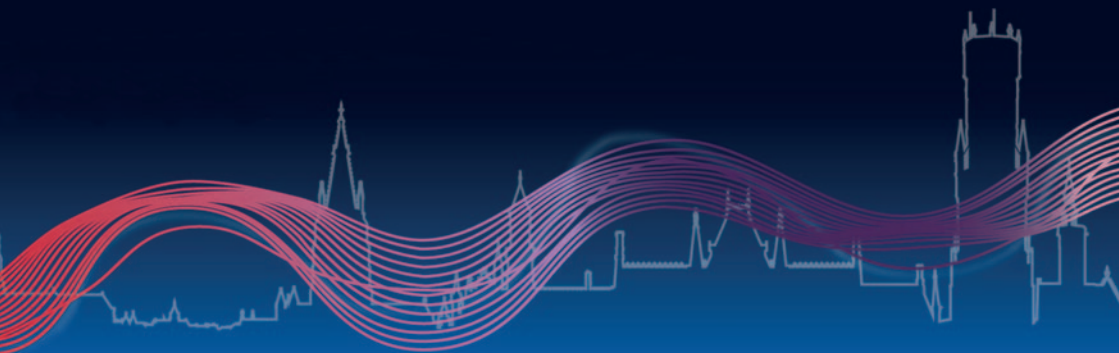


EMC EUROPE 2024



International Symposium and Exhibition on
Electromagnetic Compatibility

September 2-5, 2024, Bruges, Belgium



CONFERENCE PROGRAMME

Organized by



KU LEUVEN





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WELCOME TO EMC EUROPE 2024

On behalf of the local organizing committee, it is my utmost pleasure to extend a warm welcome to each and every one of you to the EMC Europe 2024 Symposium in the enchanting city of Brugge.

Brugge, with its cobblestone streets, enchanting canals, and awe-inspiring architecture, serves as the perfect backdrop for our scholarly exchange. This picturesque city, renowned for its rich heritage, offers an idyllic setting that will undoubtedly inspire creativity and foster meaningful connections among participants from across the globe.

The EMC Europe 2024 Symposium is poised to be a dynamic platform where leading experts, researchers, and practitioners will come together to share their latest findings, engage in vibrant discussions, and forge collaborations that will propel the field of Electromagnetic Compatibility forward. Our carefully curated program features keynote speeches, technical sessions, workshops, and tutorials, covering a broad range of topics such as measurement techniques, computational electromagnetics, electromagnetic risk management, and more.

This year's edition boasts 22 oral sessions (including 10 special sessions), 3 poster sessions, and 18 workshops or tutorials. Moreover, we have several special social events, including a Women in Engineering gathering and a Young Professional event.



© Jan D'Hondt

Our Welcome Session on Tuesday morning promises insights from both the European Commission and industry. Ioannis Bitsios, Audrey Arfi, and Ricardo Ricco, project officers for several MSCA Doctoral Networks (among which several on EMC-related matters), will discuss the impact of such projects on young people's careers and on innovation in industry. During the remainder of Tuesday, the project officers will be available to answer questions on the different options within the MSCA framework of Horizon Europe. Next to that, Rob Kleihorst, EMC architect at Philips Medical Systems Netherlands B.V, will share a manufacturer's perspective on risk-based EMC, reflecting on the challenges faced during the transition from a predominantly task-based to a risk-based EMC compliance approach.

I encourage all attendees to explore the exhibition, where cutting-edge technologies and solutions await. Engage with exhibitors, discover innovations, and network with fellow participants.

My heartfelt thanks go to the Local Organizing Committee, the members of the International Steering Committee of EMC Europe, and all those who contributed to the almost 900 reviews during the peer-review process. Special recognition to Hanne Van den Keybus from the Congres Service of KU Leuven and Stephane Stroobant, project manager at KU Leuven Bruges Campus, for their tireless efforts in arranging all practicalities for EMC Europe 2024.

As we gather here in Brugge, we're excited to announce that next year's edition will take place in the vibrant city of Paris. Mark your calendars and join us for another inspiring symposium!



Once again, welcome to EMC Europe 2024 in Brugge. May the discussions held, insights gained, and connections established serve as a catalyst for breakthroughs that will shape the future of EMC.

Prof. Davy Pissort
Chair, EMC Europe 2024

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ABOUT EMC EUROPE

EMC Europe, the leading International Symposium on ElectroMagnetic Compatibility in Europe, continues the long tradition of independent regular international Symposia on EMC organized in Europe in: Wroclaw (20 editions since 1972) and Zurich (20 editions since 1973) as well as European Symposia which were organized in Rome (since 1994) and then in Bruges, Sorrento, Eindhoven, Barcelona and Hamburg. Each of those three symposia was running every second year.

EMC Europe is now organized annually in one of the European cities with EMC scientific center to provide an international forum for the exchange of technical information on EMC.

The joint EMC Europe symposia were organized in Wroclaw (2010, 2016), York (2011), Rome (2012, 2020 – virtual), Bruges (2013), Gothenburg (2014, 2022), Dresden (2015), Angers (2017), Amsterdam (2018), Barcelona (2019), Glasgow (2021 – virtual) and Krakow (2023).

For more information about previous and forthcoming EMC Europe Symposia, please go to the website: EMC Europe - International Symposia on EMC (www.emceurope.pwr.edu.pl).

PRACTICAL INFORMATION

SYMPOSIUM VENUE

Welcome in the Bruges Meeting & Convention Centre (BMCC). The symposium venue is situated in the heart of Bruges and within walking distance from numerous hotels, historic attractions and world-famous museums. You can find a floorplan of the venue on the next pages of this programme book.

ROOM CAPACITY

We would like for everyone to enjoy this year's meeting but this also means that we have to respect the safety regulations and that we have to respect the maximum capacity of the rooms. We will work with a first-come, first-served basis, meaning once a room reaches its capacity, entry will be restricted. However, with a wide array of sessions you might be able to find a different presentation or session that you like to attend.

REGISTRATION & INFORMATION DESK

The information and registration desk can be found at the entrance hall of the BMCC. If you have any questions, concerns or problems, you can always contact one of the staff members present at the information desk and they will help you further. The registration & information desk will be open throughout the symposium for any questions you may have.

SYMPOSIUM BADGE

All registered participants will receive a name badge at the registration and information desk. This badge serves as your access pass to enter the symposium venue and participate in the sessions, coffee breaks, lunches and other activities which you have registered. We kindly request that you wear your badge visibly at all times during the symposium & exhibition. Your badge will feature a number of symbols corresponding to the events for which you have registered. Without badge access to the venues and activities might be denied.

SYMPOSIUM APP

The EMC Europe 2024 smartphone app provides you with the most comfortable tool for planning your participation in the various sessions, events and the industry exhibition. Browse the complete programme directly from your phone or tablet and create your very own agenda on the fly. The app is available for Android and iOS devices.

Last minute changes in the programme are possible. Please be aware that the symposium app will always contain the latest programme information.

To download the mobile app, please visit: <https://conference4me.psncl.pl/get/?config=emc2024> or scan the QR code or type 'EMC Europe 2024' in Google Play or iTunes App Store.



WIFI

There will be WiFi available for all participants during the symposium. During the symposium, you can log in to the network using the following information:

- Network: BMCC Public
- Log-in via name and e-mail address

CATERING

On Monday 2 September, we will serve lunch & coffee breaks in the catering area on the 4th floor of the BMCC. From Tuesday onwards, we will serve lunch & coffee breaks in the exhibition hall on the ground floor of the BMCC. This is also a great opportunity to get to know our sponsors & exhibitors!

EXHIBITION

From Tuesday 3 September to Thursday 5 September, we are welcoming more than 30 sponsors & exhibitors in our exhibition hall. Make sure to visit the exhibition in order to get the latest updates in the field!

TRANSPORT IN BRUGES

The Venue for the EMC Meeting will be the BMCC (Bruges Symposium & Convention Centre). This venue is located close to the station, at only a 10-15 minute walk. In Bruges, you can take the bus, taxi or walk. The venue is located close to the city center: the walk to the main square takes around 10 minutes.



HOW DO YOU GET AROUND IN BRUGES?

- **On foot:**

Walking is without a doubt the best way to explore Bruges. The historic city centre is compact and on a small scale. And on foot, you don't miss anything.

If you arrive at Bruges train station (by train or an international coach service) or get off the coach at the Bargeplein, the Market Square, in the heart of the city, is a 20-minute walk. On the way, you'll already come across a ton of highlights, museums, sights and attractions.

- **By public transport:**

Every 5 minutes, a public bus runs up and down between the train station and the centre of Bruges. This is a relaxed way to travel to and from the city centre. The stops at the station and 't Zand Square are both important hubs for public transport in the city. All buses pass by these stops. With a ticket for € 2.50 (price changes may be applied throughout the year), you can enjoy unlimited travel and change from stop to stop for 60 minutes. This and other travel tickets for De Lijn can be purchased on the bus (contactless only), at the ticket shop Lijnwinkel (Stationsplein) or at a vending machine (Stationsplein, bus stop 't Zand Square).

- **By taxi:**

Do you prefer personal and safe transport from A to B by an experienced taxi driver? There are a wide range of taxi firms operating in Bruges. Order your taxi in advance, and get picked up where you want. Or hail a taxi at one of the official taxi stands.

Taxi service Brugge: +32 470 36 14 66



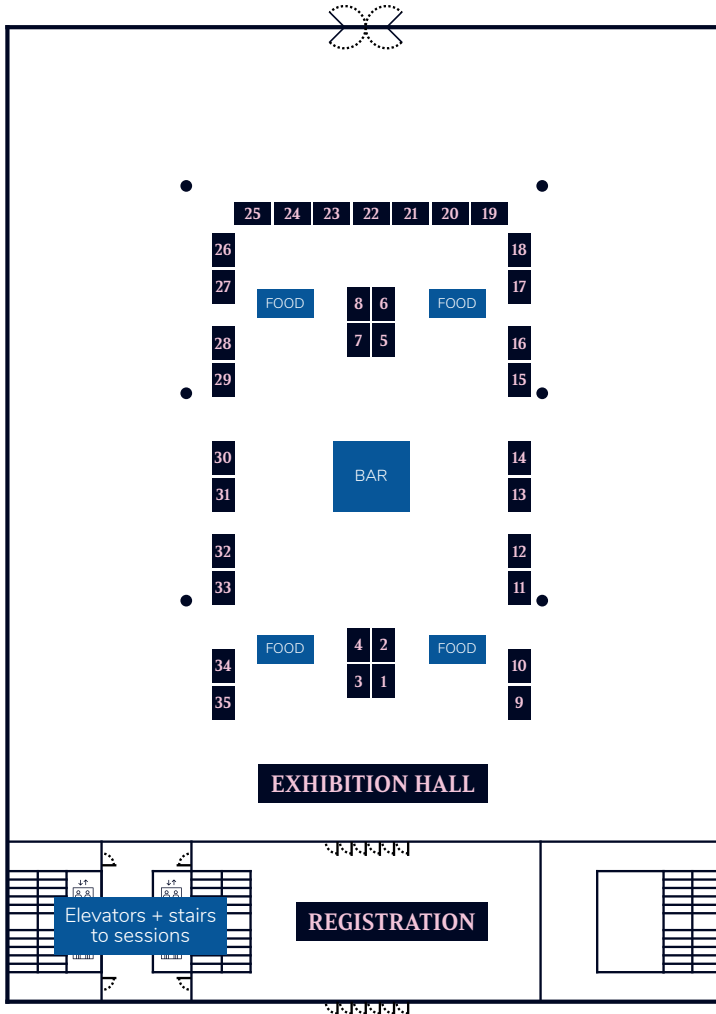
MAPS

MAP OF BRUGES

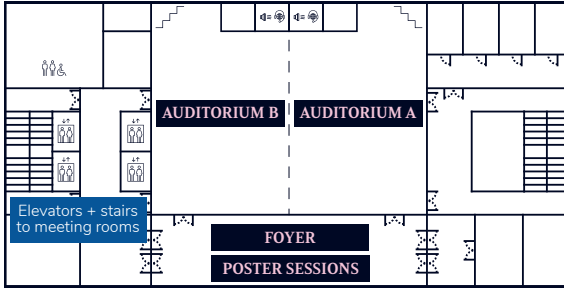


MAP OF THE SYMPOSIUM VENUE

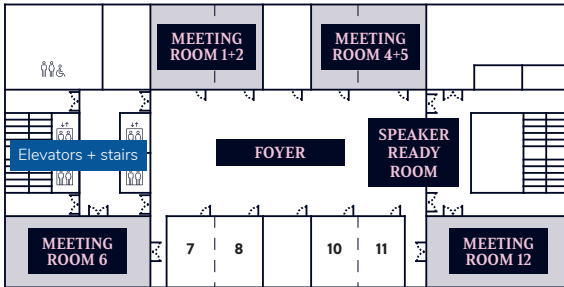
LEVEL 0 - REGISTRATION + EXHIBITION HALL + CATERING BREAKS



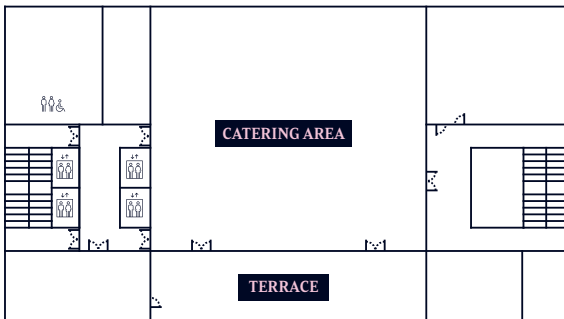
LEVEL 1 - PLENARY ROOMS



LEVEL 3 - MEETING ROOMS



LEVEL 4 - CATERING AREA MONDAY 2 SEPTEMBER



SOCIAL EVENTS

WOMEN IN ENGINEERING

- Location: BMCC entrance hall
- Date: Monday 2 September 2024
- Time: 5:00 – 9:00 pm
- Address: BMCC, Beursplein 1, 8000 Brugge
- Price: € 40 for symposium participants, pre-registration was required for this event

Join us for an unforgettable evening at the Women in Engineering (WIE) event, scheduled on Monday 2 September, from 5:00 – 9:00 pm. Together with a certified guide, we will explore the historic and charming city of Bruges, followed by a delicious dinner in a picturesque setting.

It promises to be a unique and enjoyable evening, and we are looking forward to welcoming you for this event.

This social event is primarily targeted towards female participants of all professional backgrounds and experience.

WELCOME RECEPTION

- Location: BMCC exhibition hall
- Date: Tuesday 3 September 2024
- Time: 5:30 – 7:30 pm
- Address: BMCC, Beursplein 1, 8000 Brugge
- Price: included in registration fee, € 40 for one day tickets

On Tuesday 3 September, we are hosting the official welcome reception for EMC Europe 2024 in the exhibition hall of the BMCC. Join us for drinks and small bites to network with fellow participants and exhibitors. Do not miss out to talk to our sponsors & exhibitors, our exhibition will be open throughout the evening!

YOUNG PROFESSIONALS

- Location: BMCC entrance hall
- Date: Tuesday 3 September 2024
- Time: 8:00 – 10:00 pm
- Address: BMCC, Beursplein 1, 8000 Brugge
- Price: € 25 for symposium participants, pre-registration was required for this event

We are excited to introduce the Young professional (YP) social event “Meet and Greet” for the first time in the history of the EMC Europe symposium. The event is scheduled for Tuesday 3 September 2024, from 8:00 – 10:00 pm and will take place at Bowl Inn Bruges in their game room following the Welcome reception at BMCC. Join us for an evening of games, dinner and drinks, where you can connect with fellow YPs, continue conversations from the Welcome Reception, and form new friendships. Our primary goal is to facilitate the integration of EMCS YPs into the IEEE EMCS community by fostering relationships between YPs and likeminded individuals.

