrara\(^1\)  
\(^1\)Università degli Studi di Napoli Parthenope, Italy; \(^2\)Universidad de Zaragoza, Spain                                                                                       |
| P1 | A study on risk evaluation of countermeasure technique for preventing electromagnetic information leakage from ITE | Kimihiro Tajima\(^1\), Ryo Ishikawa\(^1\), Toshinori Mori\(^1\), Yasunao Suzuki\(^2\), Kazuhiro Takaya\(^2\)  
\(^1\)NTT Advanced Technology Corporation, Japan; \(^2\)NTT, Japan                                                                                                           |
Thermal risks due to land vehicle radioelectric exposure
Alain Alcaras, Jeanne Frere
Thales Communication and security, France

An Alternative HERO Testing Method
Merve Deniz Kozan, M. Murat Uysal, Erdal Usta
otokar otomotiv ve savunma sanayi a.ş., Turkey

Analytical Model for the Assessment of Doppler Spectrum of Rotating Objects
Ayoub SOLTANE, Guillaume Andrieu, Alain Reineix
XLIM Laboratory(University of Limoges-France), France

Effectiveness of Cyclic Redundancy Checks under Harsh Electromagnetic Disturbances
Jonas Van Waes, Jonas Lanno, Andy Degraeve, Dries Vanooost, Davy Pissoort, Jeroen Boydens
KU Leuven, Belgium

Immunity Assessment of a Servomotor Exposed to an Intentional Train of RF Pulses
Valentin Houchouas¹, Jose Lopes Esteves¹, Emmanuel Cottais¹, Chaouki Kasmi¹, Keith Armstrong²
¹Wireless Security Lab, French Network and Information Security Agency - ANSSI; ²Cherry Clough Consultants Ltd

Impact of antenna height and tilt on measurements above 1GHz in the anechoic chambers
Krzysztof Sieczkarek, Adam Maćkowiak
Institute of Logistics and Warehousing, Poland

Incorporation of MoM-based Waveguide Port Model into the Mixed Conducting and Dielectric Geometry
Faik Bogdanov, Irina Chochia, Lily Svanidze, Roman Jobava
EMCoS Ltd., Georgia

On the More Rationale Approach of HERO Testing of the Instrumented Ordnances
Rakesh Kichouliya, Pawan Kumar
Research Centre Imarat, India

Analysis of Transient Electric-Field Emitted by Atom-Probe Tomography Electrode
Zhifei Xu¹, Yang Liu¹, Blaise Ravelo¹, Olivier Maurice¹, Lu Zhao², Francois Vurpillot²
¹Normandy University UNIROUEN, ESIGELEC, IRSEEM, F-76000 Rouen, France; ²GPM UMR 6634 CNRS, Univ. Rouen, Av. de l’Université, 76801 St Etienne du Rouvray, France

Equivalent Circuit Modeling of Electro-magnetic Pulse Generator for Typical Immunity Simulation
Guangxiao Luo¹, Weidong Zhang¹, Shan Huang¹, Lei Qi¹, Huafeng Wang², Haoyu Ma², Jin Liu²
¹North China Electric Power University, China, People’s Republic of; ²Global Energy Interconnection Research Institute, China
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<td>Immunity in Low Frequency</td>
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</table>
The Importance of Overload Revealing in EMI Receivers
Mario Monti, Elena Puri, Massimo Monti
Elettronica Monti, Italy

Robust Extreme Value Estimation for Full Time-Domain EMI measurements
Marco Azpurua, Marc Pous, José Antonio Oliva, Ferran Silva
Universitat Politècnica de Catalunya, Spain

Impedance Characteristic of New Type Measurement System for Measuring Conducted Disturbance
Ifong Wu¹, Shinobu Ishigami², Kaoru Gotoh¹, Yasushi Matsumoto¹
¹National Institute of Information and Communications Technology (NICT);
²Tohoku Gakuin University

Termination Impedance for AC Mains Cable Leaving from EUT Area in Radiated Emission Measurement
Kunihiro Osabe¹, Nobuo Kuwabara², Shinichi Okuyama³
¹VCCI Council, Japan; ²Kyushu Institute of Technology; ³VCCI Council, NEC Platforms, Ltd.
Modeling and Design of an EMI-Immune Source-buffered Miller OpAmp in 0.18 µm CMOS Technology
Subrahmanyam Boyapati¹, Jean-Michel Redoute², Maryam Shojaei Baghini³
¹IITB-MONASH RESEARCH ACADEMY, India; ²Dept. of Elect. and Comp. Syst. Engineering, Monash University, Australia; ³Department of Electrical Engineering, Indian Institute of Technology (IIT) Bombay, Mumbai, Maharashtra 400076, India.

A Robust CMOS Miller OpAmp with High EMI-Immunity
Subrahmanyam Boyapati¹, Jean-Michel Redoute², Maryam Shojaei Baghini³
¹IITB-MONASH RESEARCH ACADEMY, India; ²Dept. of Elect. and Comp. Syst. Engineering, Monash University, Australia; ³Department of Electrical Engineering, Indian Institute of Technology (IIT) Bombay, Mumbai, Maharashtra 400076, India.

A new methodology to extract the ICEM-CE internal activity block of a FPGA
Chaimae Ghfiri¹²³, Alexandre Boyer²³, André Durier¹, Sonia Ben Dhia²³
¹IRT Saint Exupery, France; ²LAAS CNRS, France; ³INSA Toulouse, France

Theoretical and Experimental Study of Magnetic Sensors for Near-Field Emission Measurement. Application to Design and Integration in Power Printed Board Circuit
Guillaume Vine², Jean-Marc Deniot¹, Paul-Etienne Vidal²
¹University P. Sabatier – Toulouse III, France; ²Ecole Nationale d’Ingénieurs de Tarbes, INPT, France

Hybrid DGTD-MTL-MNA Method for Modelling of Transient Field Coupling into Cables
Iskander Badzagua, Lily Svanidze, Irina Oganezova, Zviadi Kutchadze, Roman Jobava - EMCoS Ltd., Georgia

Novel VIE Solution for Low Frequency EM Fields Induced Inside Human Body Voxel Models
Giia Gabriadze¹², Giorgi Chiqovani², Ekaterina Yavolovskaya¹², Lili Svanidze¹², David Karkashadze¹², Roman Jobava¹²
¹EMCoS Ltd., Tbilisi, Georgia; ²Tbilisi State University, Tbilisi, Georgia

Errors in the shielding effectiveness of cavities due to stair-cased meshing in FDTD: Application of empirical correction factors
Samuel Anthony Bourke, John Dawson, Ian Flintoft, Martin Robinson
University of York, United Kingdom

Lightning modelling process for helicopter engine harness cable
Charles Jullien¹, Jérôme Genoulaz¹, Anca Dieudonne¹, Jean-Julien Vonflet², Gilles Crousier²
¹Safran Electrical & Power, France; ²Safran Helicopter Engines, France
EMI Reduction in SPWM Driven SiC Converter Based on Carrier Frequency Shifting
Niek Moonen\textsuperscript{1}, Frits Buesink\textsuperscript{1}, Frank Leferink\textsuperscript{1,2}
\textsuperscript{1}University of Twente, Netherlands, The; \textsuperscript{2}Thales B.V., Netherlands, The

Effects of Diode Rectifier on the Conducted Emissions in Motor-Drive System
Hemant Bishnoi, Bernhard Wunsch
ABB Schweiz AG, Switzerland

A study on parasitic inductance reduction design in GaN-based power converter for high-frequency switching operation
Takaaki Ibuchi, Tsuyoshi Funaki
Osaka University, Japan

Contribution to EMC Modeling of DC-DC Converters: Towards a Parametric Model
Bouzid Karouche\textsuperscript{1}, Mohamed bensetti\textsuperscript{2}, Abdelhalim zaoui\textsuperscript{1}
\textsuperscript{1}EMP, Algeria; \textsuperscript{2}CentraleSupélec, Paris, France

Arbitrary Waveform Generators and Software-Defined Radio for the Synthesis of Non-Continuous Wave EMC-Test Signals
Oliver Kerfin, Marvin Schwarz, Robert Geise
TU Braunschweig, Germany

Near Magnetic Field Probe for Detection of Noise Current Flowing to Uncertain Directions
KOBAYASHI RYOTA, KOBAYASHI TSUYOSHI, MIYAZAKI CHIHARU, OKA NAOTO, OH-HASHI HIDEYUKI
Mitsubishi Electric Corporation, Japan

Proof-of-concept of a Method for Contactless Vector Network Analysis Using Impedance Probes
Lukas Oppermann, Martin Harm, Achim Enders
TU Braunschweig, Germany

Wide-Band EM Characterization of a Ni-Zn ferrite tile in a TEM structure
Paul Monferran\textsuperscript{1}, Remi Tumayan\textsuperscript{2}, Christophe Guiffaut\textsuperscript{1}, Guillaume Andrieu\textsuperscript{1}, Alain Reineix\textsuperscript{1}, Xavier Bunlon\textsuperscript{2}
\textsuperscript{1}XLIM, France; \textsuperscript{2}Renault Technocentre, France
ORAL SESSION
EMC AT CHIP AND PCB LEVEL 2

Chaired by: Prof. Adrijan BARIC,
University of Zagreb, Croatia

Time: 11:00 - 12:30
Room: ANJOU

SPICE model extraction for a MOSFET based on a parametric simulation and waveform measurement
Thi Quynh Van Hoang, Daniela Yassuda-Yamashita, Priscila Fernandez-Lopez, Frederic Lafon - VALEO – GEEDS, Creteil, France

Design Approach and Analysis of a MOSFET with Monolithic Integrated EMI Snubber for Low Voltage Automotive Applications
Hermon Afewerki1, Christian Lautensack1, Norman Böttcher2, Ingmar Kallfass3
1Robert Bosch GmbH, Germany; 2Reutlingen University, Robert Bosch Center for Power Electronics (RBZ); 3University of Stuttgart, Institute of Robust Power Semiconductor Systems (ILH)

Sensitivity Analysis of Behavioral MOSFET Models in Transient EMC Simulation
Philipp Hillenbrand, Michael Beltle, Stefan Tenbohlen, Stefan Mönch
University of Stuttgart, Germany

Influence of RF Disturbance Phase on Amplifier DPI Characteristics
Marko Magerl1, Christian Stockreiter2, Adrijan Baric1
1University of Zagreb, Croatia; 2ams AG, Premstaetten, Austria

ORAL SESSION
COMPUTATIONAL METHODS 2

Chaired by: Prof. Frank GRONWALD,
University of Siegen, Germany

Time: 11:00 - 12:30
Room: AMERIQUES

Simon Runke, Martin Zang, Markus Clemens
University of Wuppertal, Chair of Electromagnetic Theory, Wuppertal, Germany

Statistical Characterization of Overhead Transmission-line Coupling with EMP from Perspective of System Susceptibility
Congguang Mao1, Dongyang Sun1, Beiyun Sun1, Flavio Canavero2
1Northwest Institute of Nuclear Technology, China, People’s Republic of; 2Politecnico di Torino, Italy