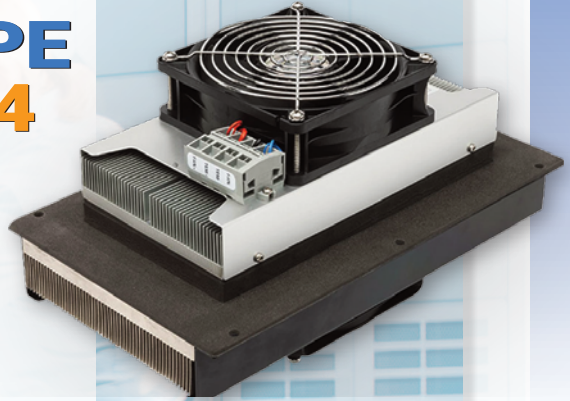
CONFERENCE DINNER

- Location: La Brugeoise
- Date: Wednesday 4 September 2024
- Time: 7:00 pm
- Address: La Brugeoise, Vaartdijkstraat 7, 8200 Bruges
- Price: included in regular registration
€ 105 for student registrations, exhibitors and one day tickets

The EMC Europe 2024 symposium dinner will take place in the unique and trendy congress- and event venue La Brugeoise. Steeped in history as a former power station or turbine hall, the old factory buildings belong to the little preserved industrial heritage of the early 1900s in Flanders and is located at the Bruges Train Station. Our experienced caterer Deldycke Traiteurs will treat us to a gourmet three-course meal featuring exquisite wines and beverages. Join us in the sophisticated ambiance of La Brugeoise to elegantly conclude the last night of this conference.

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LOCAL ORGANIZING COMMITTEE

Chairman and responsables for conference organization

- Honorary chair: J. Catrysse (KU Leuven, BE)
- General chair: D. Pissoort (KU Leuven, BE)
- Vice-chair: A. Roc'h (TU Eindhoven, NL)

Technical program chair

- T. Claeys (KU Leuven, BE)
- N. Moonen (TU Twente, NL)

Admin/financial support

- H. Van den Keybus (KU Leuven, BE)
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- M. Le Roy (Comtest, NL)
- T. Hartman (TU Twente, NL)
- T. Dhaene (UGent, BE)

KEYNOTES

KEYNOTE 1

INNOVATIVE OUTPUTS AND EU POLICY FEEDBACK: SHIELDING SUCCESS IN EU-FUNDED PROJECTS VIA METHODOLOGICAL INSIGHTS FROM THE H2020 MSCA-ITN PROGRAMME

- Ioannis Bitsios, Audrey Arfi & Riccardo Ricci
(European Commission, European Research Executive Agency, Unit REA.A1 MSCA Doctoral Networks)

Explore the vital role of EU-funded research training programmes in generating innovative outputs and effectively contributing to EU policy. Our methodological approach for tracking and analyzing innovative scientific excellence in the multidisciplinary Horizon 2020 Marie Skłodowska-Curie Actions Innovative Training networks, assesses programme impact, filters best practices and delivers potential success factors for current and future EU-funded projects. Join us in unveiling this novel methodology, It does not only quantify tangible aspects like publications and patents, but also delves into non-tangible – qualitative – elements such as social innovation and effective knowledge transfer through mobility of researchers and cross-sector secondments, quality of researchers' training and supervision and the creation of networking, synergies and new career opportunities. Discover trends in Horizon 2020 doctoral training excellence and the elements influencing their scientific performance, supporting policy feedback, sharing knowledge and understanding their potential impact on researchers, science and society at large."

More information can be found on <https://f1000research.com/articles/12-1020>, and we hope it will be interesting and inspiring for you.

KEYNOTE 2

NAVIGATING RISK-BASED EMC IN MEDICAL DEVICE DESIGN: INSIGHTS AND BEST PRACTICES

- Rob Kleihorst
(Philips Medical Systems Netherlands B.V)

As technology continues to advance, electromagnetic compatibility (EMC) is becoming an increasingly critical aspect of product design and development. For medical devices, especially large professional imaging equipment, an important critical aspect is the continuous evolving intended use environment, requiring EMC activities to take the full product life into consideration. For manufacturers, the ability to assess and manage EMC risks is becoming vital to remain competitive in an ever-changing industry. A risk-based approach to EMC involves evaluating the potential consequences of EMC-related failures and designing products accordingly to mitigate these risks.

In this presentation, Rob Kleihorst, EMC lead at Philips medical systems in the Netherlands, will provide a comprehensive overview of the manufacturer's perspective on risk-based EMC. He will explore the various factors that manufacturers need to consider in EMC risk assessment and management, including regulatory compliance, testing, standards compliance and training of globally distributed engineering teams. Next to these manufacturer internal factors, perseverance and close cooperation with other manufacturers, academia, and regulatory and certification bodies is required to gain acceptance for risk-based EMC approaches.

Drawing on his extensive experience in the field of EMC and his role as EMC architect in the IGT-S business, Rob will share insights and best practices from the industry on managing EMC risks and ensuring patient safety, product quality and reliability. He will also discuss the latest developments in risk-based EMC, including the increasing importance of cybersecurity, intentional EMI, and the challenges of designing EMC-compliant products in an era of rapidly evolving technology. Mere compliance with the task-based requirements and tests specified in standards is no longer a sustainable approach for manufacturers of safety critical systems.

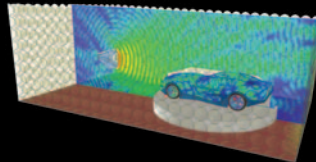
This presentation is ideal for engineers, designers, product managers, researchers, regulators, and other professionals involved in safety critical product development and design, providing a valuable perspective on managing EMC risks from a manufacturer's standpoint. Attendees will gain valuable knowledge and insights into risk-based EMC and will be better equipped to design and maintain robust, compliant, and reliable products over their entire lifecycle.

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- Antenna Design and Placement
- Cable Harness Design, and more!



WORKSHOP

Monday Sept 2nd, 2024 - Auditorium B - from **4 p.m.** to **6 p.m.**

Tutorial from back-of-napkin calculation to virtual EMC lab:
the power of EMC numerical modeling

- ✓ EMC for PCBs
- ✓ Shielding
- ✓ 3D emissions
- ✓ Cabling

PRESENTATIONS

Monday Sept 2nd, 2024

@ **2:30** p.m., meeting room 4+5

“EMC Filter Simulation Workflow
for OBC Validation”
- Ansys & Meta System

Thursday, Sept 5th, 2024

@ **5:07** p.m., meeting room 1+2

“Broadband Circuit Model of
Common Mode Chokes for EMI
Pre-compliance Assessment”
- Ansys & Meta System

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AWARDS

BEST PAPER AWARD NOMINEES

- 198 **Simplified Test Method for DC Charging Communication Immunity to Switching Noise considering Cable Crosstalk**
Mademlis, Georgios; Hasselgren, Lennert; Holst, Henrik
- 346 **Benefits of coherent demodulation for eavesdropping on HDMI emissions**
Erdeljan, Dimitrije; Kuhn, Markus G.
- 222 **Dimensional Resonances in Magnetic Powder Cores**
Schroeder, Arne; Savca, Alexandru; Christen, Thomas
- 380 **Fundamental Study on Detection of Counterfeit Parts with Abnormal Aging Characteristics Using Electromagnetic Backscattering from I/O Circuits**
Kaji, Shugo; Kinugawa, Masahiro; Fujimoto, Daisuke; Hayashi, Yuichi
- 149 **Characterization of Current Probes Using TRL Self-Calibration and Multiport Error Correction**
Mikschl, Manuel; Kohnert, Sören; Stolle, Reinhard

BEST STUDENT PAPER AWARD NOMINEES

- 156 **ESD-Event Level Detection for Real-Time Monitoring of ESD Events in Manufacturing Environments**
Lin, Tz-His; Ker, Ming-Dou
- 375 **Analyzing Bit Error Propagation in Multilayer Communication Networks: Codebook Method to Combine TMR and Hamming**
Kameli, Mohammad; Pissoort, Davy; Claeys, Tim
- 277 **Fundamental Study on Restoration Method of Encoded Data from Electromagnetic Leakage Focusing on Error Detection Codes**
Abe, Koki; Kitazawa, Taiki; Fujimoto, Daisuke; Hayashi, Yuichi
- 125 **Ionising Radiation Induced Changes on the Electromagnetic Emission of Integrated Circuits**
Czepl, Nikolaus; Ramazanoglu, Semih; Michalowska-Forsyth, Alicja; Deutschmann, Bernd
- 351 **Counter-Screen – A No-Hardware Method to Prevent Eavesdropping of Video Using TMDS**
Groot, Ryan; Van Meeteren, Duncan; Leferink, Frank

SYMPOSIUM PROGRAMME

MONDAY 2 SEPTEMBER 2024

8:00 am - 6:00 pm	REGISTRATION		
9:00 am - 10:30 am	WS-TEMP-I WS-IEMI-I	TUT-SE-I WS-MEAS-I	WS-AUTO-I
9:30 am - 10:30 am	TUT-SIM-I		
10:30 am - 11:00 am	COFFEE BREAK		
11:00 am - 12:30 pm	WS-TEMP-II WS-AUTO-II	TUT-SIM-II WS-IEMI-II	TUT-SE-II WS-MEAS-II
12:30 pm - 2:00 pm	LUNCH		
1:00 pm - 2:00 pm	POSTER SESSION PARASOL		
2:00 pm - 3:30 pm	WS-POE-I WS-AUTO-III	TUT-SIM-III WS-IEMI-III	WS-EF-I
3:00 pm - 5:30 pm	M-ISC: MEETING INTERNATIONAL STEERING COMMITTEE		
3:30 pm - 4:00 pm	COFFEE BREAK		
4:00 pm - 5:30 pm	WS-POE-II WS-IEMI-IV	WS-EF-II	WS-AUTO-IV
4:00 pm - 6:00 pm	TUT-SIM-IV		
5:00 pm - 9:00 pm	WIE-EVENT		
6:30 pm - 7:30 pm	ISC RECEPTION		
7:30 pm - 9:30 pm	ISC DINNER		

8:00 am - 6:00 pm **REGISTRATION**
 ● Location: Entrance hall

9:00 am - 10:30 am **WORKSHOPS & TUTORIALS**

WS-TEMP-I: Workshop on TEMPEST compromising emanations, side channel attacks

- Location: Auditorium A
- Chair: Prof. Frank Leferink, *University of Twente - THALES, The Netherlands*
Prof. Yu-ichi Hayashi, *Nara Institute of Science and Technology, Japan*

TUT-SE-I: Tutorial on shielding effectiveness

- Location: Meeting room 1 + 2
- Chair: Prof. Tim Claeys, *KU Leuven, Belgium*
Dr. Anne Roc'h, *Eindhoven University of Technology, The Netherlands*

WS-AUTO-I: Workshop on automotive EMC

- Location: Meeting room 4 + 5
- Chair: Dr. Marco Klingler, *EMC Consultant and Services, France*

WS-IEMI-I: Workshop on IEMI Risk Management

- Location: Meeting room 6
- Chair: Sven Fisahn, *Bundeswehr Research Institute for Protective Technologies and CBRN Protection (WIS), Germany*
Dr. Marian Lanzrath, *Fraunhofer INT, Germany*
Janet Nichols O'Neil, *ETS-Lindgren, United States of America*

WS-MEAS-I: Workshop on recent advancements in measurement uncertainty

- Location: Meeting Room 12
- Chair: Dennis Lewis, *The Boeing Company, United States of America*
Janet Nichols O'Neil, *ETS-Lindgren, United States of America*

9:30 am - 10:30 am **WORKSHOPS & TUTORIALS**

TUT-SIM-I: Tutorial on how can readily available state of the art full-wave EM simulation tools empower your Design for EMC process

- Location: Auditorium B
- Chair: Ronny Deseine, *Barco NV, Belgium*

10:30 am - 11:00 am **COFFEE BREAK**

- Location: Catering area 4th floor

11:00 am - 12:30 pm **WORKSHOPS & TUTORIALS**

WS-TEMP-II: Workshop on TEMPEST compromising emanations, side channel attacks

- Location: Auditorium A
- Chair: Prof. Frank Leferink, *University of Twente - THALES, The Netherlands*
Prof. Yu-ichi Hayashi, *Nara Institute of Science and Technology, Japan*

TUT-SIM-II: Tutorial on how can readily available state of the art full-wave EM simulation tools empower your Design for EMC process

- Location: Auditorium B
- Chair: Ronny Deseine, *Barco NV, Belgium*

TUT-SE-II: Tutorial on shielding effectiveness

- Location: Meeting room 1 + 2
- Chair: Dr. Anne Roc'h, *Eindhoven University of Technology, The Netherlands*
Prof. Tim Claeys, *KU Leuven, Belgium*

WS-AUTO-II: Workshop on automotive EMC

- Location: Meeting room 4 + 5
- Chair: Dr. Marco Klingler, *EMC Consultant and Services, France*

WS-IEMI-II: Workshop on IEMI Risk Management

- Location: Meeting room 6
- Chair: Sven Fisahn, *Bundeswehr Research Institute for Protective Technologies and CBRN Protection (WIS), Germany*
Dr. Marian Lanzrath, *Fraunhofer INT, Germany*
Janet Nichols O'Neil, *ETS-Lindgren, United States of America*

WS-MEAS-II: Workshop on recent advancements in measurement uncertainty

- Location: Meeting Room 12
- Chair: Dennis Lewis, *The Boeing Company, United States of America*
Janet Nichols O'Neil, *ETS-Lindgren, United States of America*

12:30 pm - 2:00 pm LUNCH

- Location: Catering area 4th floor

1:00 pm - 2:00 pm POSTER SESSION PARASOL**PS-PARASOL: Poster Session on Safe and Sustainable Electromagnetic Shielding Solutions for Mobility**

- Location: Foyer first floor

2:00 pm - 3:30 pm WORKSHOPS & TUTORIALS**WS-POE-I: Workshop on the GB ethernet interface with PoE from an EMC perspective**

- Location: Auditorium A
- Chair: Dr. Heinz Zenkner, Würth Elektronik eiSos, Germany

TUT-SIM-III: Tutorial on how can readily available state of the art full-wave EM simulation tools empower your Design for EMC process

- Location: Auditorium B
- Chair: Ronny Deseine, Barco NV, Belgium

WS-EF-I: Workshop on fundamentals and applications of rydberg atom-based electric field sensors

- Location: Meeting room 1 + 2
- Chair: Dr. Christopher Holloway, NIST, United States of America

WS-AUTO-III: Workshop on automotive EMC

- Location: Meeting room 4 + 5
- Chair: Dr. Marco Klingler, EMC Consultant and Services, France

WS-IEMI-III: Workshop on IEMI Risk Management

- Location: Meeting room 6
- Chair: Sven Fisahn, Bundeswehr Research Institute for Protective Technologies and CBRN Protection (WIS), Germany
Dr. Marian Lanzrath, Fraunhofer INT, Germany
Janet Nichols O'Neil, ETS-Lindgren, United States of America

3:00 pm - 5:30 pm M-ISC

Meeting International Steering Committee

- Location: Meeting room 12
- Private meeting for the International Steering Committee

3:30 pm - 4:00 pm COFFEE BREAK

- Location: Catering area 4th floor

4:00 pm - 5:30 pm WORKSHOPS & TUTORIALS

WS-POE-II: Workshop on the GB ethernet interface with PoE from an EMC perspective

- Location: Auditorium A
- Chair: Dr. Heinz Zenkner, Würth Elektronik eiSos, Germany

WS-EF-II: Workshop on fundamentals and applications of rydberg atom-based electric field sensors

- Location: Meeting room 1 + 2
- Chair: Dr. Christopher Holloway, NIST, United States of America

WS-AUTO-IV: Workshop on Automotive EMC – Advances in Design and Test Methodologies

- Location: Meeting room 4 + 5
- Chair: Janet Nichols O'Neil, ETS-Lindgren, United States of America

WS-IEMI-IV: Workshop on IEMI Risk Management

- Location: Meeting room 6
- Chair: Sven Fisahn, Bundeswehr Research Institute for Protective Technologies and CBRN Protection (WIS), Germany
Dr. Marian Lanzrath, Fraunhofer INT, Germany
Janet Nichols O'Neil, ETS-Lindgren, United States of America

4:00 pm - 6:00 pm WORKSHOPS & TUTORIALS

TUT-SIM-IV: Tutorial from back-of-napkin calculation to virtual EMC lab: the power of EMC numerical modelling

- Location: Auditorium B
- Chair: Giancarlo Guida, Ansys, Italy

5:00 pm - 9:00 pm WIE-EVENT

Women in Engineering Event

- Location: entrance hall BMCC & Rooftopbar ODA
- Only for registered participants

6:30 pm - 7:30 pm ISC RECEPTION

- Location: City Hall Bruges. Only for invited participants.