Feature Selective Validation Analysis applied to Measurement and Simulation of Electronic Circuit Electromagnetic Emissions
Amaud Colin1, Marcelo Perotoni2, Kenedy Marconi2,4, Ednaldo Ferreira5, Mateus Andrade2, Samuel Marchiori2, Magno Menezes6, Artur Nogueira7
1LACE Engenharia; 2Universidade Federal do ABC; 3Instituto Federal da Bahia; 4Universidade Federal da Bahia; 5Senai Cimatec; 6Pontifical Catholic University of Minas Gerais, Brazil; 7Federal Center for Technological Education of Minas Gerais, Brazil
Examination of screening factor of signaling cables by measurements and calculation
Jozsef LADANYI - Budapest University of Technology and Economics, Hungary

A Novel Method of Transfer-Function Identification for Modeling DM Impedance of AC Motor
Houcine Miloudi¹, Abdelber Bendaoud¹, Mohamed Miloudi¹, Stefan Dickmann², Stefan Schenke² - ¹University of Sidi Bel Abbes, Algeria; ²Helmut Schmidt University, Hamburg, Germany

An Analysis of the Performance of Power Circuit Breakers Using the Modelling of Electric Arc and a Radiometric System
Gustavo Kuhlmann¹, Thair Ibrahim Abdel Hamid Mustafa¹, Ciro André Pitz¹, Hugo Armando Dominguez Almaguer¹, Luiz Henrique Meyer¹, Sérgio Henrique Lopes Cabral¹, Fernando Tim Flores², José Eduardo Malvestio Cereja², Leandro Puchale² - ¹University of Blumenau – FURB, Brazil; ²Companhia Estadual de Energia Elétrica CEEE-GT, Brazil

Method and User-Friendly App for Characterization of Transformers at High Frequency
Carmen Bejarano, Nicolas Navea, Jose Garcia Doblado, Pablo Gonzalez Vizuete, Joaquin Bernal Mendez - Universidad de Sevilla, Spain

Simulation and measurement of Log-Per Antenna and Double Ridged Guide Horn Antenna for optimised Field Uniformity
Dwi Mandaris¹,³, Frank Leferink¹,² - ¹University of Twente, Netherlands, The; ²Thales, Hengelo, Netherlands, The; ³Research Center for Quality System and Testing Technology, LIPI, Serpong, Indonesia

A System-Independent Algorithm for Phase Center Determination
Dominic Härke¹, Heyno Garbe¹, Prashant Chakravarty² - ¹Institute of Electrical Engineering and Measurement Technology, Leibniz Universität Hannover, Germany; ²Department of Electronics, University of York

Loop Antenna Calibrations with Inclusion of Vector Network Analyser and Comparison Between Calibration Methods
Osman Sen, Soydan Cakir - TUBITAK UME, Turkey

Measurement and Estimation of Minimum Antenna Height of Free-Space Antenna Impedance
Shinichi Okuyama¹, Hiroyuki Shimanoe², Ikuo Makino², Hidenori Muramatsu³ - ¹VCCI Council / NEC Platforms, Ltd., Japan; ²S-Tech Inc.; ³Fujitsu General EMC Laboratory, Ltd; ⁴VCCI Council
**O_We_C2**  ORAL SESSION

**EMC AT CHIP AND PCB LEVEL 3**

*Chaired by:*  **Prof. Etienne SICARD,** INSA Toulouse, France

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**Design and Validation of a Movable Pin-Contact Miniature Current Probe for Chip-Level EMI Noise Measurement**

HAN-NIEN LIN¹, Che-Lun Hu¹, Jen-Fu Huang¹, Ming-Shan Lin², Tsung-Ching Lin³

¹Feng-Chia University, Taiwan, Republic of China; ²Bureau of Standards, Metrology and Inspection, Ministry of Economic Affairs, Taiwan; ³Electronic Testing Center, Taiwan

**Impact of Source Current Distribution Patterns in On-Chip Interference Studies**

Merce Grau Novellas¹, Ramiro Serra¹, Matthias Rose²

¹Eindhoven University of Technology, The Netherlands; ²NXP Semiconductors, Eindhoven, The Netherlands

**Effect of Field Area on Disturbance Propagation through Silicon Substrates in SOI-BCD Process**

Ko Oyama², Yosuke Kondo¹, Daisaku Ikoma¹, Yasuyuki Ishikawa¹, Akitaka Murata³, Shuji Agatsuma¹, Makoto Nagata²

¹DENSO CORPORATION, Japan; ²Kobe University, Japan

**EMC of DS13 communication protocol - PCB Consideration for Sensor product**

Adrien Doridant, Anthony Duhamel, Joseph Hon, Bertrand Vrignon, Kamel Abouda, Nicolas Baptistat, Patrice Besse - NXP Semiconductors

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**O_We_C3**  ORAL SESSION

**COMPUTATIONAL METHODS 3**

*Chaired by:*  **Prof. David THOMAS,**
The University of Nottingham, United Kingdom

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**Calculation of Radar Signals Interacting with Scattering Objects by use of Transfer Function**

Sergei Sandmann, Heyno Garbe

_Institute of Electrical Engineering and Measurement Technology, Germany_

**Hybrid model for fast EM simulation of wireless interferences in railway system**

Ulrich Biaou², Sara Iben-Jellal¹, Michael Bocquet², Sylvie Baranowski¹, Samuel Leman³, Frederic Hoepe³ - ¹Université de Lille, IEMN Laboratory France; ²Université de Valenciennes, IEMN Laboratory, France; ³Nexio, France

**MoM-based Foster-type Circuit Model for Lossy Wire-Interconnection Structures**

Christian Bednarz, Marco Leone

_Otto-von-Guericke-Universität Magdeburg, Germany_
The Effect of Mains Voltage Level Variations on The Disturbances Produced by Household Appliances in The Frequency Range of 9-150 kHz
Budi Sudiarhto, Aji Nur Widyanto, Holger Hirsch
ETS Universität Duisburg-Essen, Germany

The Mutual Influence of Appliances on The Disturbance in The Frequency Range of 9-150 kHz Produced by Household Appliances in The Low Voltage Network
Budi Sudiarhto, Aji Nur Widyanto, Holger Hirsch
ETS Universität Duisburg-Essen, Germany

Impedance characteristics of Aluminum Alloy Stranded Conductors in the frequency range 40 Hz to 150 kHz
András Mohos, József Ladányi
Budapest University of Technology and Economics, Hungary

CVNA Calibration Method for Electrically Small Loop Antennas from 9 kHz to 30 MHz
Martin Harm, Lukas Oppermann, Achim Enders - TU Braunschweig, Germany

A detection method for interference measurements in partly occupied radio frequency bands
Karina Fors, Kia Wiklundh, Patrik Eliardsson, Mikael Alexandersson
Swedish Defence Research Agency, FOI, Sweden

Performance of Coded Frequency Hopping Systems with Adjacent Channel Interference
Sara Linder, Karina Fors, Kia Wiklundh
Swedish Defence Research Agency (FOI), Sweden

Elimination of Electromagnetic Interference in Communication Channels by Using Spread Spectrum Techniques
Bernhard Auinger, Bernd Deutschmann, Gunter Winkler - TU Graz, Austria

Spectrum sharing in 800 MHz band: Experimental estimation of LoRa networks and Air Traffic Control Radars co-existence
Grigory Bochechka¹, Valery Tikhvinskii², Pavel Korchagin³, Andrey Gryazev⁴, Altay Aitmagambetov⁵ - ¹LLC IcomInvest, Moscow, Russian Federation; ²Moscow Technical University of Communications and Informatics, Moscow, Russian Federation; ³Geyser-Telecom Ltd, Moscow, Russian Federation; ⁴Federal State Unitary Enterprise Central Science Research Telecommunication Institute, Moscow, Russian Federation; ⁵International Information Technology University, Almaty, Kazakhstan
ORAL SESSION
THERMAL AND AGEING EFFECTS

Chaired by: Prof. Geneviève DUCHAMP,
University of Bordeaux, France

Effects of Thermal Aggressions on Susceptibility Responses and Immunity Figures of PWM patterns
JEAN-MARC DIENOT - University P. Sabatier - Toulouse III, France

Study of the thermal aging effect on the conducted emission of a synchronous buck converter
Alexandre Boyer¹, Manuel Gonzalez Sentis², Chaimae Ghfiri¹², André Durier²
¹LAAS-CNRS, France; ²IRT Saint-Exupéry

Analytical model for power converter optimization including EMC and thermal constraints
Gnimdu Dadanema¹, Mylène Delhommais², François Costa², Jean-Luc Schanen², Yvan Avenas², Christian Vollaire²
¹ENS Paris Saclay / Laboratoire SATIE, France; ²G2ELab - Univ Grenoble Alps CS 90624 38031 Grenoble CEDEX1; ³ESPE – Université Paris Est Créteil; ⁴Laboratoire AMPERE - Ecole Centrale de Lyon

Statistical analysis for the long-term electromagnetic compatibility of a DC-DC converter
HE HUANG¹, Alexandre Boyer², Sonia Ben Dhia²
¹Politecnico di torino, Italy; ²INSA Toulouse, France
**O_We_D3**  
**ORAL SESSION**  
**EXPOSURE TO EM FIELDS**

**Chaired by:**  
Prof. Mauro FELIZIANI,  
University of l’Aquila, Italy

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**Study on the Impact of the Body Shadow Effect in Wireless Channels Through Dosimetry Measurements**

Silvia de Miguel-Bilbao¹, Juan Blas², Erik Aguirre³, Peio López-Iturri³, Leyre Azpilicueta⁴, Francisco Falcone⁵, **Victoria Ramos¹**  
¹Carlos III Health Institute, Spain; ²University of Valladolid, Spain; ³Public University of Navarra, Spain; ⁴Tecnológico de Monterrey, Mexico

---

**Low Frequency Human Exposure Analysis for Automotive Applications**

Ekaterina Yavolovskaya¹,², Benjamin Willmann³,⁴, Giga Gabriadze¹,², Giorgi Chiqovani¹, Zurab Sukhiashvili¹, Sophia Iosava¹, Lily Svanidze¹,², Roman Jobava¹,²  
¹EMCoS Ltd., Tbilisi, Georgia; ²Tbilisi State University, Tbilisi, Georgia; ³VOLKSWAGEN AG, Wolfsburg, Germany; ⁴University of Magdeburg, Magdeburg, Germany

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**The evaluation of stationary and mobile components of radiofrequency electromagnetic exposure in the public accessible environment**

Jolanta Karpowicz¹, Silvia de Miguel-Bilbao², Victoria Ramos², Francisco Falcone³, Krzysztof Gryz¹, Wiesław Leszko¹, Patryk Zradziński¹  
¹Central Institute for Labour Protection – National Research Institute (CIOP-PiB), Laboratory of Electromagnetic Hazards, Poland; ²Carlos III Health Institute, Spain; ³Electric and Electronic Engineering Department, Public University of Navarra, Pamplona, Navarra, Spain

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**A 3D Coil Structure Achieving Uniform Magnetic Field for in-vitro cell experiments**

Weinong SUN¹, Yaqing He¹, Yinliang Diao², Sai-Wing Leung¹, Yun-Ming Siu¹, Richard Yuen-Chong Kong¹, Wai-Keung Lo¹  
¹City University of Hong Kong, Hong Kong S.A.R. (China); ²South China Agricultural University, Guangzhou, China.; ³EMC Consortium Limited, Hong Kong SAR

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**O_We_D4**  
**ORAL SESSION**  
**POWER LINE COMMUNICATIONS**

**Chaired by:**  
Prof. Marcello D’AMORE,  
Sapienza University of Rome, Italy

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**Multipath Model Simulator for PLC Home Networks**

Ismail AOUICHAK, Yannick KERGOSIEN, Imene ELFEKI, Jean-Charles LE BUNETEL, Yves Raingeaud, Jean-Charles Billaut - Univ. de Tours, GREMAN, UMR 7347 France

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**Estimation of PLC Transmission line and Crosstalk for LV Outdoor Electrical Cables**

Imene ELFEKI¹,², Ismail Aouichak¹, Jean-Charles LE BUNETEL¹, Yves RAINGEAUD¹, Thierry DOLIGEZ² - ¹Université de Tours, GREMAN, UMR 7347, France; ²LAN - Laboratoire des Applications Numériques, France

---

**Theoretical maximum data rate estimations for PLC in automotive power distribution systems**

Alexander Zeichner, Zongyi Chen, Stephan Frei - TU Dortmund, Germany

---

**Electro-Magnetic Emission of Power Line Communication system**

Alain Alcaras¹, Frank Leferink²,³ - ¹Thales Communication and security, France; ²Thales Netherlands; ³University of Twente
## Posters

### P2_We

**POSTER SESSION**

**POSTER SESSION 2**

**Chaired by:** Dr. Jean-Michel REDOUTE, Monash University, Australia

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<td><strong>Numerical and experimental study of implanted cardiac defibrillators immunity to ELF electric fields</strong></td>
<td>Cihan Gercek¹, Isabelle Magne², Djilali Kourtiche¹, Pierre Schmitt¹, Patrice Roth¹, Mustapha Nadi³, Martine Souques³</td>
<td>¹Institut Jean Lamour (UMR 7198), Université de Lorraine, France; ²EDF R&amp;D, France; ³EDF Service des Etudes Médicales, France</td>
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<td><strong>Investigation of the Impact of Parasitic Parameters on PCB Performance by Hybridization of 3D Quasistatic Field Solvers and MNA</strong></td>
<td>Alexander Demurov¹², Giga Gabriadze¹², Badri Khvitia¹, Zviad Kutchadze¹, Anna Gheonjian¹², Roman Jobava¹², Ilona Danelyan¹</td>
<td>¹EMCoS Ltd, Tbilisi, Georgia; ²Tbilisi State University, Tbilisi, Georgia</td>
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<td><strong>Efficient Magnetic Field Measurements</strong></td>
<td>Iwan Setiawan¹², Niek Moonen¹, Frits Buesink¹, Frank Leferink¹³</td>
<td>¹University of Twente, The Netherlands; ²Indonesian Institute of Sciences, Indonesia; ³Thales, The Netherlands</td>
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<td>P2 (4)</td>
<td><strong>A Novel Approach for Optimal Design of Monolithic Integrated RC Snubbers</strong></td>
<td>Norman Böttcher¹, Hermon Afewerki², Christian Lautensack², Ingmar Kallfass³</td>
<td>¹Robert Bosch Center for Power Electronics, Germany; ²Robert Bosch GmbH, Germany; ³Institute of Robust Power Semiconductor Systems, Germany</td>
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<td><strong>Influence of the Voltage-Dependent Output-Capacitance of SiC-Semiconductors on the Electromagnetic Interference in Dc-Dc Converter for Electric Vehicles</strong></td>
<td>Karl Oberdieck, Alexander Sewergin, Rik W. De Doncker</td>
<td>RWTH Aachen University, Germany</td>
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<td>P2 (6)</td>
<td><strong>Analysis of Analog Power Rails in High-Speed Circuit Design</strong></td>
<td>Ihsan Erdin</td>
<td>Celestica Inc., Canada</td>
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<td><strong>3D MODELING OF SURFACE-MOUNT CAPACITORS AND MUTUAL COUPLINGS BETWEEN THEM</strong></td>
<td>Aivis Asmanis, Deniss Stepins, Andris Dzenis, Gundars Asmanis</td>
<td>Riga Technical University, Latvia</td>
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<td>P2 (8)</td>
<td><strong>Secure Silicon: Towards Virtual Prototyping</strong></td>
<td>Laurent Sauvage¹², Sofiane Takarab³, Youssef Souissi², Naofumi Homma³</td>
<td>¹Télécom ParisTech, France; ²Secure-IC, France; ³RIEC Tohoku University, Japan</td>
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A De-embedding Application for EMC Attenuation Measurements of Components
Janne Hein\textsuperscript{1,2}, Johannes Hippeli\textsuperscript{1}, Thomas F. Eibert\textsuperscript{2}
\textsuperscript{1}BMW AG, Germany; \textsuperscript{2}Chair of High-Frequency Engineering, Technical University of Munich, Germany

Do Bench-Tests Keep Up With Current Technology in EMI Receivers?
Mario Monti, Elena Puri, Massimo Monti
Elettronica Monti, Italy

Current probes for differential mode conducted emission measurement
David Alistair Knight\textsuperscript{1}, Richard Marshall\textsuperscript{2}
\textsuperscript{1}NPL, United Kingdom; \textsuperscript{2}Richard Marshall Laboratories

Broad band PCB probes for near field measurements
Nimisha Sivaraman\textsuperscript{1}, Fabien Ndagijimana\textsuperscript{1}, Moncef Kadi\textsuperscript{2}, Zouheir Riah\textsuperscript{2}
\textsuperscript{1}University grenoble Alpes, France; \textsuperscript{2}Normandie Univ, UNIV-ROUEN

Hybrid MoM-MTL Solution for LF Susceptibility and Radiation Problems
Giorgi Chiqovani\textsuperscript{1}, Iskander Badzagua\textsuperscript{1,2}, David Karkashadze\textsuperscript{1,2}, Giga Gabriadze\textsuperscript{1,2}, Roman Jobava\textsuperscript{1,2}
\textsuperscript{1}EMCoS ltd., Tbilisi, Georgia; \textsuperscript{2}Tbilisi State University, Tbilisi, Georgia

Near-Field Characterization for 13.56 MHz RFID Antenna
Kassem Jomaa\textsuperscript{1}, Fabien Ndagijimana\textsuperscript{1}, Houssam Ayad\textsuperscript{2}, Majida Fadlallah\textsuperscript{2}, Jalal Jomaah\textsuperscript{2}
\textsuperscript{1}Grenoble-Alpes University, France; \textsuperscript{2}Lebanese University, Beirut, Lebanon

Meetings

MEETING

THALES GROUP NoE PRIVATE MEETING

Chaired by: Prof. Frank LEFERINK, University of Twente, THALES, The Netherlands

Time: 9:00 - 12:30
Room: AFRIQUE
### Thursday, 7th September 2017 - 3rd Symposium day

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<td><strong>ISC Dinner</strong></td>
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Automated Driving - New Challenges (part 1)
Alain Kehlhoffner - Valeo, France

Automated Driving - New Challenges (part 2)
Frédéric Lafon - Valeo, France

The automotive industry is currently facing major evolutions, particularly with the development of automated vehicle applications. The technology behind such an evolution is quite complex and is based on many sensors, radars and post-processing techniques which are quite new in the automotive industry. In the first part of the presentation, the authors will give a general overview of these new technologies and of the global performance level that can be reached on the market today.

As far as automated vehicles are concerned, some of the consequences for users and on EMC must be considered. In the second part of the presentation, the authors will focus on some of these aspects:

When a vehicle is automated, passengers’ usages and expectations will change. This will lead to new vehicle interior concepts and new usages. The EMC performance of such systems will be essential and will raise new concerns for the EMC community. Reliability and safety vs. EMC, for example, is one of the key aspects to be considered.

Broadband Foster-Type-Circuit Model of Non-Uniform and Radiating Transmission Lines
Sebastian Südekum, Marco Leone - Otto-von-Guericke Univ. Magdeburg, Germany

Distributed Voltage Sources on Transmission-lines – Unified Low Frequency Model
Isabelle Junqua, Jean-Philippe Parmantier, Solange Bertuol, Pierre Schickele ONERA, France

Novel Equivalent-Circuit Model for Electrically Short Transmission Lines Including Field Coupling
Andreas Mantzke, Marco Leone - Otto-von-Guericke Univ. Magdeburg, Germany

Study on Short Equivalent Lines in Asymptotic Method for High Frequency Electromagnetic Field Coupling to Transmission Line
Chunying Zhao¹, Liping Yan², Xiang Zhao¹, Qiang Liu², Haijing Zhou²
¹Sichuan University, China, People’s Republic of; ²Institute of Applied Physics and Computation Mathematics, China, People’s Republic of
Reflection-Optimized Star Topologies for Automotive Bus Systems
Matthias Hampe, Alexander Stieler - Ostfalia Univ. of Applied Science, Germany

Simulation Techniques for EMC Compliant Design of Automotive IC Chips and Modules
Akihiro Tsukioka¹, Makoto Nagata¹, Kohki Taniguchi¹, Daisuke Fujimoto¹, Rieko Akimoto², Takao Egami², Kenji Niinomi², Takeshi Yuhara², Sachio Hayashi², Rob Mathews³, Karlthik Srinivasan³, Ying-Shiun Li³, Norman Chang³
¹Kobe University, Japan; ²Toshiba Corporation, Japan; ³Semiconductor BU, ANSYS Inc., US

Experimental and Computational Analysis of a Radiated Immunity Standard Representativeness in the 210-216 MHz Frequency Range
Artur Nogueira de São José¹, Ursula do Carmo Resende¹, José Hissa Ferreira¹, Arnaud Christophe Pierre Marie Colin², Magno Alves de Menezes³, Rose Mary de Souza Batalha³, Juliano Fujioka Mologni³
¹Federal Center for Technological Education of Minas Gerais, Brazil; ²LACE Engenharia; ³Pontifical Catholic University of Minas Gerais; ⁴ESSS

Modeling of Conducted EMI with Current Probe Method for a Motor-Drive Braking System
Junesang Lee¹, Minho Kim¹, Jungraee Ha¹, Chanho Lee¹, Sangwon Yun¹, Yeongsik Kim¹, Kihoon Nam², Wansoo Nah³ - ¹Mando Co. Ltd., Korea, Republic of (South Korea); ²Huwin Co. Ltd., Korea, Republic of (South Korea); ³Sungkyunkwan University, Korea, Republic of (South Korea)

Detailed study of different cable ferrite characterization methods using simulation and measurement
Steffen Schulze¹, Moawia Al-Hamid², Marco Leone² - ¹Würth Elektronik eiSos GmbH & Co. KG, Germany; ²Otto-von-Guericke-University, Germany

A Miniaturized Frequency Selective Rasorber with Tunable Passband
Hao Tu, Peiguo Liu, Jiujun Huang, Yujian Qin
National University of Defense Technology, China, People’s Republic of

Adaptive Terahertz Absorber Based On Tunable Graphene Multilayer
Alessandro Giuseppe D’Aloia¹, Marcello D’Amore², Maria Sabrina Sarto³
¹Sapienza University of Rome, Italy, Italy; ²Sapienza University of Rome, Italy, Italy; ³Sapienza University of Rome, Italy, Italy