7:30 pm - 9:30 pm ISC DINNER

- Location: Crowne Plaza Salon. Only for invited participants.

TUESDAY 3 SEPTEMBER 2024

TUESDAY

8:00 am - 6:00 pm	REGISTRATION & INFORMATION
9:00 am - 7:30 pm	EXHIBITION
9:00 am - 10:30 am	OPENING CEREMONY & KEYNOTE
10:30 am - 11:00 am	COFFEE BREAK
11:00 am - 12:30 pm	OS-REVERB-I
	SS-TEMP-I
	TUT-TELEREX WS-RBEMC-I
12:30 pm - 2:00 pm	LUNCH
1:00 pm - 2:00 pm	M-iSENSE
	PS-1: POSTER SESSION I
2:00 pm - 3:30 pm	OS-IM-I
	SS-AIEMC-I SS-STOCH-I SS-TEMP-II
	WS-LF-I WS-RBEMC-II
3:30 pm - 4:00 pm	COFFEE BREAK
4:00 pm - 5:30 pm	OS-IM-II
	SS-AIEMC-II SS-STOCH-II SS-TEMP-III
	WS-LF-II WS-RBEMC-III
5:30 pm - 7:30 pm	WELCOME RECEPTION
8:00 pm - 10:00 pm	YP-EVENT

8:00 am - 6:00 pm	REGISTRATION & INFORMATION ● Location: Entrance hall
9:00 am - 7:30 pm	EXHIBITION ● Location: Beurshal
9:00 am - 10:30 am	OPENING CEREMONY & KEYNOTE ● Location: Auditorium A+B ● Chair: Prof. Davy Pissoort, KU Leuven, Belgium
10:30 am - 11:00 am	COFFEE BREAK ● Location: Beurshal

11:00 am - 12:30 pm ORAL SESSION

OS-REVERB-I: Oral Session on reverberation chambers

- Location: Meeting room 1 + 2
- Chair: Dr. Robert Vogt-Ardatjew, *University of Twente, The Netherlands*
Prof. Valter Mariani Primiani, *Università Politecnica delle Marche, Italy*

11:00 am - 11:22 am

VNA-Based Total Radiated Power Measurements in Reverberation Chambers

Ramiro Serra¹, Carlo Carobbi²

1: *Eindhoven University of Technology, The Netherlands*; 2: *University of Florence, Italy*

11:22 am - 11:45 am

Detection of Instantaneous EMC Failures in Reverberation Chambers and VIRC using a Generic Equipment

Quentin Jacquet, Guillaume Andrieu

XLIM Laboratory, *University of Limoges, France*

11:45 am - 12:07 pm

Optimization of a VIRC Stirring Process using Frequency and Time Domain Metrics

Guillaume Andrieu¹, Youssef Rammal¹, Nicolas Ticaud², Nicolas Roger³

1: *XLIM laboratory - University of Limoges, France*; 2: *Cisteme, Limoges, France*;
3: *Jacques Dubois Company, Barentin, France*

12:07 pm - 12:30 pm

Utilizing the Chi-Distribution for the Assessment of Electric Fields within Reverberation Chambers

Kristian Karlsson¹, Robert Moestam², Henrik Toss¹, Andreas Lundberg¹, Ludvig Holm¹, Björn Bergqvist³

1: RISE Research Institutes of Sweden, Sweden; 2: Rejlers AB; 3: Volvo Car Corporation

11:00 am - 12:30 pm SPECIAL SESSION

SS-TEMP-I: Special Session on TEMPEST - Part 1

- Location: Meeting room 4 + 5
- Chair: Prof. Frank Leferink, University of Twente - THALES, The Netherlands
Prof. Yu-ichi Hayashi, Nara Institute of Science and Technology, Japan

11:00 am - 11:22 am

Fundamental Study on Simple Power Analysis Using Backscattering from Switching Regulators

Taiki Kitazawa, Daisuke Fujimoto, Yuichi Hayashi

Nara Institute of Science and Technology, Japan

11:22 am - 11:45 am

Electromagnetic Information Leakage of Audio Signals Induced by RF Illumination

Fatih Bulut, Hasan Seçkin Efendioğlu

Veyis Solak TÜBİTAK BİLGEM, Türkiye

11:45 am - 12:07 pm

SDR-Based Shielding Effectiveness Measurement Technique Using Signals-of-Opportunity

Ridvan Aba¹, Miguel Figueirinhas¹, Robert Vogt-Ardatjew¹, Frank Leferink^{1,2}

1: University of Twente, The Netherlands; 2: Thales Nederland B.V, Hengelo, The Netherlands

12:07 pm - 12:30 pm

A SDR-Based Inside-Out in-situ Shielding Effectiveness Measurement Technique

Miguel Figueirinhas¹, Hans Schipper^{1,2}, Ridvan Aba¹, Robert Vogt-Ardatjew¹, Frank Leferink^{1,2}

1: University of Twente, The Netherlands; 2: Thales Nederland B.V, Hengelo, The Netherlands

11:00 am - 12:30 pm WORKSHOPS & TUTORIALS

TUT-TELEREX: Tutorial on the impact of CM choke construction on EMI filter suppression

- Location: Meeting room 6
- Chair: Dr. Szymon Pasko, Schaffner EMV AG, Switzerland

WS-RBEMC-I: Workshop on risk based EMC

- Location: Meeting room 12
- Chair: Dr. Anne Roc'h, Eindhoven University of Technology, The Netherlands
Prof. Davy Pissoot, KU Leuven, Belgium

12:30 pm - 2:00 pm **LUNCH**

- Location: Beurshal

1:00 pm - 2:00 pm **M-ISENSE**

M-iSENSE: Meeting iSense Consortium

- Location: Meeting room 12
- Private meeting for the iSense Consortium

1:00 pm - 2:00 pm **POSTER SESSION**

PS-1: Poster Session I

- Location: Foyer first floor

Recent Advances in Evaluation of filament-loaded concrete for Facilities Shielding

Michel Mardiguian

EMC Consulting, France

Alternative Materials for TEMPEST Facility Architectural Shielding

Hasan Seçkin Efendioğlu, Veyis Solak, Fatih Bulut

TÜBİTAK BİLGEM, Türkiye

Derivation of Target Transfer Function in Simulated IC Switching Current to Design PCB Secure Against Side- Channel Attack

Masaki Himuro, Kengo Iokibe, Yoshitaka Toyota

Okayama University, Japan

Measurement System for Electromagnetic Environment in Medicine using SDR with Machine Learning

Kai Ishida¹, Masaki Matsuzuki², Naoya Arisaka³, Kiyotaka Fujii³, Eisuke Hanada⁴

1: Shonan Institute of Technology, Japan; 2: Mie University Hospital, Japan;

3: Kitasato University, Japan; 4: Saga University, Japan

Non-contact Measurement for Shaft Voltages

Kensuke Kobayashi¹, Youhei Sekiya¹, Shinji Ohoka¹, Keisuke Sawazaki², Hiroto Mizutani², Yuji Mochizuki², Ryo Okano²

1: SOKEN, Japan; 2: TOYOTA Motor Corporation, Japan

Investigation of frequency-dependent electrical properties of nanocomposites based on epoxy resin reinforced with multi-walled carbon nanotubes

Giovanni Spinelli¹, Rosella Guarini², Liberata Guadagno³, Marialuigia Raimondo³, Francesca Aliberti³, Luigi Vertuccio⁴

1: University Giustino Fortunato, Italy; 2: Institute of Mechanics, Bulgarian Academy of Sciences, Academy. G. Bonchev, Bulgaria; 3: Department of Industrial Engineering, University of Salerno, Italy; 4: Department of Engineering, University of Campania, Italy

Evaluation of High-Voltage Bias-Tee for Capacitor Characterization under DC Bias

Christian Riener^{1,2}, Herbert Hack¹, David Pommerenke³, Ralph Prestros¹, Bernhard Auinger¹

1: Silicon Austria Labs, TU-Graz SAL GEMC Lab, Austria; 2: Institute of Fundamentals and Theory in Electrical Engineering, Graz University of Technology, Austria; 3: Institute of Electronics, Graz University of Technology, Austria

Effect Analysis of the Ranging Function of FMCW Radar Excited by Electromagnetic Interference

Zongyang Wang, Yuchen Meng, Puqing Zhang, Zishan Ding, Yuhao Chen, Yanzhao Xie
Xi'an Jiaotong University, People's Republic of China

A method for tailoring the antenna harmonic emission limit of radio frequency equipment based on quantitative calculation

Wei Zhao¹, Xiang Zhou^{1,2}, Shiping Tang^{1,2}, Yixing Gu¹

1: Research Center for Electromagnetic Environmental Effects, Southeast University, People's Republic of China; 2: Research Center for Electromagnetic Environmental Effects, Southeast University Suzhou Campus, People's Republic of China

Terahertz Absorption Performance Based on Urethane Foam Microstructure Model

Takehito Sato¹, Koji Nakagawa¹, Shigeru Osawa¹, Toshiyasu Tanaka², Kazuhisa Sano², Takashi Hikage³

1: E&C Engineering K.K., Japan; 2: Microwave Factory Co.,Ltd., Japan; 3: Graduate School of Information Science and Technology, Hokkaido University, Japan

Vehicle Simulations Development to Predict Human Exposure and Magnetic Field Level in Low Frequency

Keishi Miwa, Soichiro Ota, Kazuma Kawai

Toyota Motor Corporation, Japan

Magnetic Cleanliness Management in Small Satellites

Alessandro Giordani, Giovanni Maria Mongini, Emiliano Scione

Thales Alenia Space Italia, Italy

An Insight into the Practical Problems of Near-field to Far-field Transformation in the Time Domain for EMI Test

Sajjad sadeghi¹, Mehdi Gholizadeh¹, Jin Min², David Pommerenke¹

1: Institute of Electronics Graz University of Technology, Austria; 2: Amber Precision Instruments, USA

Analysis of Influence of Scanning Angle Error on Microwave Imaging Quality

Feng Tian, Zhongyuan Zhou, Chengjie Li

Southeast University, People's Republic of China

2:00 pm - 3:30 pm ORAL SESSION

OS-IM-I: Oral Session on Instrumentation & Measurement

- Location: Auditorium B
- Chair: Prof. Ferran Silva, UPC, Spain
Dr. Guillaume Andrieu, XLIM laboratory - University of Limoges, France

2:00 pm - 2:22 pm

A Frequency-Domain Analysis of D-dot Sensor Calibration Uncertainty

Damien Gapillout, Pierre Pradel, Matthieu Minesi, Grégoire Gavinet

CEA Gramat, France

2:22 pm - 2:45 pm

Electrical Model Validation of Magnetic Cores for Current Sensing and Loop Filter Applications

Faryal Baig^{1,3}, Tommaso Diminich^{1,2}, Guido Rasek¹, Flavia Grassi², Xinlong Wu², Georg Möhlenkamp³

1: Valeo eAutomotive Germany GmbH, Erlangen, Germany; 2: Politecnico di Milano, Milan, Italy;
3: Brandenburgische Technische Universität Cottbus-Senftenberg, Germany

2:45 pm - 3:07 pm

Characterization of Current Probes Using TRL Self-Calibration and Multiport Error Correction

Manuel Mikschl, Sören Kohnert, Reinhard Stolle

Augsburg Technical University of Applied Sciences, Germany

3:07 pm - 3:30 pm

A Miniature Resonant Magnetic Field Probe Integrated with MLCC

Di Wang, Xing-Chang Wei, Si-Yao Tang, Yu Tian

Zhejiang University, People's Republic of China

2:00 pm - 3:30 pm SPECIAL SESSIONS

SS-AIEMC-I: Special Session on AI for EMC - Part 1: EDA Tools

- Location: Auditorium A
- Chair: Ralf Bruening, ZUKEN, Germany

2:00 pm - 2:22 pm

A Statistically Evaluated Decision Tree Approach for SI-Compliant PCB Design

Emre Ecik¹, Werner John^{1,2}, Julian Withöft¹, Ralf Brüning³, Jürgen Götze¹

1: Information Processing Lab, TU Dortmund, Germany; 2: PYRAMIDE2525, Germany;
3: EMC Technology Center Paderborn, Zuken GmbH, Germany

2:22 pm - 2:45 pm

AI Driven Power Integrity Compliant Design of High-Speed PCB

Dennis Kevin Choy, Tinko Sebastian Bartels, Amela Pucic, Bernd Schröder, Bernd Stube
Technische Universität Berlin, Germany

2:45 pm - 3:07 pm

Machine Learning Methods for Elaborating the Feasible Region for Signal Integrity Analysis in Differential Pair PCB Structures

Julian Withöft¹, Werner John², Emre Ecik¹, Ralf Brüning³, Jürgen Götze¹

1: Information Processing Lab, TU Dortmund, Germany; 2: PYRAMIDE2525, Germany;
3: EMC Technology Center Paderborn, Zuken GmbH, Germany

3:07 pm - 3:30 pm

Enhanced Reinforcement Learning Methods for Optimization of Power Delivery Networks on PCB

Nima Ghafarian Shoae¹, Baoyin Hua¹, Werner John^{1,2}, Ralf Brüning³, Jürgen Götze¹

1: Information Processing Lab, TU Dortmund, Germany; 2: PYRAMIDE2525, Paderborn, Germany;
3: EMC Technology Center Paderborn, Zuken GmbH, Paderborn, Germany

2:00 pm - 3:30 pm SPECIAL SESSIONS

SS-STOCH-I: Special Session on stochastic electromagnetics - Part 1

- Location: Meeting room 1 + 2
- Chair: Paul Bremner, RobustPhysics, United States of America
Karol Niewiadomski, Universiteit Twente, The Netherlands

2:00 pm - 2:22 pm

On Sensitivity Analysis Techniques for PE Circuit Simulation

Karol Niewiadomski¹, Erjon Ballukja², Piotr Lezynski³, Niek Moonen¹

1: University of Twente, Netherlands; 2: University of Nottingham, United Kingdom;
3: University of Zielona Gora, Poland

2:22 pm - 2:45 pm

Experimental validation of Lomax Unconditional PDF Model for Mixed Direct and Reverberant Electric Fields Inside a Complex Enclosure

Paul Bremner¹, Reza Afra¹, James West², Charles Bunting², Mazin Mustafa³, Saif Mostafa²

1: RobustPhysics, United States of America; 2: Oklahoma State University,
United States of America; 3: University of Minnesota, United States of America

2:45 pm - 3:07 pm

Evaluation of Fast Stirling Methods for Direct Field Strength Control in a Reverberation Chamber

Konstantin Bredenfeld¹, Mathias Magdowski¹, Ralf Vick¹, Robert Gratzl²,
Hendrik Bartko², Jens Medler²

1: Otto von Guericke University, Germany; 2: Rohde & Schwarz GmbH & Co. KG

3:07 pm - 3:30 pm

A Stochastic Framework for the Analysis and Modelling of Transmission lines

Charles Jullien¹, Sebastien Lallechere², Zine Eddine Mohammed Cherif¹, Said Djeridi¹,
François De Daran², Bertrand Revol², Vincent Melchor², Victor Dos Santos²

1: Safran Electrical & Power, Blagnac, France; 2: SafranTech, Paris Saclay, France

2:00 pm - 3:30 pm SPECIAL SESSIONS

SS-TEMP-II: Special Session on TEMPEST - Part 2

- Location: Meeting room 4 + 5
- Chair: Prof. Yu-ichi Hayashi, Nara Institute of Science and Technology, Japan
Prof. Frank Leferink, University of Twente - THALES, The Netherlands

2:00 pm - 2:22 pm

Fundamental Study on Detection of Counterfeit Parts with Abnormal Aging Characteristics Using Electromagnetic Backscattering from I/O Circuits