An Ultrathin Polarization-independent Wideband Metamaterial Absorber for EMC Applications
Jiaqi Feng¹, Liming SP², Li Sun¹, Ye Tian¹, Dan Li¹ - ¹Technology and Engineering Center for Space Utilization, Chinese Academy of Sciences, China, People’s Republic of; ²Beijing Key Laboratory of Millimeter Wave and Terahertz Technology, School of Information and Electronics, Beijing Institute of Technology
An Analog-to-Digital Converter Immunity Modelling based on a Stochastic Approach
Siham Hairoud Airieau\textsuperscript{1,2}, Tristan Dubois\textsuperscript{1}, Geneviève Duchamp\textsuperscript{1}, André Durier\textsuperscript{2}
\textsuperscript{1}IMS Laboratory / Univ. Bordeaux, France; \textsuperscript{2}IRT Saint Exupery, Toulouse, France

Crosstalk Analysis of Printed Circuits with Many Uncertain Polynomial Chaos Metamodels
Mourad Larbi\textsuperscript{1}, Igor Stievano\textsuperscript{1}, Flavio Canavero\textsuperscript{1}, Philippe Besnier\textsuperscript{2}
\textsuperscript{1}Politecnico di Turin, Dipartimento di Elettronica, Politecnico di Torino, 10129 Torino, Italy; \textsuperscript{2}Institut d’Électronique et de Télécommunications de Rennes, INSA de Rennes, 35708 Rennes, France

Experimental validation of a statistical model of a wiring system in a reverberant room
Louis Kovalevsky\textsuperscript{1}, Guillaume Andrieu\textsuperscript{2}, Robin Langley\textsuperscript{3} - \textsuperscript{1}wavesix LLC, United States America; \textsuperscript{2}Univ. of Limoges, XLIM laboratory; \textsuperscript{3}Univ. of Cambridge, United Kingdom

Simulation based analysis of electric field distributions in small reverberation chambers
Inès Barbary\textsuperscript{1}, Julia Schiffler\textsuperscript{2}, Marco Rozgic\textsuperscript{1}, Robert Hollan\textsuperscript{1}, Claas Schlie\textsuperscript{1}, Jens Storjohann\textsuperscript{1}, Michael Hagel\textsuperscript{1}, Lars Ole Fichte\textsuperscript{1}, Stefan Potthast\textsuperscript{1}, Martin Schaarschmidt\textsuperscript{1}, Sebastian Lange\textsuperscript{1}, Marcus Stiemer\textsuperscript{1} - \textsuperscript{1}Helmut Schmidt University, Hamburg, Germany; \textsuperscript{2}Düsseldorf, Germany; \textsuperscript{3}Bundeswehr Research Institute for Protective Technologies and NBC Protection, Munster, Germany

Comparison of Voltage Sources with Current Sources on Unbalanced Differential Microstrip Line
Hiroaki Saito, Tohlu Matsushima, Takashi Hisakado, Osami Wada
Kyoto University, Japan

A Modal-Analysis-Based Prediction Method for Radiation Power in Differential Channels with Discontinuity
Chi-Hsuan Cheng, Tzong-Lin Wu - National Taiwan University, Taiwan

Electromagnetic characterization of complex flexible printed interconnects
Françoise Paladian\textsuperscript{1}, Kamal Kerroum\textsuperscript{1}, Sébastien Girard\textsuperscript{1}, Sébastien Lalléchère\textsuperscript{1}, Pierre Bonnet\textsuperscript{1}, Patrice Foutrel\textsuperscript{2}
\textsuperscript{1}Clermont Auvergne University, France; \textsuperscript{2}SAFRAN Electronics & Defense

Identifying Frequency Dispersion of Transmission Characteristics of Shielded-Flexible Printed Circuits
Yoshiki Kayano, Hiroshi Inoue - The University of Electro-Communications, Japan
**O_Th_B2**  
**ORAL SESSION**  
**AUTOMOTIVE EMC 2**  
Chaired by: **Dr. Frédéric LAFON, VALEO, France**  

**EMC and Signal Integrity Design Considerations for Flexible Printed Interconnects in Automotive Data-Bus Applications**  
Yu Xian Teo, Jiaqi Chen, Alastair R. Ruddle  
*Future Transport Technologies Department, HORIBA MIRA Ltd, United Kingdom*  

**Characterization of Common-Mode Choke for Automotive Ethernet Networks enabling 100 Mbit/s**  
Sanaz Mortazavi, Detlef Schleicher, Friedel Gerfers  
1*Volkswagen AG, Germany; 2Technische Universität Berlin*  

**Channel Selective Adaption of PWM Frequencies for Undisturbed AM and FM Reception in Automobiles**  
Andreas Bendicks, Stephan Frei, Norbert Hees, Marc Wiegand  
1*TU Dortmund University, Dortmund, Germany; 2Leopold Kostal GmbH & Co KG, Lüdenscheid, Germany*  

**Superposition of shield currents in inverter-fed AC-Motors**  
Madhavi Sreenivasa Murthy, Guido A. Rasek  
1*Brandenburgische Technische Universität Cottbus-Senftenberg; 2Robert Bosch GmbH, Germany*  

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**O_Th_B3**  
**ORAL SESSION**  
**PROTECTION DEVICES: SHIELDING**  
Chaired by: **Dr. John DAWSON, University of York, United Kingdom**  

**Numerical Evaluation of TD Shielding Performance of Thin Shields in the Presence of Vertical Dipoles**  
Rodolfo ARANEO, Salvatore CELOZZI, Giampiero LOVAT, Paolo BURGHIGNOLI  
1*University of ROME LA SAPIENZA, Italy - DIAEE - EE Division; 2University of ROME LA SAPIENZA, Italy - DIET*  

**Wideband Full Wave Shielding Effectiveness Simulation of Structures with Wire Grid Meshes**  
Zahra Kazerouni, Hadi Aliakbarian  
*KN Toosi University of Technology, Iran, Islamic Republic of*  

**Measurement of Transmission through Printed Circuit Boards: Application to Enclosure Shielding**  
Sarah Louise Parker, Andy Marvin, John Dawson, Ming Ye  
1*University of York, United Kingdom; 2Huawei Technologies AB*  

**Effect of power state on absorption cross section of personal computer components: applications to enclosure shielding**  
Jiexiong Yan, John Dawson, Andy Marvin  
*University of York, United Kingdom*
**O_Th_B4**  
**ORAL SESSION**  
**ESD AND TRANSIENTS**  
**Chaired by:** Dr. Jean-Luc LEVANT, Microchip, France  
**Time:** 14:00 - 15:30  
**Room:** ESPACE SAINT-AUBIN

**Distance characteristic of electric field waveform and field peak value caused by micro gap ESD in a pair of spherical electrodes**  
Ken Kawamata¹, Shinobu Ishigami¹, Shigeki Minegishi¹, Osamu Fujiwara²  
¹Tohoku Gakuin University, Japan; ²Nagoya Institute of Technology, Japan

**LIN communication behaviours against ESD events**  
Fabien Escudié¹², Fabrice Caignet¹², Nicolas Nollier¹²  
¹LAAS-CNRS; ²UPS

**Dynamic models of external capacitors to perform accurate EMC and ESD simulations**  
Nicolas Baptistat, Kamel Abouda, Adrien Doridant, Bertrand Vrignon, Tristan Dubois  
NXP, France

**Modeling Transient Electrical Disturbances by Inductive Coupling for the ISO 7637-3 ICC Test**  
Niels Lambrecht¹, Hugo PUES², Daniel De Zutter¹, Dries Vande Ginste¹  
¹Ghent University, Belgium; ²MELEXIS Technologies NV

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**O_Th_C1**  
**ORAL SESSION**  
**TRANSMISSION LINES 3**  
**Chaired by:** Prof. Maria Sabrina SARTO, Sapienza University of Rome, Italy  
**Time:** 16:00 - 17:30  
**Room:** JEANNETEAU

**Simulation of the Stochastic Electromagnetic Field Coupling to Multiconductor Transmission Lines using Enhanced Per-Unit-Length Parameters**  
Johanna Kasper, Ralf Vick - Otto von Guericke University Magdeburg, Germany

**Modelling of Transmission Line Loaded with BCI Probe Using Circuit Concept Approach**  
Kimitoshi Murano¹, Misaki Hoshino³, Yoshio Kami², Fengchao Xiao², Majid Tayarani³  
¹Tokai University, Japan; ²The University of Electro-Communications, Japan; ³Iran University of Science and Technology, Iran

**Frequency-Domain Analysis of the Characteristic Impedance Matrix of High-Voltage Transmission Lines**  
Rodolfo Araneo¹, Salvatore Celozzi¹, Jose Antonio Marinho Brandao Faria²  
¹University of OF ROME LA SAPIENZA, Italy; ²Instituto de Telecomunicacoes Instituto Superior Tecnico – Universidade de Lisboa

**A Practical Application of an Analytical Method for Modeling Power Transmission Lines**  
Thair Ibrahim Abdel Hamid Mustafa¹, Sergio Henrique Lopes Cabral¹, Hugo Armando Dominguez Almaguer¹, Luiz Henrique Meyer¹, Leandro Henrique Bona Puchale², Jose Eduardo Cereja², Gustavo Vier²  
¹Univ. of Blumenau, Brazil; ²CEEE-GT,Brazil
**Development of a Passive Impedance Network for Modeling Electric Vehicle Traction Batteries for EMI Measurements**

Sebastian Jeschke¹, Marc Maarleveld¹, Jörg Bärenfänger¹, Holger Hirsch², Sergii Tsiapenko², Christian Waldera³, Martin Obholz³

¹EMC Test NRW GmbH, Germany; ²University Duisburg-Essen; ³Volkswagen AG

**Predicting the RF Impedance of Cells in Series for Automotive Traction Battery Applications**

Jiaqi Chen, Alastair R. Ruddle, Yu Xian Teo

HORIBA MIRA Ltd, United Kingdom

**Transient Co-Simulation of Electromagnetic Emissions caused by a SiC Traction Inverter**

Philipp Hillenbrand¹, Michael Beltle¹, Stefan Tenbohlen¹, Jan Hansen²

¹University of Stuttgart, Germany; ²Robert Bosch GmbH, Germany

**Measurement of RF impedance for automotive 18650 cylindrical lithium ion cells**

Alastair R. Ruddle, Jiaqi Chen, Yu Xian Teo

HORIBA MIRA Limited, United Kingdom

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**Dedicated Stripline Set-Up for the Characterization of the Shielding Effectiveness of Board-Level Shields**

Dries Vanoost, Tim Claeys, Andy Degraeve, Filip Vanhee, Davy Pissoort

KU Leuven, Belgium

**Effective Noise Coupling Reduction in Metallic Enclosures Hosting X-K Bands Microwave Circuits**

Muhammet Hilmi Nisanci¹, Francesco de Paulis², Antonio Orlandi²

¹Sakarya University, Turkey; ²University of L’Aquila, Italy

**Ultrathin Switchable Microwave Filter Based on Graphene and Slot Array**

Chenxi Liu¹, Liang Yang², Peiguo Liu¹, Yujian Qin¹, Jijun Huang¹

¹National University of Defense Technology, China, People’s Republic of; ²Science and Technology on Space Physics Laboratory, Beijing, China