Shugo Kaji¹, Masahiro Kinugawa², Daisuke Fujimoto¹, Yuichi Hayashi¹

1: Nara Institute of Science and Technology, Japan; 2: The University of Fukuchiyama, Japan

2:22 pm - 2:45 pm

Counter-Screen - A No-Hardware Method To Prevent Eavesdropping Of Video Using TMDS

Ryan Groot^{1,2}, Duncan Van Meeteren¹, Frank Leferink^{1,2}

1: Thales Nederland BV, Hengelo, The Netherlands; 2: University of Twente, Enschede, The Netherlands

2:45 pm - 3:07 pm

Timing-Controlled EM Fault Injection Method Focusing on EM Leakage from Communication Channel

Hikaru Nishiyama, Daisuke Fujimoto, Yuichi Hayashi

Nara Institute of Science and Technology, Japan

3:07 pm - 3:30 pm

Practical Considerations for the Use of Comb Generators in Shielding Effectiveness Measurements

Miguel Figueirinhas¹, Hans Schipper^{1,2}, Ridvan Aba¹, Robert Vogt-Ardatjew¹, Frank Leferink^{1,2}

1: University of Twente, Enschede, The Netherlands; 2: Thales Nederland B.V Hengelo, The Netherlands

2:00 pm - 3:30 pm WORKSHOPS

WS-LF-I: Workshop on the standardization in the Frequency Range up to 150 kHz - Part 1

- Location: Meeting room 6
- Chair: Dr. Lu Wan, Hitachi Energy Ltd, Switzerland
Prof. Petre-Marian Nicolae, University of Craiova, Romania
Prof. Ileana Diana Nicolae, University of Craiova, Romania

WS-RBEMC-II: Workshop on risk based EMC

- Location: Meeting room 12
- Chair: Dr. Anne Roc'h, Eindhoven University of Technology, The Netherlands
Prof. Davy Pissort, KU Leuven, Belgium

3:30 pm - 4:00 pm COFFEE BREAK

- Location: Beurshal

4:00 pm - 5:30 pm ORAL SESSION

OS-IM-II: Oral Session on Instrumentation & Measurement

- Location: Auditorium A
- Chair: Dr. Guillaume Andrieu, XLIM laboratory - University of Limoges, France
Dr. Marc Pous, HE Space for ESA, The Netherlands

4:00 pm - 4:22 pm

Experimental Validation of Correction Factors for In Situ H-Field Measurements below 2 MHz

Jordi Solé-Lloveras^{1,2}, Marco A. Azpúrua^{1,2}, Yasutoshi Yoshioka³, Ferran Silva²

1: EMC Barcelona, EMC Electromagnetic BCN S.L., Spain; 2: Grup de Compatibilitat Electromagnètica, Universitat Politècnica de Catalunya, Spain; 3: Power System Control Research Department. Digital Innovation Laboratory. Fuji Electric Co., Ltd. Japan

4:22 pm - 4:45 pm

Development of a Reference Source for Conducted Emission Tests

Ugur Yanik^{1,2}, Osman Sen¹, Yasin Ozkan¹, Osman Gurlevik¹, Mehmet Ciydem²

1: ASELSAN A.Ş., Türkiye; 2: GAZI University, Türkiye

4:45 pm - 5:07 pm

Uniform magnetic field coils construction optimization

Rado Lapuh¹, Caglar Aslan², Klemen Stibernik³, Martin Hudlicka⁴

1: Left Right s.p., Slovenia; 2: TUBITAK UME, Turkiye; 3: SIQ - Slovenian Institute of Quality and Metrology, Slovenia; 4: Czech metrology institute, Czech Republic

5:07 pm - 5:30 pm

Utilizing Frequency Folding in Multichannel Measurements for Broadband EMI Measurements

Patrick Koch, Sjouke Spijkerman, Tom Hartman, Niek Moonen

University of Twente, The Netherlands

4:00 pm - 5:30 pm SPECIAL SESSIONS

SS-AIEMC-II: Special Session on AI for EMC - Part 2: EMC advice from AI

- Location: Auditorium A
 - Chair: Dr. Stanislav Kovar, Tomas Bata University in Zlin, Czech Republic
Dr. Dominik Mair, Universitat Innsbruck, Austria
-

4:00 pm - 4:22 pm

Design Considerations for Pixelated Antennas Regarding Pixel Size and Symmetry

Dominik Mair, Michael Renzler, Raphael Rueland

Universitat Innsbruck, Austria

4:22 pm - 4:45 pm

Application of an AI-assisted Approach for Efficient EMI Source Characterization based on the Spherical Wave Expansion Technique

Carlo Olivieri, Francesco de Paulis;

University of L'Aquila, Italy

4:45 pm - 5:07 pm

Monitor Identification Based on Electromagnetic Emanations and Multilayer Perceptron Networks

Darko Ninkovic, Dragan Olcan

University of Belgrade, School of Electrical Engineering, Serbia

5:07 pm - 5:30 pm

A Physics-driven and Data-driven Digital Twin for Vehicle Immunity Testing

Christoph Mäurer;

Altair Engineering, Germany

4:00 pm - 5:30 pm SPECIAL SESSIONS

SS-STOCH-II: Special Session on stochastic electromagnetics - Part 2

- Location: Meeting room 1 + 2
- Chair: Karol Niewiadomski, Universiteit Twente, The Netherlands
Paul Bremner, RobustPhysics, United States of America

4:00 pm - 4:22 pm

Application of a sparse polynomial chaos expansion for high-dimensional uncertainty quantification of braided shielded cables

Haolin Jiang¹, Francesco Ferranti², Giulio Antonini¹

1: University of L'Aquila, Italy; 2: Vrije Universiteit Brussel and Flanders Make, Belgium

4:22 pm - 4:45 pm

On the Equivalence of Working Volumes in Reverberation Chambers Close to the Lowest Usable Frequency

Anett Kenderes^{1,2}, Szabolcs Gyimóthy², Péter Tamás Benkő¹

1: Robert Bosch Kft, Budapest, Hungary; 2: Department of Broadband Infocommunications and Electromagnetic Theory, Budapest University of Technology and Economics, Budapest, Hungary

4:45 pm - 5:07 pm

Practical Considerations for Converting a Shielded Enclosure into a Reverberation Chamber

Anett Kenderes^{1,2}, Csaba Bártfai¹, Péter Tamás Benkő¹, Balázs Soós¹, Szabolcs Gyimóthy²

1: Robert Bosch Kft, Budapest, Hungary; 2: Department of Broadband Infocommunications and Electromagnetic Theory, Budapest University of Technology and Economics, Budapest, Hungary

4:00 pm - 5:30 pm SPECIAL SESSIONS

SS-TEMP-III: Special Session on TEMPEST - Part 3

- Location: Meeting room 4 + 5
- Chair: Prof. Frank Leferink, University of Twente - THALES, The Netherlands
Prof. Yu-ichi Hayashi, Nara Institute of Science and Technology, Japan

4:00 pm - 4:22 pm

Benefits of coherent demodulation for eavesdropping on HDMI emissions

Dimitrije Erdeljan, Markus G. Kuhn

University of Cambridge, United Kingdom

4:22 pm - 4:45 pm

Fundamental Study on Restoration Method of Encoded Data from Electromagnetic Leakage Focusing on Error Detection Codes

Koki Abe, Taiki Kitazawa, Daisuke Fujimoto, Yuichi Hayashi

Nara Institute of Science and Technology, Japan

4:45 pm - 5:07 pm

Shielding Effectiveness of a Filled Cabinet

Hans Schipper^{1,2}, Miguel Figueirinhas², Frank Leferink^{1,2}

1: Thales Nederland, The Netherlands; 2: University of Twente, The Netherlands

5:07 pm - 5:30 pm

A Novel Approach to Measure Shielding Effectiveness in TEMPEST- Protected Buildings

Fatih Bulut, Veyis Solak, Hasan Seçkin Efendioğlu

TÜBİTAK BİLGEM, Türkiye

4:00 pm - 5:30 pm WORKSHOPS

WS-LF-II: Workshop on the standardization in the Frequency Range up to 150 kHz - Part 2

- Location: Meeting room 6
- Chair: Dr. Lu Wan, *Hitachi Energy Ltd, Switzerland*
Prof. Petre-Marian Nicolae, *University of Craiova, Romania*
Prof. Ileana Diana Nicolae, *University of Craiova, Romania*

WS-RBEMC-III: Workshop on risk based EMC

- Location: Meeting room 12
- Chair: Dr. Anne Roc'h, *Eindhoven University of Technology, The Netherlands*
Prof. Davy Pissort, *KU Leuven, Belgium*

5:30 pm - 7:30 pm WELCOME RECEPTION

- Location: Beurshal

8:00 pm - 10:00 pm YP-EVENT

Young professionals Event

- Location: Bowl inn Brugge
- Only for registered participants

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WEDNESDAY 4 SEPTEMBER 2024

8:00 am - 6:00 pm	REGISTRATION & INFORMATION		
9:00 am - 5:30 pm	EXHIBITION		
9:00 am - 10:30 am	OS-COMMS-I	OS-IM-III	OS-CAB
	SS-EMCPE-I		
	WS-REVERB-I	TUT-STAND-I	
10:30 am - 11:00 am	COFFEE BREAK		
11:00 am - 12:30 pm	OS-COMMS-II	OS-IM-IV	OS-IMMU
	SS-EMCPE-II		
	WS-REVERB-II	TUT-STAND-II	
12:30 pm - 2:00 pm	LUNCH		
1:00 pm - 2:00 pm	M-DRIVES	M-NEPIT	M-ETERNITY
	PS-2: POSTER SESSION II		
2:00 pm - 3:30 pm	OS-COMMS-III	OS-IM-V	
	SS-RFEXP	SS-SE-I	
	WS-REVERB-III	TUT-STAND-III	
3:30 pm - 4:00 pm	COFFEE BREAK		
4:00 pm - 5:30 pm	OS-COMMS-IV	OS-ESD	
	SS-SE-II		
	WS-REVERB-IV	TUT-SSC	
7:00 pm - 1:00 am	SYMPOSIUM DINNER		

8:00 am - 6:00 pm **REGISTRATION & INFORMATION**

- Location: Entrance hall

9:00 am - 5:30 pm **EXHIBITION**

- Location: Beurshal

9:00 am - 10:30 am **ORAL SESSIONS**

OS-COMMS-I: Oral Session on wired & wireless communications

- Location: Auditorium A
- Chair: Dr. Kia Wiklundh, FOI, Sweden / Prof. Tim Claeys, KU Leuven, Belgium

9:00 am - 9:22 am

Interference Evaluation on Software Defined Radio Links using the Amplitude Probability Distribution

Marc García-Bermúdez², Jordi Solé- Lloveras^{1,2}, Marco A. Azpúrua^{1,2}

1: EMC Electromagnetic BCN, S.L., Spain; 2: Universitat Politècnica de Catalunya, Spain

9:22 am - 9:45 am

Non-Gaussian interference vulnerability of coding schemes used for control channels in 4G and 5G

Kia Wiklundh, Sara Linder

Swedish Defence Research Agency, Sweden

9:45 am - 10:07 am

EM Risk Management for Wireless Communications: First Look and Case Study

Brian Leeman, Laura De Baets, Sofie Pollin, Hans Hallez, Davy Pissoort, Tim Claeys

KU Leuven, Belgium

10:07 am - 10:30 am

Controlling HET Radiated Emission on a UHF communication payload in satellite scenarios

Marco Di Marco¹, Federico Cimorelli¹, Emiliano Scione¹, Guglielmo Lulli¹, Giovanni Galgani²

1: Thale Alenia Space Italy, Italy; 2: Mermec Engineering, Italy

9:00 am - 10:30 am ORAL SESSIONS

OS-IM-III: Oral Session on Instrumentation & Measurement

- Location: Auditorium B
- Chair: Dr. Marc Pous, *HE Space for ESA., The Netherlands*
Dr. Tom Hartman, *University of Twente, The Netherlands*

9:00 am - 9:22 am

An International Round-Robin Test for Insertion Impedance of Current Probes

Alexander Kriz¹, Katsumi Fujii², David Knight³, Dieter Schwarzbeck⁴

1: Seibersdorf Laboratories, Austria; 2: National Institute of Information and Communications Technology, Japan; 3: National Physical Laboratory, United Kingdom; 4: Schwarzbeck Mess - Elektronik OHG, Germany

9:22 am - 9:45 am

Low Self-Distortion Test Fixture for Contact Harmonic and Passive Intermodulation Measurement

Oleksii Shekhovtsov, Rui Mi, Leonhard Petzel, Harun Sido, David Pommerenke
Graz University of Technology, Austria

9:45 am - 10:07 am

Evaluation of On-the-fly Scanning Effects on Complex Field Retrieval using a Single Probe

Cheng Yang, Christian Adam, Sebastian Götschel

Hamburg University of Technology, Germany

10:07 am - 10:30 am

Rydberg Atom Electrometry: Recent Sensitivity and Bandwidth Improvements

Nikunj Kumar Prajapati¹, Alexandra Artusio-Glimpse¹, Samuel Berweger¹,
Matthew Simons¹, Noah Schlossberger^{2,3}, Dangka Shylla^{2,3}, William Watterson^{2,3},
Dixith Manchaiah^{2,3}, Christopher Holloway¹

1: National Institute of Standard and Technology, United States of America;

2: Associate of the National Institute of Standard and Technology, United States of America;

3: Department of Physics at the University of Colorado, Boulder, United States of America

9:00 am - 10:30 am ORAL SESSIONS

OS-CAB: Oral Session on transmission lines, cables & crosstalk

- Location: Meeting room 1 + 2
- Chair: Dr. Philippe Besnier, CNRS - UMR 6164 - IETR, France
Prof. Franco Moglie, Università Politecnica delle Marche, Italy

9:00 am - 9:22 am

Mitigating the UART over CAN-FD MeLiBu Radiated Emissions using Split Termination

Amr Ibrahim Madi, Matthias Mentzel, Markus Schneider

Melexis GmbH, Germany

9:22 am - 9:45 am

Numerical Computation of In-cell Parameters for Multiwire Formalism in FDTD

Jesper Lansink Rotgerink¹, Harmen Schippers¹, Alberto Gáscon Bravo², Luis D. Angulo², Salvador G. García²

1: Royal Netherlands Aerospace Centre, the Netherlands; 2: University of Granada, Spain

9:45 am - 10:07 am

Deep Learning Model for Capacitance and Inductance Matrices Prediction of Multiconductor Transmission Line

NHousseem Chebbi, Isabelle Junqua

ONERA, France

10:07 am - 10:30 am

Time-frequency diagnosis of a fault in a network of shielded cable

Senaa Kaouche, Bachir Nekhoul

University of Jijel, Algeria

9:00 am - 10:30 am SPECIAL SESSIONS

SS-EMCPE-I: Special Session on EMC for power electronic systems in electrified transportation systems - Part 1

- Location: Meeting room 4 + 5
- Chair: Ivan Struzhko, *University of Twente, The Netherlands*

9:00 am - 9:22 am

Development of an in-situ Detection Mechanism for Common-Mode Choke Saturation

Rodica Botnarevscaia¹, Cathrine Feloups^{1,3}, Tom Hartman¹, Niek Moonen¹, Frank Leferink^{1,2}

1: *University of Twente, Enschede, The Netherlands*; 2: *Thales Netherlands, Hengelo, The Netherlands*; 3: *South Valley University, Qena, Egypt*

9:22 am - 9:45 am

S-Parameters Characterization for EMI Filters: Limitations

Daria Nemashkalo¹, Patrick Koch¹, Niek Moonen¹, Frank Leferink^{1,2}

1: *University of Twente, Enschede, The Netherlands*; 2: *Thales Nederland, Hengelo, The Netherlands*

9:45 am - 10:07 am

Thevenin Black Box Model to Characterize Conducted Electromagnetic Interference of DC/AC Converters for Aerospace Applications

Noan Artaud^{1,3}, Jean-Marc Dienot^{2,3}, Isabelle Junqua¹, Laurent Guibert¹, Sara Boujouj⁴

1: *ONERA, France*; 2: *Labceem, Université Paul Sabatier – Toulouse III, Tarbes, France*; 3: *Laboratoire SIAME – Fédération IPRA EA4581, Université UPPA (Pau)*; 4: *ex ONERA, France*

10:07 am - 10:30 am

Sensitivity of the Model of Traction Current Distribution in Rails to Variability in Impedances and Admittances of the Rail Network

Volodymyr Havryliuk

Ukrainian State University of Science and Technologies, Ukraine

9:00 am - 10:30 am WORKSHOPS & TUTORIALS

WS-REVERB-I: Workshop on You had me at “Reverb...”!