**Protection Characteristics of Ferrite Magnetic Ring against HEMP and Lightning**

Qin Feng¹², Mao Congguang¹²

¹State Key Laboratory of Intense Pulsed Radiation Simulation and Effect; ²Northwest Institute of Nuclear Technology
Cross-Correlation Analysis of the Cyclostationary Near-Field Unintentional Radiations from the PCB

Yury Kuznetsov¹, Andrey Baev¹, Anastasia Gorbunova¹, Maxim Konovalyuk¹, Johannes A. Russer², Michael Haider², Peter Russer²
¹Moscow Aviation Institute (National Research University); ²Technische Universität München

Near-Field Scanning of Stochastic Fields Considering Reduction of Complexity

David W. P. Thomas¹, Mohd H. Baharuddin¹, Christopher Smartt¹, Gabriele Gradoni¹, Gregor Tanner¹, Stephen Creagh¹, Nebojsa Doncov², Michael Haider³, Johannes A. Russer³
¹University of Nottingham, U.K.; ²University of Nis, Serbia; ³Technische Universität München, Germany

3D Antenna Patterning for MIMO and Phased-Array Systems: Energy-based Built-In-Self-Test for Multiphysics Co-Design

Sidina Wane¹, Johannes A. Russer³, Thanh Vinh Dinh¹, Damienne Bajon², Dominique Lesenechal¹, Pablo Corrales², Peter Russer³, Michel Ivrlac³, Josef Nossek³
¹NXP-Semiconductors; ²ISAE-Universite de Toulouse, France; ³Technische Universität München, Germany; ⁴Federal University of Ceara, Fortaleza, Brazil

Estimating Radar Cross-Section of Canonical Targets in Reverberation Chamber.

Philippe Besnier, Jérôme Sol, Stéphane Méric - CNRS - UMR 6164 - IETR, France

Propagation methods for stochastic field emissions and source reconstruction

Gabriele Gradoni, Deepthee Madenoor Ramapriya, Stephen Creagh, Gregor Tanner, Hafiz Mohd Baharuddin, Chris Smartt, David Thomas

University of Nottingham, United Kingdom

Meetings

MEETING

MEETING

PETER PRIVATE MEETING

Time: 12:30 - 14:00
Room: AFRIQUE

Chaired by: Prof. David PISSOORT
Ku Leuven, Belgium

MEETING

ISC MEETING

Time: 14:00 - 16:00
Room: TESLA

Chaired by: Prof. Andy Marvin,
York EMC Services Ltd, United Kingdom
P3 (1) Multi-conductor transmission line modelling of transfer impedance measurement methods
Jesper Lansink Rotgerink, Harmen Schippers, Jaco Verpoorte
Netherlands Aerospace Centre, Netherlands, The

P3 (2) Investigation of Common Mode (CM) Impedance : Comparison of Pure and BCI CM Voltage
Hassan Hussein CHEAITO¹, Mor-Sokhna Diop², Marwan Ali¹, Edith Clavel², Christian Vollaire¹
¹laboratoire ampère, France; ²G2ELab, grenoble, France

P3 (3) Shielding Effectiveness Estimation of an Enclosure with an Arbitrary Shape Aperture
Ali Shourvarzi, Mojtaba Joodaki
Ferdowsi University of Mashhad, Iran, Islamic Republic of

P3 (4) Tapered Structures for Frequency Characterization of Wide-Terminal Current-Sense Resistor
Josip Bacmaga¹, Raul Blecic¹,², Renaud Gillon², Adrijan Baric¹
¹University of Zagreb Faculty of Electrical Engineering and Computing, Croatia; ²KU Leuven, ESAT-TELEMIC, Belgium; ³ON Semiconductor, Belgium

P3 (5) A Simulation Method to Determine the RF Impedance of Batteries
Moustafa Raya, Ralf Vick
Otto von Guericke University Magdeburg, Germany

P3 (6) A combined CM & DM conducted EMI modeling approach - Application to a non-isolated on-board single-phase charger for electric vehicles
Christelle Saber¹,⁴, Denis Labrousse¹,², Bertrand Revol¹,³, Alain Gascher⁴
¹Laboratory of Systems & Applications of Information & Energy Technologies SATIE, France; ²Conservatoire National des Arts et Métiers, France; ³Ecole Normale Supérieure Paris Saclay, France; ⁴Renault S.A.S., France

P3 (7) Analysis of the Effects of Associated Equipment in EN 55032 for Conducted Emission Test
Bekir Solak, Sezgin Hilavin, Emre Alan, Melike Özkan, Faik Alan
Vestel Elektronik Sanayii ve Ticaret A.Ş., Turkey
P3 (8) Closed form model of radiated EM field from wired systems and analysis of coupling impact
Achraf Liakouti\textsuperscript{1,2}, Ali Benbassou\textsuperscript{2}, Christophe Pasquier\textsuperscript{1}, Claire Faure\textsuperscript{1}, Khalil El Khamlichi Drissi\textsuperscript{1}, Françoise PALADIAN\textsuperscript{1}
\textsuperscript{1}Clermont Auvergne University, Pascal Insitute, France; \textsuperscript{2}Laboratory of Transmission and Information Processing, USMBA, FEZ, Morocco

P3 (9) Estimating parasitic resonances by analysis of the late time response
Sergej Braining\textsuperscript{1}, Stefan Dickmann\textsuperscript{1}, Matthias Kreitlow\textsuperscript{2}
\textsuperscript{1}Helmut-Schmidt-Universität, Universität der Bundeswehr Hamburg, Germany; \textsuperscript{2}Bundeswehr Research Institute for Protective Technologies and NBC Protection Munster, GERMANY

P3 (10) EMC of Wireless Medical Telemeters and Noise Radiated from Light Emitting Diode Lamps
Kai Ishida\textsuperscript{1}, Keita Suzuki\textsuperscript{2}, Eisuke Hanada\textsuperscript{3}, Minoru Hirose\textsuperscript{2}
\textsuperscript{1}National Institute of Information and Communications Technology, Japan; \textsuperscript{2}Kitasato University, Japan; \textsuperscript{3}Saga University, Japan

P3 (11) Dielectric Measurement of Liquids in 1GHz Band Based on Comparison with Reference Materials Using an Open-ended Cut-off Circular Waveguide
Kouji Shibata, Masaki Kobayashi
Hachinohe Institute of Technology, Japan

P3 (12) Assessment of the Electromagnetic Environment Hardware Control Room in Cinema and Concert Hall
Volodymyr Pilinsky\textsuperscript{1}, Andrey Rozvadovskiy\textsuperscript{2}, Alexander Chupakhin\textsuperscript{1}, Roman Sirota\textsuperscript{3}, Ievgen Zaitsev\textsuperscript{4}
\textsuperscript{1}National Technical University of Ukraine “Igor Sikorsky Kyiv Polytechnic Institute”, Department of Audio Engineering and Information Registration, Kiev, Ukraine; \textsuperscript{2}Branch of the FSUE NIIR Testing Centre «Omega», Sevastopol, Ukraine; \textsuperscript{3}Software development company “GEAR Electronics”, Kyiv, Ukraine; \textsuperscript{4}Warsaw University of Technology, Institute of Electronic Systems, Warsaw, Poland

P3 (13) An Ultra-wideband Miniaturized Printed Dipole Antenna for EMC Measurements
Morteza Ghaderi Aram, Hamed Tahmasbi, Hadi Aliakbarian
KN Toosi University of Technology, Iran, Islamic Republic of
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<td>WT_Fr_A2: Workshop 5A EMC of ICs - The French Touch</td>
<td>WT_Fr_A3: Workshop 6A Reverberation Chambers: from Basics to Advanced Concepts And Applications</td>
<td>WT_Fr_A5: Workshop 7 Conducted Emission Reduction for Motor Drives on Industrial Sites</td>
<td>WT_Fr_A4: Tutorial 1C Experiments for EMC Education and Awareness (half-day 2)</td>
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<td>WT_Fr_B2: Workshop 5B EMC of ICs - The French Touch</td>
<td>WT_Fr_B3: Workshop 6B Reverberation Chambers: from Basics to Advanced Concepts And Applications</td>
<td>WT_Fr_B4: Tutorial 1D Experiments for EMC Education and Awareness (half-day 2)</td>
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<td>WT_Fr_C2: Workshop 5C EMC of ICs - The French Touch</td>
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Workshops

WT_Fr_1  WORKSHOP 4

AUTOMOTIVE EMC

Chaired by:  Dr. Marco KLINGLER,
Peugeot Citroen Automobiles, France

Speakers

Marco Klingler (Peugeot Citroen Automobiles, France) - Frederic Bocquet (Ansys, France) - Anna Gheonjian (EMCoS Ltd., Georgia) - Simon Guicheteau (Altair Engineering France) - Andreas Barchanski (Dassault Systemes, SIMULIA, Germany) - Rémi Tumayan (Renault S.A.S, France) - Garth D’Abreu (ETS-Lindgren, United States of America) - Pascal Hervé (CSA Group Bayern GmbH) - Alastair Ruddle (MIRA Limited, United Kingdom) Christoph Keller (Robert Bosch GmbH) - Frédéric Lafon (VALEO, France) - Jean-Roger K. Kuvedu-Libla
Delphi Electronics & Safety - Luxembourg

Programme :

**WT_Fr_A1 session**  Time: 9:00 - 10:30

**Online EMC Numerical Simulation - Towards a collaborative French or European project**
Marco Klingler - *Peugeot Citroen Automobiles, France*

**Original use of interference system simulation tools for detection and fix of EMC/EMI perturbation from power electronic devices with cables, into wireless device communications within a vehicle**
Frederic Bocquet¹, Alain Michel¹, Amazir Moknache¹, Domenico Loricchio²
¹Ansys, France; ²Ansys, Italy

**Analysis of the Radiated Emission from Shielded HV-Cables**
Anna Gheonjian¹,², Oussama Sassi³, Badri Khvitia¹,², Zviad Kutchadze¹, Diana Eremyan¹, Giorgi Kapanadze¹,², Roman Jobava¹,²
¹EMCoS Ltd., Tbilisi, Georgia; ²Ivane Javakhishvili Tbilisi State University, Tbilisi, Georgia; ³Volkswagen AG, Wolfsburg, Germany
**WT_Fr_B1 session**  
Time: 11:00 - 12:30

**Minimizing Low Frequency EM Disturbances on Vehicles Using Efficient 3D Simulation**
Simon Guicheteau¹, Salah Benassine², Christophe Guérin¹, Cyril Favre¹, Markus Schick³ -¹*Altair Engineering France, Meylan, France*; ²*Groupe PSA, Vélizy-Villacoublay, France*; ³*Altair Engineering GmbH, Böblingen, Germany*

**RF Interference in BCI Testing of Remote Keyless-Entry Systems**
Andreas Barchanski¹, Patrick DeRoy¹, Cyrus Romstamzadeh², Michael Grobosky², Ryan Frost², Flavia Grassi³, Sergio Pignari³ ¹*Dassault Systemes, SIMULIA, Germany*; ²*Robert Bosch USA*; ³*Politecnico di Milano*

**Electromagnetic Field Radiated by Lightened High Voltage Battery for Electric Vehicle**
Rémi Tumayan¹, Xavier Bunlon¹, Alain Reineix², Guillaume Andrieu², Christophe Guiffaut² -¹*Renault S.A.S, France*; ²*XLIM UMR CNRS n°7252, France*

**WT_Fr_C1 session**  
Time: 14:00 - 15:30

**Meeting the Need for HIL Type Enhanced EMC Full Vehicle Measurements**
Garth D’Abreu - *ETS-Lindgren, United States of America*

**Coexistence of EMC and Radio requirements for future connected vehicles certification**
Pascal Hervé¹, Jürgen Pessinger¹, Oussama Sassi² ¹*CSA Group Bayern GmbH*; ²*EMV-Zentrum, Volkswagen AG*

**Preliminary Estimates of Electromagnetic Field Exposures Due to Advanced Vehicle Technologies**
Alastair Ruddle - *MIRA Limited, United Kingdom*

**WT_Fr_D1 session**  
Time: 16:00 - 17:30

**Parametric Modeling of Common Mode Chokes**
Christoph Keller¹, Jan Hansen¹, Philipp Hillenbrand², Matteo Ledri² ¹*Robert Bosch GmbH*; ²*University of Stuttgart*

**Global Modeling and simulation methodology to predict ESD performance from IC to system**
Frédéric Lafon, Priscila Fernandez Lopez, Van Hoang, Kevin Loudiere  *VALEO, France*

**Frequency Extensions as Big Challenges for Electromagnetic Compatibility Investigations of Automotive Electronics**
Jean-Roger K. Kuvedu-Libla - *Delphi Electronics & Safety - Luxembourg, Luxembourg*
Speakers
Frédéric Lafon (VALEO, France) - Priscila Fernandez-Lopez (Valeo, France) - Sebastien Serpaud (RT Saint Exupéry, Toulouse, France) - Alexandre Boyer (LAAS-CNRS, France) - Richard Perdriaou (ESEO-RFEMC/IETR, France) - Adrien Doridant (NXP Semiconductors, France) - Chaimae Ghfiri (IRT Saint Exupery, France) - Geneviève Duchamp (University of Bordeaux, France) - HABIB BOULZAZEN (ESIGELEC - IRSEEM, France) - Jean-Luc Levant (Microchip, France)

Programme:

WT_Fr_A2 session  Time: 9:00 - 10:30

Immunity Modeling of Integrated Circuits - Review and Application Usage
Frédéric Lafon - VALEO, France

Introducing ICIM-CPI to model the IC immunity to Conducted Pulse
Priscila Fernandez-Lopez¹, Christian Marot²
¹Valeo, France; ²Airbus, France

Comparison of extraction methods to build a radiated emission model of ICs (ICEM-RE) : pros and cons
Sebastien Serpaud - IRT Saint Exupéry, Toulouse, France

WT_Fr_B2 session  Time: 11:00 - 12:30

ESD Modeling of Integrated Circuits and Passive Components
Frédéric Lafon - VALEO, France

Learning EMC of ICs with IC-EMC
Alexandre Boyer - LAAS-CNRS, France

FastImmunity: an EDA extension for PCB immunity prediction
Ala Ayed, Sjoerd Op’t Land, Richard Perdriaou, Mohamed Ramdani
ESEO-RFEMC/IETR, France
EMC System Simulation Flow for Electromagnetic Emission Prediction
Adrien Doridant
NXP Semiconductors, France

Effects of Ageing on the Conducted Emissions and Signal Integrity of an IC
Chaimae Ghfiri
IRT Saint Exupery, France

Behavioral modelling taking into account ageing effects for IC’s immunity prediction.
Geneviève Duchamp, Tristan Dubois
University of Bordeaux, France

On the combined effect of environmental and service conditions on the EMC behavior of the passive component up to the circuit.
HABIB BOULZAZEN
ESIGELEC - IRSEEM, France

Methodology Used to Check the EFT Robustness of 32-bit ARM Microcontroller
Jean-Luc Levant
Microchip, France
WT_Fr_3 WORKSHOP 6

REVERBERATION CHAMBERS: FROM BASICS TO ADVANCED CONCEPTS AND APPLICATIONS

Chaired by: Dr. Philippe BESNIER, CNRS - UMR 6164 - IETR, France

Speakers

Philippe Besnier (CNRS - UMR 6164 - IETR, France) - Olivier LEGRAND (Université Côte d'Azur, CNRS, INΦNI, UMR 7010, France) - Elodie RICHALOT (Université Paris-Est Marne-la-Vallée, France) - Matthieu Davy (Institut d'Electronique et des Télécommunications, UMR CNRS 6164, Université de Rennes 1, France)

Programme:

**WT_Fr_A3 session**

**Basic principles and properties. Reverberation chambers in practice.**
Philippe Besnier - CNRS - UMR 6164 - IETR, France

**Chaotic vs non-chaotic chambers**
Olivier LEGRAND - Université Côte d'Azur, CNRS, INΦNI, UMR 7010, France

**WT_Fr_B3 session**

**Achieving chaoticity in a rectangular Reverberation Chamber**
Elodie RICHALOT
Université Paris-Est Marne-la-Vallée, France

**Cross-correlation of electromagnetic fields in a reverberation chamber**
Matthieu Davy
Institut d'Electronique et des Télécommunications, UMR CNRS 6164, Université de Rennes 1, France
CONDUCTED EMISSION REDUCTION FOR MOTOR DRIVES ON INDUSTRIAL SITES

Chaired by: Daniel Gustave DAUZON, EMITECH, France

Speakers: Daniel Gustave DAUZON (EMITECH, France)

Abstract:
On industrial sites, more and more electrical motors driven by electronic drivers are present. These equipments generate common mode currents leading sometimes to critical disturbances. This situation happens especially when cables between the electronic command unit and the motor are long. The different noises generated are differential mode or common mode noise, but the common mode current is often the most severe.

This workshop intends to overview simple solutions which are usually implemented on site, but also it will present some strategies which can be introduced inside the electronic command units and reducing significantly these currents. Different problems will be adressed, as overvoltages due to line transmission model of the cable, common mode resonance, and reduction of the common mode voltage sent to the motor.
EXPERIMENTS FOR EMC EDUCATION AND AWARENESS
(PART II)

Chaired by: Frits BUESINK,
University of Twente, Netherlands, The

Speakers Frits BUESINK (University of Twente, Netherlands, The)

Sessions

Abstract:
In this second session of the tutorial “Experiments for EMC education and awareness” the measures are demonstrated that allow the mitigation of EMI effects shown during the first part of this tutorial (see the Monday, September 4 program). During the tutorial also some systems engineering aspects will be reviewed: the three dimensions of EMC, front- and back-door interference and the concept of loosely coupled coherent hardware modules.

Programme:

WT_Fr_A4 session Time: 9:00 - 10:30
Tutorial 1C - Experiments for EMC Education and Awareness
(half-day 2)
Frits BUESINK - University of Twente, The Netherlands

WT_Fr_B4 session Time: 11:00 - 12:30
Tutorial 1D - Experiments for EMC Education and Awareness
(half-day 2)
Frits BUESINK - University of Twente, The Netherlands
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Hemera RF : Produits et logiciels pour les essais CEM

HEMERA-RF offre une très large gamme de matériels d'essais dédiés : CEM (Compatibilité électromagnétique), essais conduits et rayonnés selon normes EN 550xx, EN61004-xx; DO 160, MIL-STD, automobile...), mesure d'antennes, et les Hyperfréquences.

Sont distribués entre autres: amplificateurs de puissance CEM, cages de faraday, chambres anéchoïques, générateur d'impulsions, générateur de transitoire, antennes de mesure, sondes de champs, liaisons optiques, ainsi que logiciels de mesures CEM et radio...

Vérification, étalonnage et maintenance figurent parmi nos prestations. HEMERA-RF collabore avec plusieurs laboratoires accrédités en Europe.

Entreprise française indépendante, HEMERA-RF intervient de deux manières : en tant que maître d'œuvre intégrateur (France et étranger) et distributeur de marques nationales et internationales réputées.” Les fabricants suivants seront présents durant ces quelques jours : Dare, Montena, Prana, Siepel
Hemera RF : Products and Software for EMC measurement

HEMERA RF is a French independent company dedicated to the distribution and support of various EMC & Microwave test equipment (civil, military and electronic warfare) as shielded rooms, anechoic chambers, pulse generators, surge/burst generators, field probes, antennas, and EMC software... Hemera RF proposed associated services (calibration, repair,..) too. Dare, Montena, Prana and Siepel will join us during this event.
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- UCHIYA
- TE CONNECTIVITY / POLAMCO
- TE CONNECTIVITY / AMP
- TE CONNECTIVITY / GEUTSCH
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http://www.semc.cesi.cn
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Controlled electromagnetic environments

UK:
Comtest Engineering supplies high performance (semi) anechoic chambers, reverberation chambers and RF shielded rooms. Comtest is a privately owned, second generation family business and was founded in 1985. We are a professional organization and recognized for quality and flexibility. Our high-performance RF shielded doors, mode-stirrer systems and microwave absorbers have been internationally recognized as state of the art products.

The comprehensive turnkey test chamber solutions we offer:
• (semi) Anechoic chambers for EMC and Antenna Pattern measurements
• (semi) Anechoic chamber upgrades
• Reverberation chambers
• RF shielded rooms & doors

Comtest skilled and experienced team is dedicated to satisfying your need to control the electromagnetic environment!

NL:
Comtest Engineering is een ingenieurs bureau gespecialiseerd in het leveren van totaal oplossingen voor anechoische test kamers voor EMC en antenne metingen alswel RF afgeschermde ruimtes (kooien van Faraday). Comtest is een tweede generatie familie bedrijf, opgericht in 1985. We zijn een professionele organisatie en staan bekend om onze kwaliteit en flexibiliteit. Onze hoogwaardige oplossingen voor EMC test kamers, RF afgeschermde ruimtes, antenne test kamers worden wereldwijd erkend als state of the art producten.

De turn key test faciliteiten die wij kunnen aanbieden zijn:
• (semi) Anechoic chambers
• (semi) Anechoic chamber upgrades
• Reverberation chambers
• RF shielded rooms & doors
WHERE THERE IS ELECTROMAGNETISM, NEXIO HAS A ROLE TO PLAY.

Since 2003, NEXIO has assembled a team of over 60 technicians, engineers and doctors, able to handle any type of problem oriented on Testing, EMC Design and Simulation, Lightning, RF and RCS.

NEXIO turns electromagnetic waves into added value for major groups, SMEs and VSEs in 30 countries. NEXIO is organized into 3 business divisions: Services-Engineering, Test Automation, Simulation software and 2 Innovation and Training transverse centers.

Our products and services cover all phases of electronic product development, from design to qualification, in the Aerospace, Spatial, and Automotive sectors as well as the Electronics Industry.

NEXIO is based in Toulouse, Paris, Lyon-Grenoble, Munich, Austin and Shanghai.

SO WHY NOT PUT US TO THE TEST?