- Location: Meeting room 6
- Chair: Dr. Robert Vogt-Ardatjew, *University of Twente, The Netherlands*
Dr. Vignesh Rajamani, *Exponent, United States of America*

TUT-STAND-I: Tutorial on why are radiated Emission/Immunity EMC-Tests are so tricky? - Part 1

- Location: Meeting room 12
- Chair: Dr. Diethard E.A. Hansen, *EURO EMC SERVICE (EES) Dr. Hansen Consulting, Switzerland*

10:30 am - 11:00 am COFFEE BREAK

- Location: Beurshal

11:00 am - 12:30 pm ORAL SESSIONS

OS-COMMS-II: Oral Session on wired & wireless communications

- Location: Auditorium A
- Chair: Prof. Tim Claeys, *KU Leuven, Belgium*
Dr. Kia Wiklundh, *FOI, Sweden*

11:00 am - 11:22 am

Software-Defined Radio Techniques for Enhanced OFDM Transmission in NVIS Propagation

Emil Sorecau^{1,2}, Mirela Sorecau^{1,2}, Florin Popescu³, Paul Bechet²

1: *Technical University of Cluj Napoca*; 2: *Land Forces Academy “Nicolae Bălcescu” Sibiu, Romania*;
3: *“Carol I” National Defence University*

11:22 am - 11:45 am

Susceptibility of IEEE 802.11p V2X communication to jamming attacks

Nathan Chopinet, Virginie Deniau, Christophe Gransart, Paul Monferran, Léo Mendiboure
Université Gustave Eiffel, France

11:45 am - 12:07 pm

Smart Jamming: Deep Learning-Based UAVs Neutralization System

Angesom Ataklity Tesfay¹, Driss Aouladhadj¹, Virginie Deniau¹, Christophe Gransart¹, Mickael Dufour³, Patrick Sondi²

1: Université Gustave-Eiffel, France; 2: IMT Nord Europe; 3: Inodesign Group

12:07 pm - 12:30 pm

On RadCom channel capacity for V2V applications

Elena Haller, Oscar Amador, Emil Nilsson

Halmstad University, Sweden

11:00 am - 12:30 pm ORAL SESSIONS

OS-IM-IV: Oral Session on Instrumentation & Measurement

- Location: Auditorium B
- Chair: Prof. Heyno Garbe, *Leibniz Universitaet Hannover, Germany*
Dr. Christopher Holloway, *NIST, United States of America*

11:00 am - 11:22 am

Evaluation of Influence to Radiated Emission Measurement in Consideration of Connection Direction of Unbalanced Power Line Termination Device to Outlet in Test Sites

Shinichi Okuyama¹, Nobuo Kuwabara², Kunihiro Osabe³, Fujio Amemiya³, Toshiki Shimasaki³, Hidenori Muramatsu³

1: VCCI Council / NEC Platforms, Ltd., Japan; 2: Kyushu Institute of Technology; 3: VCCI Council

11:22 am - 11:45 am

Validation of the Physical Random Unintentional Radiation Model by Measurement of an Artificial Test Object in an Anechoic Chamber

Max Rosenthal, Jörg Petzold, Ralf Vick Otto von Guericke

University Magdeburg, Germany

11:45 am - 12:07 pm

Field Strength Check Standard Probe Comparisons to Historical Measurements

Matthew Simons¹, William Watterson², Lucas Koepke¹, Chris Parks¹, Vincent Neylon¹, Christopher Holloway¹

1: NIST, United States of America; 2: Dept. of Physics, University of Colorado, United States of America

12:07 pm - 12:30 pm

Depth of Investigation in Measurements of Frequency- Dependent Soil Properties

Dmitry Kuklin, [Evgeniya Borozdina](#)

Kola Science Centre of the Russian Academy of Sciences, Russian Federation

11:00 am - 12:30 pm ORAL SESSIONS

OS-IMMU: Oral Session on electromagnetic immunity

- Location: Meeting room 1 + 2
- Chair: Dr. Alexander van Deursen, Eindhoven University of Technology, The Netherlands
Dr. Niek Moonen, University of Twente, The Netherlands

11:00 am - 11:22 am

Using Near-Field Scan to Predict the Conducted Immunity of Electronic Components up to 6 GHz

[Nicolas Castagnet](#)^{1,2}, Alexandre Boyer², Fabien Escudié¹

1: CEA / Gramat, France; 2: LAAS-CNRS, France

11:22 am - 11:45 am

Robustness Assessment of a High Performance, High Robustness IoT Processor Platform

Lucas Speckbacher^{1,4}, Lukas Pertoll^{1,4}, [David Pommerenke](#)¹, Heinrich Wolf²,
Ramon Linke², Harald Gossner³

1: Institute of Electronics, Technical University of Graz, Austria; 2: Fraunhofer EMFT, Germany;
3: Intel, Germany; 4: Christian Doppler Laboratory for Technology Guided Electronic Component
Design and Characterisation

11:45 am - 12:07 pm

Simplified Test Method for DC Charging Communication Immunity to Switching Noise considering Cable Crosstalk

[Georgios Mademlis](#), Lennart Hasselgren, Henrik Holst

Volvo Cars, Sweden

12:07 pm - 12:30 pm

Evaluation of Simulated and Real Measurement Data for AI-based Interference Classification in EMC Applications

[Jad Maalouly](#)¹, Dennis Hemker¹, Sven Lange², Marcel Olbrich³, Christian Hedayat²,
Harald Mathis¹, Jürgen Kutter⁴

1: Fraunhofer FIT, Hamm, Germany; 2: Fraunhofer ENAS, Paderborn, Germany;
3: EMC Test NRW GmbH, Dortmund, Germany; 4: InnoZent OWL e.V., Paderborn, Germany

11:00 am - 12:30 pm SPECIAL SESSIONS

SS-EMCPE-II: Special Session on EMC for power electronic systems in electrified transportation systems - Part 2

- Location: Meeting room 4 + 5
- Chair: Ivan Struzhko, *University of Twente, The Netherlands*

11:00 am - 11:22 am

Reduction of Common-Mode Radiation in Electrical Drive Systems with Multi-Level Topology Inverters

Kevin Krakow¹, Wolfgang Grupp², Thomas Weyh², Michael Hohenegger³, Stefan Dickmann¹

1: *Helmut-Schmidt-University, Germany*; 2: *University of the Bundeswehr Munich, Germany*; 3: *Bavertis GmbH*

11:22 am - 11:45 am

Adaptive Notch Filter Based on Electrically Variable Components for EMC

Ivan Struzhko¹, Tom Hartman¹, Frank Leferink^{1,2}

1: *University of Twente, The Netherlands*; 2: *Thales Nederland, The Netherlands*

11:45 am - 12:07 pm

Comparison of Electromagnetic Parameters of Nanocrystalline Cores

Rodica Botnarevscaia¹, Ivan Struzhko¹, Tetiana Serdiu^{k2}, Frank Leferink^{1,3}

1: *University of Twente, Enschede, The Netherlands*; 2: *Ukrainian State University of Science and Technologies, Dnipro, Ukraine*; 3: *Thales Nederland B.V., Hengelo, The Netherlands*

12:07 pm - 12:30 pm

A Study on Propagation Path Analysis Method for Radiated Emission from EV High Voltage Systems

HeeHoon Yi¹, Joomin Park², Ick-Jae Yoon², Hongseok Kim³

1: *Hyundai Motor Group, Republic of Korea*; 2: *CNU, Republic of Korea*; 3: *CPS Tech Inc., Republic of Korea*

11:00 am - 12:30 pm WORKSHOPS & TUTORIALS

WS-REVERB-II: Workshop on You had me at "Reverb...!"

- Location: Meeting room 6
- Chair: Dr. Robert Vogt-Ardatjew, *University of Twente, The Netherlands*
Dr. Vignesh Rajamani, *Exponent, United States of America*

TUT-STAND-II: Tutorial on why are radiated Emission/Immunity EMC-Tests are so tricky? - Part 2

- Location: Meeting room 12
- Chair: Dr. Diethard E.A. Hansen, *EURO EMC SERVICE (EES) Dr. Hansen Consulting, Switzerland*

12:30 pm - 2:00 pm **LUNCH**

- Location: Beurshal

1:00 pm - 2:00 pm **M-DRIVES**

Meeting reliable electric drives

- Location: Meeting room 6
- Private meeting for KU Leuven, TU Darmstadt and TU Eindhoven

1:00 pm - 2:00 pm **M-NEPIT**

M-NEPIT: Meeting NEPIT consortium

- Location: Meeting room 12
- Private meeting for the NEPIT Consortium

1:00 pm - 2:00 pm **M-ETERNITY**

M-ETERNITY: Meeting Eternity Consortium

- Location: Meeting room 4 + 5
- Private meeting for the ETERNITY Consortium

1:00 pm - 2:00 pm POSTER SESSION

PS-2: Poster Session II

- Location: Foyer first floor

Analysis of Conducted Emission with influences of operating frequencies and amplitudes of a self-oscillating capacitive touch sensing circuit

Subramaniam Saravana Sankar¹, Stanislav Kovar¹, John F. Dawson², Michael Galda³

1: Tomas Bata University in Zlin, Zlin, Czech Republic; 2: University of York, York, UK;
3: NXP Semiconductors, Roznov p.R., Czech Republic

Time domain modeling of electromagnetic lightning transients in a buried shielded cable considering the effect of frequency

Hadjer Chikeur, Bachir Nekhoul

University of Jijel, Algeria

A portable VNA-based system for grid impedance measurements

Serdar Büyük¹, Andrea Mariscotti², Klemen Štibernik³, Osman Şen¹, Marcin Wojciechowski⁴

1: TUBITAK UME, Turkey; 2: University of Genova, Italy; 3: SIQ (Slovenian Institute for Quality and Metrology), Slovenia; 4: GUM (Central Office of Measures), Poland

A Theoretical Study of an Energy Storage Effect in Nonlinearly loaded Receiving Structures

Robert Michels¹, Martin Schaarschmidt², Sven Fisahn², Frank Gronwald¹

1: University of Siegen, Germany; 2: Bundeswehr Research Institute for Protective Technologies and CBRN Protection

Recognition of block cipher algorithms based on radiated emission

Konrad Szczepankiewicz, Marian Wnuk

Military University of Technology, Poland

New SIL Calculation Software as per CISPR 16-1-5

Soydan Çakır¹, Osman Şen¹, Bahadır Tektaş¹, Serdar Büyük¹, Sibel Çimen²

1: Scientific and Technological Research Council of Türkiye, Türkiye; 2: Kocaeli University

Comparative analysis of calibration procedures in current and proposed editions of the IEC 61000-4-2 Standard

Panagiotis K. Papastamatis¹, Ioanna P. Katsanaki¹, Eleni P. Nicolopoulou¹, Christos D. Nikolopoulos², Christos A. Christodoulou¹, Ioannis F. Gonos¹

1: National Technical University of Athens, Greece; 2: Hellenic Mediterranean University, Greece

Importance of Interface Variables for Closed-Loop Circuit EMC Co-Simulation Using WR Method

Md Moktarul Alam^{1,2}, Richard Perdriau^{1,3}, Mohamed Ramdani^{1,3}, Mohsen Koohestani^{1,3}

1: ESEO, France; 2: INSA, University of Rennes; 3: IETR, University of Rennes

Evaluation of Measurement Noise Effects in the Close Environment of Equivalent Near-Field Sources

Dominik Schröder¹, Ulrich Kiefner², Christian Hedayat², Jens Förstner¹

1: Paderborn University, Germany; 2: Fraunhofer ENAS, Paderborn, Germany

Cause of the Common-Mode Noise Suppression Effect of Y-Capacitor in Isolated DC/DC Converters

Robert Orvai¹, Mark Csornyei², Janos Hamar¹, Balint Pinter³

1: Department of Automation and Applied Informatics, Faculty of Electrical Engineering and Informatics, Budapest University of Technology and Economics; 2: Electrified Motion – Power Electronics, Robert Bosch Kft.; 3: Department of Broadband Infocommunications and Electromagnetic Theory, Faculty of Electrical Engineering and Informatics, Budapest University of Technology and Economics

Origin of the damped oscillatory waves in the MV mains of the High Current Testing Laboratory

Jolanta Sadura, Jan Sroka, Jacek Starzyński

Warsaw University of Technology, Poland

Behavioral Model of Inductors via Physics-Informed Circuit Synthesis and Modified Vector Fitting

Lu Wan², Simone Negri², Giordano Spadacini², Pooya Davari¹

1: Aalborg University; 2: Politecnico di Milano

Simulation of RF de-sense in small form factor stacked die packages

Jimmy Andreas Johansson¹, Graeme Osler¹, Gerardo Romo Luevano²

1: Qualcomm Technologies International, Ltd., United Kingdom; 2: Qualcomm Technologies, Inc., USA

2:00 pm - 3:30 pm ORAL SESSIONS

OS-COMMS-III: Oral Session on wired & wireless communications

- Location: Auditorium A
- Chair: Prof. Jan Carlsson, Provinn, Sweden
Dr. Marco A. Azpurua, EMC Electromagnetic BCN, S.L., Spain

2:00 pm - 2:22 pm

Effects of intentional RF interference on Optical Wireless Communication Systems

Antonio Costanzo¹, Virginie Deniau², Valeria Loscri³

1: CERADE, ESAIP, France; 2: Université Gustave Eiffel, France; 3: Inria Lille Nord Europe, France

2:22 pm - 2:45 pm

Machine Learning Techniques for the Geolocalization of Jamming Sources in Indoor Wireless Networks

Paul Monferran¹, Antonio Costanzo², Artur N. de São José³, Virginie Deniau¹,
Christophe Gransart¹

1: COSYS-LEOST, Université Gustave Eiffel, France; 2: CERADE, ESAIP, France; 3: University of Brasilia, Faculty of Technology, Department of Electrical Engineering, 70910- 900, Brasilia, Brazil

2:45 pm - 3:07 pm

Protection distances between HF- communication systems and wireless charging of vehicles

Aleksander Blagoiev, Sara Linder, Kia Wiklundh

Swedish Defence Research Agency, Sweden

3:07 pm - 3:30 pm

GNSS Coexistence Measurement Setup using a Vibrating Intrinsic Reverberation Chamber

Evelina Tourounoglou¹, Frank Leferink^{1,2}

1: Thales Nederland B.V., Hengelo, The Netherlands; 2: University of Twente, Enschede, The Netherlands

2:00 pm - 3:30 pm ORAL SESSIONS

OS-IM-V: Oral Session on Instrumentation & Measurement

- Location: Auditorium B
- Chair: Dr. Alexandre Boyer, LAAS-CNRS, France
Prof. Mauro Feliziani, Università degli Studi dell'Aquila, Italy

2:00 pm - 2:22 pm

Probabilistic Approach to Defining Emission Limits in Terms of Total Radiated Power

Yasushi Matsumoto, Ifong Wu, Kaoru Gotoh

National Institute of Information and Communications Technology, Japan

2:22 pm - 2:45 pm

Maximum Emission from Electrically Large Sources in EMI Measurements - Comparing Measurements and Theoretical Estimates

Sven Battermann¹, Heyno Garbe²

1: Hochschule Bielefeld - University of Applied Sciences and Arts; 2: Leibniz University Hannover

2:45 pm - 3:07 pm

Impact of Radiator and Groundplane Configuration of Spline-Based Planar Monopole Sensors in Radiated EMC Testing