During the EMC Europe exhibition you can discover BAT-SCANNER at our stand. The near-field scanner helps to the design of electronic circuits evaluating their behavior in terms of EMC. Through a high precision robotics system, an optimized automation and many post-processing functions, BAT-SCANNER measures the electromagnetic fields produced by your equipment. That also includes a tool developed to help reduce the emissions of both conductive and radiated.
LUMILOOP develops and markets ready to use laser powered sensor systems. Power-over-fiber is an attractive option in electromagnetically sensitive environments, particularly for long-term, maintenance-free applications. It can deliver uninterrupted power sufficient for elaborate sensors, data processing or even actuators alongside continuous high speed data communication for remote sensor application (www.lumiloop.de).

LUMILOOP presents the **LSProbe 1.2**, which enables a significant reduction in measurement time and effort for radiated susceptibility testing. The patented technology results in a reliable, secure and laser safe measurement device. The **LSProbe 1.2** is an easy-to-handle laser powered E-field probe for the frequency range of 10 kHz to 6 GHz. It delivers best-in-class dynamic range (typically 95 dB) for electric field strengths from 0.1 V/m to 10 kV/m. Extensive temperature, field strength and frequency compensation data is provided for each probe. Continuous streaming of 500,000 S/s and burst measurement of 2,000,000 S/s provide precise timing and characteristics of the electric field strength. Introducing new capabilities to ascertain fast changing fields in reverberation chambers. The miniaturized system also enables pulse detection from an impulse width of 0.5 μs on all three axis.

![LSProbe 1.2](image)

**Fig.: LSProbe 1.2**
SCHURTER Electronic Components is a leading innovator and producer of electronic components. As a Swiss technology company SCHURTER is operating successfully worldwide. In a dynamic market the SCHURTER Group is showing sustainable growth due to the specialized competence, innovative capacity, proximity to customers and financial independence.

The SCHURTER Group is divided into two divisions. The Component Division encompasses the equipment protection, equipment connections, switches and EMC products business units including the measurement service as well as the Solutions unit. Solutions offers business partners a total solution package to fulfill the most demanding customer wishes in their entirety through the coordination and networking of all SCHURTER core competences. The Input Systems Division develops and produces customized solutions based on touchscreens, capacitive technology and membrane switches.

22 companies in 17 countries belong to the SCHURTER Group, 11 companies of which have their own production sites. This ensures that all major markets can be served by their own companies. They are coordinated from three hubs: SCHURTER AG in Lucerne for Europe, SCHURTER Inc. in Santa Rosa for America as well as SCHURTER (S) Pte. Ltd. in Singapore for Asia. In addition, SCHURTER has representatives in about 60 countries and works together with over 200 distributors. This close-knit network guarantees that SCHURTER products are securely and quickly available internationally.
Components don’t exist in electromagnetic isolation. They influence their neighbors’ performance. They are affected by the enclosure or structure around them. They are susceptible to outside influences. With System Assembly and Modeling, CST STUDIO SUITE helps optimize component and system performance.

Involved in EMC/EMI analysis? You can read about how CST technology is used for EMC/EMI analysis at www.cst.com/emc.

If you’re more interested in filters, couplers, planar and multilayer structures, we’ve a wide variety of worked application examples live on our website at www.cst.com/apps.

Get the big picture of what’s really going on. Ensure your product and components perform in the toughest of environments.

Choose CST STUDIO SUITE – Complete Technology for 3D EM.
Outstanding T&M perspectives with EMC solutions.

Rohde & Schwarz ranks among the world market leaders in both T&M and EMC equipment.

For more than 80 years, Rohde & Schwarz has stood for quality, precision and innovation in all fields of wireless communication and has 40 years of experience in the field of EMC Testing.

Rohde & Schwarz solutions are used worldwide by leading companies in EMC testing. Rohde & Schwarz offers complete systems for RF and microwave, as well as time domain T&M equipment for all market segments, such as wireless, automotive, aerospace & defence, industry and electronics, research and education. Rohde & Schwarz manufactures quality products, in Germany, to suit all budgets.

For more information, contact us:
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Rohde & Schwarz ranks among the world market leaders in both T&M and EMC equipment. For more than 80 years, Rohde & Schwarz has stood for quality, precision and innovation in all fields of wireless communication and has 40 years of experience in the field of EMC Testing. Rohde & Schwarz solutions are used worldwide by leading companies in EMC testing. Rohde & Schwarz offers complete systems for RF and microwave, as well as time domain T&M equipment for all market segments, such as wireless, automotive, aerospace & defence, industry and electronics, research and education. Rohde & Schwarz manufactures quality products, in Germany, to suit all budgets.

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Wurth Elektronik est une société du groupe Würth (leader mondial de la fixation).
WE conçoit et commercialise des composants pour l’industrie électronique ainsi que des circuits imprimés.

Fabricant logistique, WE est présent en direct auprès de tous les clients de l’industrie électronique française grâce à ses 40 commerciaux de terrain qui apportent leur savoir-faire technique du démarrage des projets à la production. Service, conseil technique, outils d’aide au design, échantillons gratuits, produits en stock, personnalisation : la signature WE !

WE offre une gamme étendue de composants pour la CEM, d’inductances, de transformateurs, de selfs RF, de varistances, de leds, de capas, de connecteurs, de switchs, d’éléments de fixation pour cartes et câbles ainsi que de circuits imprimés nus.
KEMET Corporation is a global supplier of electronic components with over 160 patents and world-wide manufacturing plants that are leading the advancement of the most cutting-edge electrical solutions.

The company offers customers the broadest selection of capacitor technologies in the industry across all dielectrics, along with an expanding range of electromechanical devices, electromagnetic compatibility solutions and supercapacitors.

KEMET provides solutions demanding the highest standards of quality, delivery and service.
The future is here! From driverless vehicles and drones delivering pizzas, to ear buds that act as virtual mixing boards for real-world audio, our lives are increasingly dominated by EMC. So, too, is ETS-Lindgren’s work in compliance testing and measurement, transcending the standards of EMC performance – Beyond Measure.

As an international manufacturer of market-leading components and systems that measure, shield and control electromagnetic and acoustic energy, ETS-Lindgren is the investigative force ensuring the compliance standards of some of the biggest industry names and revolutions! From chambers to test cells, absorbers, positioners and antennas, ETS-Lindgren’s EMC solutions are designed for reliability, diversity, scale and precision.

More importantly, our ability to create real-world test scenarios allows customers to troubleshoot potential failure and maximize their chance of passing standards within the allotted time and budget; enabling them to bring life-changing products to market – faster.

To view our accreditations and EMC Use Cases, visit our website at www.ets-lindgren.com.
Since 1985 Spirent has played a leading role in the evolution of global navigation satellite systems. From the early days of signal generation, through to the most advanced simulators and record-and-playback devices in the world today, Spirent provides a rich history of innovation and provides for an exciting future.

Servicing the needs of all industries and applications, Spirent solutions enable manufacturers, integrators, and developers to realise the potential of their systems.

**Test Instruments** Spirent provides a comprehensive range of test instruments, ranging from industry leading simulators and record & playback devices, to interference detectors and generators.

**Test Scenarios** Speed up your testing with our broad range of standard and custom test scenarios.

**Professional Services** With services labs located in Asia, Europe, and America, and a team of experienced and expert professionals, Spirent Professional Services can help you get the results you need faster.

**Automated Testing** Spirent’s bespoke GNSS test automation tool, PT TestBench, enables you to test quickly and without the risk of input error.

**Support Services** Our worldwide network of support engineers is always on hand to keep our customers safe from costly downtime. With decades of experience and related academic study, our support team are a big part of what sets us apart.

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**Sales and information**

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Since 1981, Advanced Test Equipment Rentals (ATEC) has served as a global provider of test equipment rentals for EMC testing, offering long and short-term rentals of test equipment. Our extensive inventory of equipment, combined with our more than 30 years in the test equipment business, make ATEC a reliable, well informed rental supplier. ATEC also provides test equipment for a variety of industries, including Military, Communications, Semi-Conductor, Industrial Electrical, Power Supplies & Loads and more. Calibrated, ISO 17025 accredited, and ready to ship.

ATEC offers conducted emissions and immunity equipment for measuring a device's emissions and transients, as well as test to IEC, MIL-STD, CISPR 16 and other EMC test standards. Browse our rental inventory of EMC receivers, harmonics and flicker, LISNs, transient limiters, transient generators, ESD guns, indirect lightning test systems, and more.

Radiated emissions and immunity equipment is similarly available for rent from ATEC. We carry a wide selection of EMC radiated test equipment, such as amplifiers, signal generators, EMC antennas, RF power meters and sensors, field strength probes, EMI receivers, near field probes, preamplifiers, and much more. Accurately measure radiated emissions, monitor susceptibility, test to MIL-STD 461 RS103 or DO-160 Section 20, and more.

ATEC carries conducted and radiated emissions and immunity EMC test equipment from leading manufacturers like Teseq, Empower, Rhode & Schwarz, Keysight, CA Instruments, EM Test, Yokogawa, Haefely, Newtons4th, and more.

https://www.atecorp.com/
800-404-2832 (ATEC)
For EMC Solutions we design, manufacture, supply and install:

- Shielded enclosures
- Anechoic chambers
- Shielded doors
- Absorbers
- Antennas
- Turntables, Masts and Controllers

Through our partnership with Amplifier Research (AR), we can provide exceptional turn-key solutions for the most demanding EMC requirements.
Narda STS S.r.l. is the first Italian manufacturer of measuring instruments for electromagnetic fields, known since 1980 also with its PMM brand. The range covers two important sectors: Narda STS is a reference for:

- **EMF Safety**: probes, meters, monitoring stations for evaluating the exposure to electromagnetic fields of workers and public;
- **EMC**: instruments and systems for electromagnetic compatibility tests destined to Manufacturers, Test Laboratories and Research Centers.

Narda STS products are of easiest use, top performances and attention to convenience. The internal Calibration Laboratory, internationally recognized as Accredited Calibration Center LAT 008, ensure metrological correctness.

Membership to the International Group L3 Technologies, a leading supplier in the Aerospace and Defense sectors, guarantees outstanding quality and innovativeness.

The International Sales Network is constantly trained for best technical and commercial support.

Strict business ethics, compliance to safety and health standards, environmentally friendly design are, together with technology, Narda STS' fundamentals rewarded by thousands of Users around the world. Wherever electromagnetic fields are object of research, assessment, approval, evaluation, Narda STS is there with state-of-art solutions.
The Emitech specificity is to support all the manufacturers, suppliers, importers or resellers of electrical equipments:

- **Certification** - Mandatory requirements before and/or during the marketing of products - general public, medical, industrial, telecom, ... like CE Marking for the European Market
- **Qualification** - Tests specifications fixed by a buyer to its suppliers such as automotive, military, aeronautical or space qualifications

From toys to aircraft’s subparts, all electrical products need our services

Emitech provides three main services for a global performance:

- **Training courses**
- **Expertise & Engineering**
- **Test laboratories in complementary fields**

We support you at every step of your project

Every day, we support our customers from everywhere in the world for their products used all around the world.

www.emitech.fr
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The IRT Saint Exupéry has been launched by the French government within Investments for the Future Program to boost high value competitive technological sectors in Aeronautics, Space and Embedded Systems. This Institute of Technology combines resources from public and private partners to lead R&T activities in three strategic domains:


- Embedded Systems in 3 Competence Centres: Telecom, Images and Data as well as Collaborative System Engineering.

Its expertise and technology platforms, as well as its collaborative environment boost the maturation and transfer of breakthrough technologies (TRL 4-6) to its industrial partners.
Company Profile Freicomp GmbH / Germany

Freicomp GmbH was founded in 2003 by Thomas Müller, Dip. Eng. (FH), in Freiburg. The Company has since continued to grow and expand, not only in size but also internationally. In 2015, Freicomp GmbH moved to new premises within Ebringen, 5 km off Freiburg, which includes a warehouse with over 600 m², offices and a well-equipped test-lab. Our employees benefit from many years of experience in the development and marketing of passive components. The available know-how provided a very strong basis for the founding of this company and continues to be of great importance, today.

Services
- Trade and development for electrical products
- Distribution of components
- Technical advice
- Engineering services

Products
- EMI components, Filters, chokes, capacitors
- Inductors, Transformers and other winding components

Development of services with different manufacturers globally. To accommodate our customer requirements, we work together with several manufacturers worldwide. We place great emphasis on ensuring that the product is in line with the manufacturer's possibilities and are thus confident of providing a qualitative and cost-effective solution. Please do not hesitate to contact us with any further questions. We also invite you to visit our home page at www.freicomp.com
Altair is focused on the development and broad application of simulation technology to synthesize and optimize designs, processes and decisions for improved business performance.

Altair provides leading electromagnetic (EM) simulation software, widely used in many industries and applications to solve a broad range of electromagnetic problems from static to low and high frequencies.

As part of Altair’s HyperWorks Software Suite - the most comprehensive CAE solution e.g. for structural optimization, modeling, CFD, NVH and composites- FEKO provides solutions for a wide range of EM problems for a large variety of industries. Applications range: 3D antenna design and antenna placement, Electromagnetic Coupling and Interference (EMC, EMI) analysis, Bio-electromagnetics, 3D RF components, 3D EM circuits, radomes and scattering problems.

The leading software for low frequency electromagnetic and thermal simulations Flux™ is also now part of Altair’s HyperWorks CAE Suit since 2016. The software tool allows users to design and create machines from standard or customized parts, as well as to intuitively add windings and materials to run a selection of tests and compare machine capacity. Open and intuitive, Flux can be easily included in your design workflow to deliver reliable analysis results, allowing engineers to concentrate on innovation.

A newest Release under the name of Flux – FluxMotor – an easy-to-use and efficient dedicated predesign tool, targeting designers from all sectors related to the electric motors field.

The integration to the Altair suite enables users to work in a global creative environment. Flux can be coupled with the best available 3D analysis software to consider Multiphysics phenomena’s or to handle system level simulations to develop strategies for controls.

Privately held with more than 2,600 employees, Altair is headquartered in Troy, Michigan, USA and operates more than 45 offices throughout 20 countries. Today, Altair serves more than 5,000 corporate clients across broad industry segments. To learn more, please visit www.altair.com.
AR France, is the AR Group (Amplifier Research) French office, through AR Europe.

AR is the first worldwide manufacturer of high frequency wideband power amplifiers. Our range covers from DC to 50GHz and from 1W to 100kW.

Aside of those amplifiers, AR proposes two other product lines on antennas and field monitoring probes/systems.

To answer to our customer system needs till complete EMC laboratories for example, we propose, in addition to our own AR products, solutions from our partners in the following fields: low frequency amplifiers; power meters; antenna radiation pattern measurements; turntables/antenna mast; current probes; fiber optic link (analog or digital); anechoic and reverberating chambers; noise sources; ESD bench; nearfield (planar, cylindrical, spherical) and farfield scanners; TWT; pulse and voltage drop simulators; etc…

Product Maintenance is performed locally in our Gennevilliers (92 - FRANCE) laboratory.

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ANSYS is the global leader in engineering simulation. We bring clarity and insight to our customer’s most complex design challenges through the broadest portfolio of fast, accurate and reliable simulation tools. Our technology enables organizations in all industries to imagine high-quality, innovative product designs that are sustainable and have an accelerated time to market. ANSYS employs 3000 professionals, more than 700 of them with PhDs in engineering fields such as finite element analysis, computational fluid dynamics, electronics and electromagnetics, embedded software, system simulation and design optimization.

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Protect yourself from radiation!

ANTI-RADIATION CASES FOR SMARTPHONES (apple, samsung & others)

Electromagnetic waves have been at the heart of debates for several years, raising concerns about some potential harmful effects on health.

As a precaution, MySilverShield has put all its expertise to design a wide range of cases for smartphones, belly bands and other protective devices...

By combining silver wire with stainless steel, it is a real shield that is available for you in order to protect yourself effectively from radiation!

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A BETTER CONNECTED WORLD

We live in an exciting age of intelligence, where human progress moves at the speed of imagination.

Commerce, industry and society are evolving, bringing people closer, making society more efficient, and taking life beyond what we ever expected, driving a vision of endless possibilities and opportunities.

Welcome to our future, a world with infinite potential. Breakthroughs in ICT technology are making society more intelligent. Cloud, Big Data, SDN and LoT, all driving mankind’s migration from the physical to the virtual.

Barriers and boundaries are broken down between technologies, countries, businesses and industries. When we are united, we believe we can build a Better Connected World.
Angers, from electronics to the Internet of Things: a pioneering tech ecosystem

Angers has always moved with the times and is now leading the way in the current digital and technological revolution by pioneering the IoT, or Internet of Things. This expertise has earned the region membership of the French Tech “IoT and Manufacturing” network and made it the home of Cité de l’Objet Connecté.

The digital and electronics sector encompasses technologies such as electronics, IT, telecommunications, multimedia and virtual reality, and a variety of jobs to create a technology ecosystem unlike any other in Europe. The city’s engineering schools and university labs are internationally acclaimed in this field.

WISE - the electronics campus with international horizons - has taken up residence in Angers alongside the WeNetwork cluster, which counts 200 members and 700 entities across Western France.

Leading companies
Lacroix, Anjou Électronique, Ercogener, Soreel, Thales

Electronics campus
3,900 students and 250 researchers in the Pays de la Loire

25% of the electronics industry’s French jobs in the French West.
The Loire Valley, a Unesco treasure in Anjou
EMC Europe 2018

International Symposium on Electromagnetic Compatibility

27-30 August 2018

Amsterdam

Beurs van Berlage

www.emceurope2018.org
Call for Papers

The 2018 Joint IEEE International Symposium on Electromagnetic Compatibility & Asia-Pacific Symposium on Electromagnetic Compatibility (2018 Joint IEEE EMC & APEMC) will take place at the Suntec Convention and Exhibition Center in Singapore from 14 to 17 May 2018. The joint symposium combines the 60th IEEE International Symposium on EMC with the 9th APEMC Symposium. For the former, it is only the 4th time for it to be held outside the North America Continent in 60 years and the first time in Asia over the past three decades. For the latter, it is a homecoming to where the APEMC originated 10 years ago.

The symposium Technical Program Committee invites you to submit your original and unpublished papers in all aspects of electromagnetic compatibility (EMC) as well as signal and power Integrity (SI/PI), including but not limited to EMC/SI/PI design, modeling, management, measurements, and education.

All eligible papers (excluding abstract-reviewed papers) will be submitted for online publication at the IEEE Xplore, and authors will also be invited to submit extended versions of those papers for possible publication in a special issue of the IEEE Transactions on Electromagnetic Compatibility.

Plan ahead and join this unique symposium, meet international colleagues, present your latest research findings, share your insight and perspectives, ask questions, learn from experts and innovators, explore collaborations, visit exhibitions and see new products. Experience Singapore, where east meets west, and much more!

Important Dates

- **Preliminary Full Paper Submission**
  (3 to 6 pages in PDF format; without author names & affiliations)
  - Start: 18 August 2017
  - End: 24 November 2017
- **Paper Acceptance Notification**: 16 January 2018
- **Final Paper Due**: 28 February 2018

Please visit symposium website for more information about

Topics of Interest
Embedded Conference on SIPI
Call for Special Sessions
Call for Workshops & Tutorials
Call for Abstract Reviewed Papers

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Embedded Conference on SIPI

As high-speed designs continue evolving, signal/power integrity and other EMC problems become tightly related to each other. The embedded conference on Signal and Power Integrity (SIPI), which is an integral part of the 2018 Joint IEEE EMC & APEMC Symposium, provides a unique opportunity for attendees to exchange ideas and share experiences relevant for today’s high-speed designs. Topics include but not limited to the TC-10 technical areas.

SIPI-TPC Chairs: Zhiping YANG (zhipingyang@gmail.com) Er-Ping LI (erpingli@ieee.org)

Call for Special Sessions

The symposium Technical Program Committee is seeking proposals for Special Sessions to be presented at the 2018 Joint IEEE EMC & APEMC Symposium. The proposals may cover any current or emerging areas of EMC, SIPI and related technologies.

Prospective organizers of a Special Session should send their proposals via email to Special Session Chairs: Richard Gao (gaoxk@ieee.org) and Bob Davis (robert.h.davis@lnco.com). Submissions must be in Word or PDF format following the proposal template that can be found at the symposium website (www.apemc.org).

Special Session Proposal Schedule
- Proposals for Special Sessions: 18 August 2017 – 14 October 2017
- Notification of acceptance: 07 November 2017

Special Session Paper Schedule
- Special Session Paper must be submitted by 23 December 2017
- Notification of review feedback by 22 January 2018
- Final versions of Special Session papers from all authors are due on 28 February 2018.

Call for Workshops & Tutorials

Prospective organizers of workshops and tutorials should send their proposals via email to John Maas (johnmaas@us.ibm.com) and Martin Leung (martin.Leung@cst.com). Submissions must be in Word or PDF format following the proposal template that can be found at the symposium website (www.apemc.org).

Schedule for Workshop & Tutorial Proposal & Presentation Material
- Proposals to be submitted during 18 August 2017 – 14 October 2017
- Notification of acceptance: 07 November 2017
- Presentation materials from all presenters are due by 05 March 2018.

Call for Abstract Reviewed Papers

Schedule for Abstract Reviewed Papers
- Abstract submissions (about 500 words): 18 August 2017 – 08 January 2018
- Notification of acceptance: 29 January 2018
- Final Paper Material (1 to 6 pages) due: 28 February 2018

The abstract reviewed papers will be invited for resubmission to a special issue of the IEEE EMC Magazine. When accepted and published, they will be archived in the IEEE Xplore.

2018 Joint EMC Symposium in Singapore
Plans

Ground floor

Auditorium, room number D002, 350 seats. Ground floor, in the middle of the building.

Floor -1

Auditorium, room number DS02, 250 seats. Basement. Specific stairs and lift (opposite each other) in the middle of the building. Do not take the stairs or lift near the main entrance or the cafeteria.
First floor

Lecture room, room number C108, 100 seats. 1st floor (UK numbering), opposite main entrance, above the cafeteria. Turn left when exiting the stairs, make a U-turn to the left when exiting the lift.

Third floor

Lecture room, room number C304, 80 seats. Opposite main entrance, 3rd floor (UK numbering). Turn left when exiting the stairs, make a U-turn to the left when exiting the lift.
Fourth floor

Auditorium, room number A405, 100 seats. 4th floor (UK numbering), above main entrance. Please use the stairs or the lift near the main entrance.