Agus Dwi Prasetyo^{1,3}, Harfan Hian Ryanu³, Deny Hamdani², Achmad Munir¹

1: Radio Telecomm. & Microwave Lab., School of Electrical Eng. & Informatics, Institut Teknologi Bandung, Indonesia; 2: School of Electrical Engineering and Informatics, Institut Teknologi Bandung, Indonesia; 3: School of Electrical Engineering, Telkom University, Indonesia

3:07 pm - 3:30 pm

Rogowski Coil Sensors with Optical Output for Lightning Current Measurement in Aircraft Fuselage

Marcos Quílez, Miquel Navarro, Jordi Solé-Lloveras, Ferran Silva

Universitat Politècnica de Catalunya, Spain

2:00 pm - 3:30 pm SPECIAL SESSIONS

SS-RFEXP: Special Session on the trends in radiofrequency exposure for workers and public

- Location: Meeting room 1 + 2
- Chair: Dr. Sachiko Yamaguchi-Sekino, *National Institute of Information and Communications Technology, Japan*
Dr. Victoria Ramos, *Instituto de Salud Carlos III, Spain*

2:00 pm - 2:22 pm

Variations in Portable Measurements of Radio-Frequency Electromagnetic Fields

Sachiko Yamaguchi-Sekino¹, Miwa Ikuyo¹, Kazuhiro Tobita¹, Teruo Onishi¹, Masao Taki¹, Soichi Watanabe²

1: *Electromagnetic Compatibility Laboratory, Electromagnetic Standards Research Center, Radio Research Institute, National Institute of Information and Communications Technology, Japan;*

2: *Electromagnetic Standards Research Center, Radio Research Institute, National Institute of Information and Communications Technology, Japan*

2:22 pm - 2:45 pm

Exposure to 5G mmWaves of a Base Station Operator: Dosimetric Study of the Influence of Posture

Luca Bellosono^{1,2}, Simona D'Agostino¹, Micol Colella¹, Gian Marco Contessa², Alessandro Polichetti², Micaela Liberti¹, Francesca Apollonio¹

1: *Dept. of Information Engineering, Electronics and Telecommunications, Sapienza University of Rome;* 2: *National Center for Radiation Protection and Computational Physics, Italian National Institute of Health*

2:45 pm - 3:07 pm

Data-Efficient Prediction of the Specific Absorption Rate in a Human Head Model Exposed to a Plane EM Wave Using Gaussian Process Regression

Yousef Hassab, Hamideh Esmaeili, Christian Schuster

Institute für Theoretische Elektrotechnik, Hamburg University of Technology (TUHH), Germany

3:07 pm - 3:30 pm

Simulation of Human Exposure from WPT and the Influence from Level of Components in the Model

Peter Ankarson¹, Bjorn Bergqvist²

1: *RISE;* 2: *Volvo Cars*

2:00 pm - 3:30 pm SPECIAL SESSIONS

SS-SE-I: Special Session on Shielding Revisited - Part 1

- Location: Meeting room 4 + 5
- Chair: Prof. Tim Claeys, KU Leuven, Belgium
Dr. Anne Roc'h, Eindhoven University of Technology, The Netherlands

2:00 pm - 2:22 pm

Enhanced Prediction and Measurement of the Shielding Effectiveness of Reverberant Equipment Enclosures

Ali Ghaffarlouy Raef, Andrew C. Marvin, Simon J. Bale, Martin P. Robinson, John F. Dawson
University of York, United Kingdom

2:22 pm - 2:45 pm

Noniterative Reference-Plane-Invariant Material Characterization Using CPW Line

Sadeqh Barzegar, Anne Roc'h, Laurens A. Bronckers
Eindhoven University of Technology, The Netherlands

2:45 pm - 3:07 pm

Correlating Shielding Effectiveness and Wave Impedance for Characterizing Low-Frequency Board Level Shields using the Stripline Method

Pavithrakrishnan Radhakrishnan, Lirim Koraqi, Tim Claeys, Johan Catrysse, Davy Pisssoort
KU Leuven, Belgium

3:07 pm - 3:30 pm

Evaluation of Shielding Effectiveness of Physically Small Enclosures Using Different Types of Receiving Antennas via Full-wave Simulation

Zhao Chen, Johan Catrysse, Tim Claeys, Davy Pisssoort
ESAT-WaveCoRE, M-Group, KU Leuven, Belgium

2:00 pm - 3:30 pm WORKSHOPS & TUTORIALS

WS-REVERB-III: Workshop on You had me at “Reverb...”!

- Location: Meeting room 6
- Chair: Dr. Robert Vogt-Ardatjew, *University of Twente, The Netherlands*
Dr. Vignesh Rajamani, *Exponent, United States of America*

TUT-STAND-III: Tutorial on why are radiated Emission/Immunity EMC-Tests are so tricky? - Part 3

- Location: Meeting room 12
- Chair: Dr. Diethard E.A. Hansen, *EURO EMC SERVICE (EES) Dr. Hansen Consulting, Switzerland*

3:30 pm - 4:00 pm COFFEE BREAK

- Location: Beurshal

4:00 pm - 5:30 pm ORAL SESSIONS

OS-COMMS-IV: Oral Session on wired & wireless communications

- Location: Auditorium A
- Chair: Dr. Marco A. Azpurua, *EMC Electromagnetic BCN, S.L., Spain*
Prof. Jan Carlsson, *Provinn, Sweden*

4:00 pm - 4:22 pm

Comparison of Radio Frequency Interference (RFI) Issue between Differential and Common Modes in USB Channel

Liang-Yen Wu¹, Chih-Yu Fang¹, Bin-Chyi Tseng², Jackson Yen², Tzong-Lin Wu¹

1: EMC Lab, National Taiwan University, Taiwan; 2: Advanced Electromagnetic & Wireless Communication R&D Center, ASUSTek Computer Inc, Taiwan

4:22 pm - 4:45 pm

Classification and Modelling of Power Line Communication Channel in the Narrowband Range

Ismail Aouichak¹, Anour Achouri², Yves Raingeaud¹, Jean-Charles Le Bunetel¹

1: GREMAN-UMR7347, Université de Tours, CNRS, INSA Centre Val de Loire;
2: Laboratoire des Applications Numériques LAN

4:45 pm - 5:07 pm

Analysis of noise measurements at the HF band

Karina Fors, [Sara Linder](#), Kia Wiklundh

Swedish Defence Research Agency, Sweden

4:00 pm - 5:30 pm ORAL SESSIONS

OS-ESD: Oral Session on ESD

- Location: Auditorium B
- Chair: Prof. Francesca Maradei, Sapienza University of Rome, Italy
Prof. David Pommerenke, Graz University of Technology IFE, Austria

4:00 pm - 4:22 pm

ESD-Event Level Detection for Real- Time Monitoring of ESD Events in Manufacturing Environments

Tz-Hsi Lin, [Ming-Dou Ker](#)

Institute of Electronics, National Yang Ming Chiao Tung University, TAIWAN.

4:22 pm - 4:45 pm

Transmission Line Based CDM ESD Current Target to Overcome Bandwidth Limitations

[Gabriel Fellner](#)^{1,2}, David Pommerenke^{1,2}, Lena Zeithoefler³, Friedrich zur Nieden³

1: Institute of Electronics, Graz University of Technology; 2: Christian Doppler Laboratory for EMC Aware Robust Electronic Systems; 3: Infineon Technologies AG

4:45 pm - 5:07 pm

Influence of Electrode Surface Roughness on Electromagnetic Field Radiation due to Micro-Gap ESD Below 1 kV

[Ken Kawamata](#)¹, Shinobu Ishigami¹, Osamu Fujiwara²

1: Tohoku Gakuin University, Japan; 2: Nagoya Institute of Technology

5:07 pm - 5:30 pm

Modeling the ESD Dynamic Behavior of TVS Based on a Time-dependent Resistance

Jian-Fang Dang¹, [Guang-Xiao Luo](#)¹, Wei- Dong Zhang¹, David Pommerenke²

1: North China Electric Power University, People's Republic of China;
2: Graz University of Technology, Austria

4:00 pm - 5:30 pm SPECIAL SESSIONS

SS-SE-II: Special Session on Shielding Revisited - Part 2

- Location: Meeting room 4 + 5
- Chair: Dr. Anne Roc'h, *Eindhoven University of Technology, The Netherlands*
Prof. Tim Claeys, *KU Leuven, Belgium*

4:00 pm - 4:22 pm

Simple Formula for the Calculation of Shielding Effectiveness of Finite Width Conductive Shields

Leonardo Sandrolini, Mattia Simonazzi, Ugo Reggiani

University of Bologna, Italy

4:22 pm - 4:45 pm

Impact of Waveform Modulation from Electromagnetic Interference Sources on Coupling to Digital Electronic Interconnects

Mona Esmaeili, Sameer Hemmady, Oameed Noakoosteen, Christos Christodoulou, Edl Schamiloglu, Payman Zarkesh-Ha

University of New Mexico, Albuquerque, NM, United States of America

4:45 pm - 5:07 pm

Analysis of Cable Factors on Shielding Effectiveness Measurements with GTEM Cell

Furkan Sahin, Sander Bronckers, Anne Roc'h

Eindhoven University of Technology, The Netherlands

5:07 pm - 5:30 pm

Mean Reflectivity of Dielectric Materials in Reverberation Chambers vs Free Space Conditions

Mehmet Faruk Cengiz¹, Julio Cesar Parra¹, Marco A. Azpúrua¹, Robert Vogt- Ardatjew², Frank Leferink³

1: *Universitat Politècnica de Catalunya, Spain*; 2: *University of Twente, The Netherlands*;
3: *Thales Nederland, The Netherlands*

4:00 pm - 5:30 pm WORKSHOPS & TUTORIALS

WS-REVERB-IV: Workshop on You had me at “Reverb...”!

- Location: Meeting room 6
- Chair: Dr. Robert Vogt-Ardatjew, *University of Twente, The Netherlands*
Dr. Vignesh Rajamani, *Exponent, United States of America*

TUT-SSC: Tutorial on EMI reduction using spread spectrum clocking

- Location: Meeting room 1 + 2
- Chair: Prof. Bernd Deutschmann, *Graz University of Technology, Austria*

7:00 pm - 01:00 am SYMPOSIUM DINNER

- Location: Beurshal

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THURSDAY 5 SEPTEMBER 2024

8:00 am - 6:00 pm	REGISTRATION & INFORMATION			
9:00 am - 2:00 pm	EXHIBITION			
9:00 am - 10:30 am	OS-PE-I	OS-AUTO-I	OS-PCBIC-I	
	SS-RBEMC-I	SS-COMPEM		
	WS-SPACE-I			
10:30 am - 11:00 am	COFFEE BREAK			
11:00 am - 12:30 pm	OS-PE-II	OS-AUTO-II	OS-COMPEM	OS-PCBIC-II
	SS-RBEMC-II			
	WS-SPACE-II			
12:30 pm - 2:00 pm	LUNCH			
1:00 pm - 2:00 pm	M-EMCS	M-PATTERN		
	PS-3: POSTER SESSION III			
2:00 pm - 3:30 pm	OS-PE-III	OS-FIL-I	OS-SE-I	OS-HPEM
	SS-RBEMC-III			
	WS-AIEMC-I			
3:30 pm - 4:00 pm	COFFEE BREAK			
4:00 pm - 5:30 pm	OS-PE-IV	OS-FIL-II	OS-SE-II	OS-REVERB-II
	SS-COMPL			
	WS-AIEMC-II			

8:00 am - 6:00 pm **REGISTRATION & INFORMATION**

- Location: Entrance hall

9:00 am - 2:00 pm **EXHIBITION**

- Location: Beurshal

9:00 am - 10:30 am **ORAL SESSIONS**

OS-PE-I: Oral Session on EMC for power electronics

- Location: Auditorium B
- Chair: Prof. Flavia Grassi, *Politecnico di Milano, Italy*
Prof. Stephan Frei, *TU Dortmund University, Germany*

9:00 am - 9:22 am

Application of Levenberg-Marquardt Method for Optimizing Gate Driving Signals of a DC/DC Converter to Reduce Switching Resonances

Caroline Krause, Stephan Frei

TU Dortmund University, Germany

9:22 am - 9:45 am

On the Simulation of Conducted Emission of a Flyback Converter using LTSpice

Herbert Hackl¹, Jose Romero-Lopera¹, Dietmar Klien², Mehdi Gholizadeh³, Sajjad Sadeghi³, Bernhard Auinger¹

1: *Silicon Austria Labs GmbH, Graz, Austria*; 2: *Tridonic GmbH & Co KG, Dornbirn, Austria*;
3: *Institute of Electronics, Graz University of Technology, Graz, Austria*

9:45 am - 10:07 am

A Vector Fitting Procedure for the High-Frequency Model Generation of Inductive Components

Simon Podendorf¹, Oliver Woywode², Stefan Dickmann¹

1: *Helmut Schmidt University, Germany*; 2: *Philips Medical Systems DMC GmbH, Germany*

10:07 am - 10:30 am

Aggregated EMI Prediction in 2-150 kHz using Black Box Model of Power Converters

Abduselam Hamid Beshir¹, Per Thaastrup Jensen², Dinesh Kumar³, Pooya Davari¹

1: *Aalborg University, Denmark*; 2: *FORCE Technology*; 3: *Danfoss Drives A/S*

9:00 am - 10:30 am ORAL SESSIONS

OS-AUTO-I: Oral Session on automotive EMC

- Location: Meeting room 1 + 2
- Chair: Dr. Marco Klingler, *EMC Consultant and Services, France*
Prof. Jan Hansen, *Graz University of Technology, Austria*

9:00 am - 9:22 am

Analysis of common mode noise coupling channel Between Vehicle Assembly and Ground Assembly in electric vehicle Wireless Power Transfer (WPT)

Younghun Lee, Martin Pavlovsky, Namita Vyas, Thomas Würz

Siemens AG, Germany

9:22 am - 9:45 am

Electric Vehicle Testing and Verification of Electromagnetic Noise Suppression by Signal Processing in AM Radio

Retsu Sugawara¹, Yuji Matusda¹, Jun Takahashi¹, Keji Wada²

1: Mitsubishi Electric Corporation, Japan; 2: Tokyo Metropolitan University, Japan

9:45 am - 10:07 am

Precise high-frequency impedance measurements of cylindrical battery cells for electric vehicles

Magdalena Jurcevic, Raul Bleic, Andro Broznic

Rimac Technology d.o.o., Croatia

9:00 am - 10:30 am ORAL SESSIONS

OS-PCBIC-I: Oral Session on EMC for PCB & ICs

- Location: Meeting room 6
- Chair: Prof. Mohamed Ramdani, ESEO, France
Prof. Richard Perdriau, ESEO, France

9:00 am - 9:22 am

Ionising Radiation Induced Changes in the Electromagnetic Emission of Integrated Circuits

Nikolaus Czepel, Semih Ramazanoglu, Alicja Michalowska-Forsyth, Bernd Deutschmann
Graz University of Technology, Austria

9:22 am - 9:45 am

Prediction of PCB Field Emissions in Antenna Measurements with an Accelerated Current Reconstruction Method Using Near-Field Data

Robert Nowak, Maximilian Lemke, Stephan Frei
TU Dortmund University, Germany

9:45 am - 10:07 am

Frequency Extension up to 9 GHz of the Coaxial-to-Microstrip Transition on a 4-Layer IC-level EMC Test Board

Hugo Pues, Stefan Leus, Aymen Ben Saada
Melexis, Belgium

10:07 am - 10:30 am

Analysis of Near Field Radiation at LPDDR5 DRAM with Various Operation Modes

Jun-Bae Kim, Yoo-Chang Sung, Seung- Jun Bae
Samsung Electronics, Korea, Republic of (South Korea)

9:00 am - 10:30 am SPECIAL SESSIONS

SS-RBEMC-I: Special Session on Risk Based EMC - Part 1

- Location: Auditorium A
- Chair: Dr. Anne Roc'h, Eindhoven University of Technology, The Netherlands
Prof. Davy Pissoot, KU Leuven, Belgium

9:00 am - 9:22 am

Analyzing Bit Error Propagation in Multilayer Communication Networks:
Codebook Method to Combine TMR and Hamming

Mohammad Kameli, Davy Pissoot, Tim Claeys

KU Leuven, Belgium

9:22 am - 9:45 am

Evaluation of Absorber Loading Effect on the Maximum Field Strength in an MRI
Room

Simon Rendon Velez^{1,2}, Ridvan Aba², Mark J. A. M. van Helvoort¹, Barbel van den Berg³,
Robert Vogt-Ardatjew², Frank Leferink^{1,4}

1: Philips Medical Systems / University of Twente, The Netherlands; 2: University of Twente;
3: Medish Spectrum Twente; 4: Thales

9:45 am - 10:07 am

Analyzing Electromagnetic Interference Effects in Wireless Healthcare Equipment
and Environments

Prashanth Goud Domakonda, Geon George Bastian, Marco A. Azpurua,
Mireya Fernandez-Chimeno, Ferran Silva

Polytechnic University of Catalonia · Barcelona Tech - UPC, Spain

10:07 am - 10:30 am

Application of a Framework for Finding the Performance of Sampling Strategies for
Electric Field Measurements in a Simple Scenario

Sebastian Mauricio Salas Laurens, Anne Roc'h

Eindhoven University of Technology, The Netherlands

9:00 am - 10:30 am SPECIAL SESSIONS

SS-COMPEM: Special Session on Computational electromagnetics for electromagnetic compatibility

- Location: Meeting room 4 + 5
- Chair: Prof. Herbert De Gersem, TU Darmstadt, Germany

9:00 am - 9:22 am

Advanced Numerical High-Fidelity Real-Time Dosimetry Simulations of Low-Frequency Magnetic Fields for Inductive Charging of Electric Vehicles

Steven Stroka, Norman Haussmann, Fotios Kasolis, Markus Clemens

University of Wuppertal, Germany

9:22 am - 9:45 am

Addressing Numerical Challenges for Low Frequency Shielding 3D Full-Wave Simulations: FDTD and MoM

Lirim Koraqi, Pavithrakrishnan Radhakrishnan, Tim Claeys, Johan Catrysse, Davy Pisssoort

KU Leuven, Belgium

9:45 am - 10:07 am

Black Box Simulation Approach to Predict the Harmonic Currents in a Heat Pump Unit

Alexander Magnusson¹, Madhavi Dhara², Nagapoomnima S. Murthy²

1: Bosch, Sweden; 2: Bosch, Germany

10:07 am - 10:30 am

CM-EMI Prediction for 3-Level T-Type Traction Inverters using Wideband-Kriging

Patrick Dominik Gsoels^{1,2,3}, Jose Romero Lopera¹, Akash Akash⁴, Franz Vollmaier¹, Jan Carsten Hansen^{1,2,3}

1: Silicon Austria Labs GmbH, Austria; 2: Christian Doppler Laboratory for EMC Aware Robust Electronic Systems; 3: Institute of Electronics, Graz University of Technology, Austria; 4: Dept. of Electrical Communication Engineering, Indian Institute of Science, Bangalore, India

9:00 am - 10:30 am WORKSHOP

WS-SPACE-I: Workshop on challenges for space EMC applications - Part 1

- Location: Meeting room 12
- Chair: Dr. Marc Pous, *HE Space for ESA, The Netherlands*

10:30 am - 11:00 am COFFEE BREAK

- Location: Beurshal

11:00 am - 12:30 pm ORAL SESSIONS

OS-PE-II: Oral Session on EMC for power electronics

- Location: Auditorium B
- Chair: Prof. Stefan Dickmann, *Helmut Schmidt University, Germany*
Prof. Sebastian Koj, *JADE University of Applied Sciences, Germany*

11:00 am - 11:22 am

Extraction of Noise Source Impedance of an operating high-power converter with high-EMI noises by increasing SNR using an amplifier

Dongwan Kang¹, Sangyeong Jeong^{1,3}, Hyck Su Kweon², Young Hwan Kwack², Jinguok Kim^{1,3}

1: *Ulsan National Institute of Science and Technology, South Korea*; 2: *Hyundai Mobis Co., South Korea*; 3: *EMcoretech Co., South Korea*

11:22 am - 11:45 am

Conducted Emissions of an upto 2.3 kW Interleaved SiC Buck Converter under Varied Operative Conditions

Shounak Shashishekhar Kulkarni, Marita Wendt, Sönke Brandt, Klaus F. Hoffmann, Erik Kampert, Stefan Dickmann

Helmut Schmidt University, Germany

11:45 am - 12:07 pm

Wide-Frequency Equivalent Circuit Modelling of a DC/DC Converter for Conducted Emissions

Andrea Mariscotti¹, Leonardo Sandrolini², Mattia Simonazzi²

1: *University of Genoa, Italy*; 2: *University of Bologna, Italy*

12:07 pm - 12:30 pm

Research on Modelling Method of Conducted EMI in the Electric Drive System on Motor-Load Conditions

Jin Jia^{1,2}, Xin Yong Hu¹, Xia Yin He¹, qiubo Chen¹, Xing Wu³, Yun Long²

1: Chongqing University of Technology, China; 2: Chongqing TSARI-CQUT institute of intelligent Automotive Technology, China; 3: Chongqing Qingshan Industrial Co., Ltd.

11:00 am - 12:30 pm ORAL SESSIONS

OS-AUTO-II: Oral Session on automotive EMC

- Location: Meeting room 1 + 2
- Chair: Prof. Mauro Feliziani, Università degli Studi dell'Aquila, Italy
Dr. Marco Klingler, EMC Consultant and Services, France

11:00 am - 11:22 am

Research on Electromagnetic Immunity Test Method of Vehicle ADAS functions

Jin Jia², Kai Sheng¹, Lei Wan¹, Yan ming Qing³, Bo nian Zhang³, Fa kun Chen⁴

1: Chongqing University of Technology; 2: Chongqing TSARI-CQUT institute of intelligent Automotive Technology; 3: China Merchants Testing Vehicle Technology Research Institute Co; 4: Shen zhen Innova Tech Technology Co

11:22 am - 11:45 am

Passive and Active Cancellation Loops for Magnetic Field Mitigation in SAE J2954 WPT Systems

Silvano Cruciani¹, Tommaso Campi², Francesca Maradei², Mauro Feliziani³

1: Tor Vergata University of Rome, Rome, Italy; 2: Sapienza University of Rome, Italy; 3: University of L'Aquila

11:45 am - 12:07 pm

Improvement Method using Complex Baseband Signals against False Detection caused by Electromagnetic Noise in FMCW Radar

Yusuke Kitsukawa, Takahiro Horiguchi, Noriyuki Fukui, Eiji Taniguchi

Mitsubishielectric corporation, Japan

12:07 pm - 12:30 pm

Determination of Induced Antenna Voltage for DC-AC Converter on Electric Vehicles at High Frequencies

Ryota Morimoto, Takuma Matsuda, Hiroto Mizutani

Toyota Motor Corporation, Japan

11:00 am - 12:30 pm ORAL SESSIONS

OS-COMPEM: Oral Session on Computational electromagnetics

- Location: Meeting room 4 + 5
- Chair: Dr. Mathias Magdowski, Otto von Guericke University, Germany
Prof. Giulio Antonini, University of L'Aquila, Italy

11:00 am - 11:22 am

MODALF NG: a new simulator to overcome the growing challenges of railway lines modelling

Habib Osmani, Achraf Dsoul, Hamid Tavassoli-Estahbanati, Juan Jose Munoz Vargas

SNCF Reseau, France

11:22 am - 11:45 am

Extended Capabilities of PEEC-based Approach for the Modelling and Design of Common-Mode Chokes

Diana Eremyan, Anna Gheonjian, Zviadi Kut Chadze, Roman Jobava

EMCoS LLC, Georgia

11:45 am - 12:07 pm

A Hybrid Data Generation Approach for the Development of an AI-based EMC Interference Recognition Method

Sven Lange¹, Marcel Olbrich², Dennis Hemker³, Jad Maalouly³, Jürgen Kutter⁴, Dominik Schröder¹, Christian Hedayat¹, Michael Kleinen², Andreas Grünwaldt², Jörg Bärenfänger², Harald Mathis³, Harald Kuhn¹

1: Fraunhofer ENAS, Paderborn, Germany; 2: EMC Test NRW GmbH, Dortmund, Germany; 3: Fraunhofer FIT, Hamm, Germany; 4: InnoZent OWL e.V., Paderborn, Germany

12:07 pm - 12:30 pm

Importance of Interface Variables for Closed-Loop Circuit EMC Co-Simulation Using WR Method

Md Moktarul Alam^{1,2}, Richard Perdriau^{1,3}, Mohamed Ramdani^{1,3}, Mohsen Koohestani^{1,3}

1: ESEO, France; 2: INSA, University of Rennes; 3: IETR, University of Rennes

11:00 am - 12:30 pm ORAL SESSIONS

OS-PCBIC-II: Oral Session on EMC for PCB & ICs

- Location: Meeting room 6
- Chair: Dr. Renaud Gillon, SYDELITY b.v., Belgium
Dr. Carlo Olivieri, University of L'Aquila, Italy

11:00 am - 11:22 am

Study of the Multifrequency Susceptibility of Operational Amplifiers

Alexandre Boyer, Fabrice Caigner

LAAS-CNRS, France

11:22 am - 11:45 am

Electromagnetic Immunity of the Overtemperature Protection of Smart Power High Side Switches

Daniel Kircher¹, Cristian Ionascu², Bernd Deutschmann¹

1: Graz University of Technology, Austria; 2: Infineon Technologies Austria AG

11:45 am - 12:07 pm

Analysis of Interconnects Routed Under PMC Based Heat Sinks

Volkan Yayla¹, Muhammet Hilmi Nisanci², Baha Kanberoglu², Francesco de Paulis³

1: Kutahya Dumlupinar University, Turkiye; 2: Sakarya University, Turkiye;
3: University of L'Aquila, Italy

12:07 pm - 12:30 pm

Ionising Radiation Induced Changes in the Electromagnetic Emission of Integrated Circuits

Nikolaus Czepl, Semih Ramazanoglu, Alicja Michalowska-Forsyth, Bernd Deutschmann
Graz University of Technology, Austria

11:00 am - 12:30 pm SPECIAL SESSIONS

SS-RBEMC-II: Special Session on Risk Based EMC - Part 2

- Location: Auditorium A
- Chair: Dr. Anne Roc'h, Eindhoven University of Technology, The Netherlands
Prof. Davy Pisssoort, KU Leuven, Belgium

11:00 am - 11:22 am

Empirical validation of signal predistortion for nonlinear distortion mitigation in RF Amplifiers

Nathalia A. Rocha Batista, Marcos Quílez, Ferran Silva, Mireya Fernandez Chimeno
Universitat Politècnica de Catalunya, Spain

11:22 am - 11:45 am

EMI Risk Management: Leveraging EMC Assurance Cases and the Goal Structuring Notation for Effective Shielding

Laure Buysse, Pavithrkrishnan Radhakrishnan, Vikas Ghatge, Johan Catrysse, Davy Pisssoort
KU Leuven, Belgium

11:45 am - 12:07 pm

Markov Decision Processes to Model Decision-making in Harsh Electromagnetic Environments

Miriam Gonzalez-Atienza¹, Dries Vanoost¹, Mathias Verbeke^{2,3}, Davy Pisssoort¹

1: ESAT-WaveCore, M-Group, KU Leuven, Bruges Campus; 2: Declarative Languages and Artificial Intelligence (DTA), M-Group, KU Leuven, Bruges Campus; 3: Flanders Make@KU Leuven, Belgium

11:00 am - 12:30 pm WORKSHOP

WS-SPACE-II: Workshop on challenges for space EMC applications - Part 2

- Location: Meeting room 12
- Chair: Dr. Marc Pous, HE Space for ESA, The Netherlands

12:30 pm - 2:00 pm **LUNCH**

- Location: Beurshal

1:00 pm - 2:00 pm M-EMCS

IEEE EMC-Society Chapter Representatives meeting

- Location: Meeting room 12
- Private meeting for representatives of the IEEE EMC-Society Chapters

1:00 pm - 2:00 pm M-PATTERN

Meeting PATTERN Consortium

- Location: Meeting room 4 + 5
- Private meeting for the PATTERN Consortium

1:00 pm - 2:00 pm POSTER SESSION

PS-3: Poster Session III

- Location: Foyer first floor

Common-Mode Impedance of an Electric Motor and the Impact of Material and Geometry Uncertainties

Simon Stenmark¹, Thomas Rylander¹, Matthys M Botha², Jan Carlsson³

1: Chalmers University of Technology, Sweden; 2: Stellenbosch University, South Africa;
3: Provinn AB, Sweden

Summary of studies on ESD-induced conducted immunity test methods for spacecraft equipment and implementation into the EMC test requirements

Toru Kasai¹, Toshio Onigata²

1: Japan Aerospace Exploration Agency, Japan; 2: e-OHTAMA, LTD., Japan

Improved Determination of the Electric Field in Radiated IEMI Tests with EMP and UWB Signals

Unai Aizpurua, Erik Kampert, Stefan Dickmann

Helmut-Schmidt-University/University of the German Federal Armed Forces Hamburg, Germany

Separating Sections of a Research Facility to Minimize the Spread of EMI

Lars Weberg

Combitech, Sweden

AI-tailored Slew-rate Gate Drive Scheme for Low Emission Multilevel Inverter

Raik Orbay, [Georgios Mademlis](#), Kooros Moabber, Subramanian Ganesh, Harsh Srivastava, Joachim Härsjö, Divyaraj Gadhavi

Volvo Cars, Sweden

A Novel De-embedding Method Based on Artificial Neural Network

[Siyao Tang](#), Xingchang Wei, Di Wang

Zhejiang University, People's Republic of China

Primary Frequency Control for Wind Power Plant using Battery Energy Storage System

[Hamza Feza Carlak](#)¹, Ergin Kayar²

1: Akdeniz University, Turkiye; 2: Western Mediterranean Load Dispatch Directory TEİAŞ

Reciprocal Influence of Supply and Demand Quality in Remote Off-grid Systems

[Ilman Sulaeman](#)¹, Niek Moonen¹, Jelena Popović¹, Frank Leferink^{1,2}

1: University of Twente, Enschede, the Netherlands; 2: Thales Nederland B.V., Hengelo, the Netherlands

Modeling by Non-uniform Transmission Lines of Grounding Electrodes under Lightning Currents

Ahmed Boutadjine, [Bachir Nekhoul](#)

University of Jijel, Algeria

Experimental Characterization of Polarization Effects on Antenna Measurement Near Structures

Rheyuniarto Sahleendar Asthan^{1,2}, Trasma Yunita^{1,3}, [Achmad Munir](#)¹

1: Radio Telecommunication and Microwave Laboratory, School of Electrical Engineering and Informatics, Institut Teknologi Bandung, Indonesia; 2: Department of Electrical Engineering, Institut Teknologi Sumatera, Indonesia; 3: School of Electrical Engineering, Telkom University, Indonesia

EMI Reduction for Enhancing Measurement Performance of EM Wave Absorber Using Horn Antennas

Budi Syihabuddin^{1,2}, Levy Olivia Nur¹, Mohammad Ridwan Effendi², [Achmad Munir](#)²

1: School of Electrical Engineering, Telkom University, Indonesia; 2: Radio Telecomm. & Microwave Lab., School of Electrical Eng. & Informatics, Institut Teknologi Bandung, Indonesia

Heaters Magnetic emissions control on Navigation satellites

Marta Saporito, Ilario Marziali, Marco Nicoletto, Mauro Tosti, [Emiliano Scione](#)

Thales Alenia Space, Italy

Computational RF Dosimetry of Rodents Cohorts in a Realistic Reverberation Chambers at 900 MHz

Antonio Faraone¹, Giorgi Bit-Babik¹, Paola Russo², Alfredo De Leo², Valter Mariani Primiani², Valerio De Santis³

1: Motorola Solutions Inc., Fort Lauderdale, Florida, USA; 2: Università Politecnica delle Marche, Italy; 3: University of L'Aquila, Italy

2:00 pm - 3:30 pm ORAL SESSIONS

OS-PE-III: Oral Session on EMC for power electronics

- Location: Auditorium B
- Chair: Prof. Sebastian Koj, JADE University of Applied Sciences, Germany
Prof. Stephan Frei, TU Dortmund University, Germany

2:00 pm - 2:22 pm

Modelling Asymmetry and Mode Conversion in Common-Mode Chokes

Pablo Ruiz-Morales¹, Joaquín Bernal- Méndez¹, María A. Martín-Prats²

1: Dpt. Applied Physics III, Universidad de Sevilla, Spain; 2: Dpt. Electronics Engineering, Universidad de Sevilla, Spain

2:22 pm - 2:45 pm

Predicting the electromagnetic characteristics of an unknown antenna using noisy or phaseless sparse data

Dae-Young Hwang, Ki-Tae Park, Jae- Wook Lee, Jung-Hoon Han

Korea Aerospace University, Korea, Republic of (South Korea)

2:45 pm - 3:07 pm

Resonance Mode Analysis on Conducted Emissions of an Inverting Buck-Boost Converter

Ko Odreitz, Markus Musil, Bernd Deutschmann

Graz University of Technology, Austria

3:07 pm - 3:30 pm

Measurement procedure to generate a GaN power transistor surrogate model at GHz frequencies

Jan Pascal Henninger^{1,2}, Jan Carsten Hansen^{1,2,3}, David Johannes Pommerenke^{1,2}

1: Technical University Graz, Austria; 2: Christian Doppler Laboratory for EMC Aware Robust Electronic Systems; 3: Silicon Austria Labs, Graz, Austria

2:00 pm - 3:30 pm ORAL SESSIONS

OS-FIL-I: Oral Session on filtering

- Location: Meeting room 1 + 2
- Chair: Prof. Flavia Grassi, Politecnico di Milano, Spain
Dr. Niek Moonen, University of Twente, The Netherlands

2:00 pm - 2:22 pm

Calculation and Distribution of Losses in EMC Filters in the High-Voltage Power Train for an Electric Vehicle

Lennart P. P. B. Bohl¹, Guido A. Rasek², Thomas Stöhr², Cheng Yang¹, Christian Schuster¹

1: Institut für Theoretische Elektrotechnik, Hamburg University of Technology, Hamburg, Germany;
2: EMC Architecture PEM PTS, Valeo eAutomotive Germany GmbH, Erlangen, Germany

2:22 pm - 2:45 pm

Multichannel EMI Filter Performance Assessment by Mix Mode Injection

Patrick Koch¹, Daria Nemashkalo¹, Niek Moonen¹, Frank Leferink^{1,2}

1: University of Twente, The Netherlands; 2: Thales Nederland, The Netherlands

2:45 pm - 3:07 pm

Effect of EMI filter improvement techniques on conducted emissions in a 48-12 DC-DC converter

Álvaro Ojeda-Rodríguez, Joaquín Bernal- Méndez, María A. Martín-Prats

University of Seville, Spain

3:07 pm - 3:30 pm

Comparative Analysis of Various Magnetic Cores for Current Sensing in Active EMI Filters

Faryal Baig^{1,2}, Guido Rasek¹, Georg Möhlenkamp²

1: Valeo eAutomotive Germany GmbH, Erlangen, Germany; 2: Brandenburgische Technische Universität Cottbus-Senftenberg, Germany

2:00 pm - 3:30 pm ORAL SESSIONS

OS-SE-I: Oral Session on shielding effectiveness

- Location: Meeting room 4 + 5
- Chair: Prof. Andy Marvin, *University of York, United Kingdom*
Prof. Johan Catrysse, *KU Leuven, Campus Brugge, Belgium*

2:00 pm - 2:22 pm

Shielding Effectiveness of a Thin Conductive Perforated Foil for Satellite Applications

Federico Cozzolino^{1,2}, Alessio Tamburrano^{1,2}, Fabrizio Marra^{1,2}, Marco Fortunato^{1,2}, Frederic Lescoat³, Mireya Joya Villanua³, Maria Sabrina Sarto^{1,2}

1: Dept. of Astronautical, Electrical and Energy Engineering (DIAEE), Sapienza University of Rome, Rome, Italy; 2: Research Center for Nanotechnology applied to Engineering (CNIS), Rome, Italy; 3: Airbus Defence and Space SAS, Toulouse, France

2:22 pm - 2:45 pm

Investigating the EMI Shielding Effectiveness of Sustainable Biochar-Based Composites for 5G and 6G Mid- Band Applications

Anargyros Baklezos¹, Dimitrios Kalderis¹, Ioannis Vardiambasis¹, Panagiotis Papastamatis², Christos Nikolopoulos¹

1: Dept. of Electronic Engineering, Hellenic Mediterranean University, Chania, Greece; 2: ECE, National Technical University of Athens, Zografou, Greece

2:45 pm - 3:07 pm

Comparing the Four-Antenna and Two-Antenna Methods for Shielding Effectiveness Characterisation in a Double Reverberation Chamber

Laura De Baets, Davy Pisssoort, Tim Claeys

KU Leuven, Belgium

3:07 pm - 3:30 pm

Optimal Design of Microwave Absorbers Based on High-Impedance Surfaces

Federico Cozzolino, Alessandro Giuseppe D'Aloia, Marcello D'Amore, Maria Sabrina Sarto

Sapienza University of Rome, Italy

2:00 pm - 3:30 pm ORAL SESSIONS

OS-HPEM: Oral Session on high power electromagnetics

- Location: Meeting room 6
- Chair: Prof. Frank Sabath, WIS, Germany

2:00 pm - 2:22 pm

A kind of high-rEp and high pulse-repetition-rate ultra-wideband radiation system
Puqing Zhang, Yu Yang, Kaiyuan Zhu, Bohao Zhang, Yangxin Qiu, Shaofei Wang, Yanzhao Xie
Xi'an Jiaotong University, People's Republic of China

2:22 pm - 2:45 pm

Fundamental Study on Method of Generating Compressed Air by Utilizing
the Electromagnetic Force Caused by Lightning Surge Currents
Atsushi Nagao, Yumiko Yamashita, Toshihisa Masuda, Naomichi Nakamura, Takashi Ikeda
NTT Space Environment and Energy Laboratories, Japan

2:45 pm - 3:07 pm

Surges Induced in Secondary Circuits Due to Very-Fast Transients in Primary Circuits:
Experimental Study Using a Test Platform
Daiki Tashiro, Akiyoshi Tatematsu, Norito Yoshizaki
Central Research Institute of Electric Power Industry, Japan

3:07 pm - 3:30 pm

Direct lightning of a compact overhead distribution line with covered conductors and
periodic grounding
FErika Stracqualursi¹, Gianfranco Di Lorenzo¹, José Brandao Faria², Rodolfo Araneo¹
1: Sapienza University of Rome, Italy; 2: Instituto de Telecomunicacoes, Instituto Superior Tecnico
– Universidade de Lisboa, Portugal

2:00 pm - 3:30 pm SPECIAL SESSIONS

SS-RBEMC-III: Special Session on Risk Based EMC - Part 3

- Location: Auditorium A
- Chair: Dr. Anne Roc'h, Eindhoven University of Technology, The Netherlands
Prof. Davy Pissoot, KU Leuven, Belgium

2:00 pm - 2:22 pm

Assessment of Different Scenarios on Input Impedance of a Thin Wire

Mohammad Khorramizadeh, Laurens A. Bronckers, Anne Roc'h
Eindhoven University of Technology, The Netherlands

2:22 pm - 2:45 pm

Assessing the Response Time of a Frequency-Selective EMD Detector

Xinting Xue¹, Tim Claeys¹, Robert Vogt- Ardatjew², Davy Pissoot¹
1: KU Leuven, Belgium; 2: University of Twente, the Netherlands

2:45 pm - 3:07 pm

Electromagnetic Interference Reduction in Mixed Electrical Class Modules based Host Systems

Tabish Mahfooz Ahmad¹, Przemyslaw Misiewicz¹, Jean-Paul M. G. Linnartz²,
Ramiro Serra²

1: Signify Research, The Netherlands; 2: Electrical Engineering, Eindhoven University of Technology

3:07 pm - 3:30 pm

Development of an ESD Risk Evaluation Method for SSD Installation in Host Systems

Heesu Kim, Nam-su Kim, Youngmin Ku, Chunghyun Ryu, Junsik Park
Samsung Electronics, Korea, Republic of (South Korea)

2:00 pm - 3:30 pm WORKSHOP

WS-AIEMC-I: Workshop on AI/ML for EMI Simulation and Troubleshooting Applications

- Location: Meeting room 12
- Chair: Prof. Mohamed Kheir, SDU, Denmark

3:30 pm - 4:00 pm

COFFEE BREAK

- Location: Catering area 4th floor

4:00 pm - 5:30 pm

ORAL SESSIONS

OS-PE-IV: Oral Session on EMC for power electronics

- Location: Auditorium B
- Chair: Prof. David Thomas, *The University of Nottingham, United Kingdom*
Dr. Tom Hartman, *University of Twente, The Netherlands*

4:00 pm - 4:22 pm

An EMC-Investigation on Dead Time Distortion of SiC Based Half Bridge LLC Resonant Inverter

Manikandan Sankar, Simon Podendorf, Klaus F. Hoffmann, Stefan Dickmann
Helmut-Schmidt-University, Hamburg, Germany

4:22 pm - 4:45 pm

A Differential-Mode and Common-Mode DC-Bias VNA Measurement Setup for Power 4-Port Devices

Christoph Maier^{1,2}, Andree Scambor^{1,2}, David Prutej^{1,2}

1: *Christian Doppler Laboratory for Technology Guided Electronic Component Design and Characterisation*; 2: *Institute of Microwave and Photonic Engineering, Graz University of Technology, Austria*

4:45 pm - 5:07 pm

IGBT's Ageing and its Impacts on the EM Conducted Emissions

Evan Dimech¹, John Fredrick Dawson²

1: *University of Malta, Malta*; 2: *The University of York, UK*

5:07 pm - 5:30 pm

Study on Operation Disturbance Characteristics of Three-phase Common Box GIS Switch and Its Influence on Secondary Cable

Weidong Zhang, Dingding Yao, Guangxiao Luo, Guoqing Zhang, Fanzhong Mu, Hongjun Min, Guanglong Zhou

North China Electric Power University, People's Republic of China

4:00 pm - 5:30 pm ORAL SESSIONS

OS-FIL-II: Oral Session on filtering

- Location: Meeting room 1 + 2
- Chair: Prof. Flavia Grassi, Politecnico di Milano, Italy

4:00 pm - 4:22 pm

Design of a High-Voltage EMI Filter Using Virtual Reality

Jan Eberl, Jan Hansen

Graz University of Technology, Austria

4:22 pm - 4:45 pm

Comparison of FIR Filter Lengths and Adaptation Methods in Digital Active EMI Filters based on Delay-Compensated Digital Gate Control Signals

Maximilian Lemke, Tobias Dörlemann, Robert Nowak, Jens Aigner, Stephan Frei

TU Dortmund University, Germany

4:45 pm - 5:07 pm

Monte Carlo Uncertainty Tensorial-Analysis-of-Networks of EMI Filter with Lumped Component Parasitic Effect Variability

Blaise Ravelo¹, Fabrice Marty², Sébastien Lalléchère³

1: Nanjing University of Information Science & Technology (NUIST), People's Republic of China; 2: AFSCET, Paris, France; 3: Safran Tech, Paris-Saclay, France

5:07 pm - 5:30 pm

Broadband Circuit Model of Common Mode Chokes for EMI pre-compliance assessment

Antonio Camarda¹, Flavio Calvano¹, Stefano Righi^{2,3}, Luca Dossi³, Luca Vincetti², Alessandro Tacchini^{2,3}

1: Ansys, Italy; 2: Modena and Reggio Emilia university; 3: Metasystem s.p.a.

4:00 pm - 5:30 pm ORAL SESSIONS

OS-SE-II: Oral Session on shielding effectiveness

- Location: Meeting room 4 + 5
- Chair: Prof. Davy Pissoot, KU Leuven, Belgium
Prof. Andy Marvin, University of York, United Kingdom

4:00 pm - 4:22 pm

Sensitivity Enhancement of a Non- Invasive Shielding Effectiveness Measurement Method in Reverberation Chambers

Philippe Besnier, Jérôme Sol, François Sarrazin

Univ Rennes, INSA Rennes, CNRS, IETR UMR 6164

4:22 pm - 4:45 pm

Modeling and Prevention of Electromagnetic Leakage Scenarios in Automotive EMC Shielding

Bálint Pintér¹, Márk Csörnyei², Róbert Orvai¹

1: Budapest University of Technology and Economics, Hungary; 2: Robert Bosch Kft.

4:45 pm - 5:07 pm

Studying the impact of shielding cabinet dimensions on cavity resonance

Pedro A. Martinez¹, Victor Solera¹, Victor Martinez², Roberto Herraiz¹, Antonio Alcarria², Andrea Amaro¹, Jose Torres¹, Adrian Suarez¹

1: Department of Electronic Engineering, University of Valencia, Spain; 2: EMC Shielding & Grounding Team, Würth Elektronik eiSos, Germany

5:07 pm - 5:30 pm

Effect of Corrosion on Electromagnetic Reliability for the High-Voltage Shield Cable of Electrification Vehicles

Hae Lyong Kim¹, Byung Su Kim², Jae Sang Yoon¹, Hyo Sung Kim¹, Sung Sik Kong², Beom Jin Choi¹, Seung Ho Ahn², Hee Hoon Yi²

1: Korea Automotive Technology Institute, EM Environment R&D Department, Republic of Korea; 2: Hyundai Mortor R&D Center, Republic of Korea

4:00 pm - 5:30 pm ORAL SESSIONS

OS-REVERB-II: Oral Session on reverberation chambers

- Location: Auditorium A
- Chair: Prof. Frank Leferink, *University of Twente - THALES, The Netherlands*
Dr. Ramiro Serra, *Eindhoven University of Technology, The Netherlands*

4:00 pm - 4:22 pm

Rician K Factor Fluctuation in Reverberation Chambers

Alfredo De Leo, Paola Russo, Valter Mariani Primiani

Università Politecnica Marche, Italy

4:22 pm - 4:45 pm

Acceleration of Mirror Image Method Using 3D Poisson Summation Approach for Solving Antenna Problems in a Stirred Reverberation Chamber

Faik G. Bogdanov, Irina Chochia, David Karkashadze, Roman Jobava

EMCoS LLC, Georgia

4:45 pm - 5:07 pm

Analysis of Radiating Structure Input Impedance in Reverberation Chambers

Alfredo De Leo, Valter Mariani Primiani

Università Politecnica Marche, Italy

5:07 pm - 5:30 pm

Exploring the Effects of Time Constants on Short Pulse Testing in Electromagnetic Reverberation Chambers

Alan Aliyali, Mattias Elfsberg, Tomas Hurtig, Frans Nyberg, Pablo Vallejos

FOI (Swedish Defence Research Agency), Sweden

4:00 pm - 5:30 pm SPECIAL SESSIONS

SS-COMPL: Special Session on EMC Diagnostics of Complex Systems

- Location: Meeting room 6
- Chair: Dr. Vladimir Mordachev, *Belarusian State University of Informatics and Radioelectronics, Belarus*
Prof. Eugene Sinkevich, *Belarusian State University of Informatics and Radioelectronics, Belarus*

4:00 pm - 4:22 pm

Double-Frequency-Testing-Based Models of 5G FR1 Amplifier Nonlinearity for Rapid Simulation of EMI

Eugene Sinkevich¹, Vladimir Mordachev¹, Dzmitry Tsyankenka¹, Fayu Wan², Ivan Shakinka¹, Arthur Dubovik¹

1: *Belarusian State University of Informatics and Radioelectronics, Belarus*; 2: *Nanjing University of Information Science and Technology, China*

4:22 pm - 4:45 pm

Feasibility analysis of hybrid sharing the upper 6 GHz band between 5G NR networks and Wi-Fi devices

Alexander Pastukh¹, Valery Tikhvinskiy², Evgeny Devyatkin¹

1: *Institute of Radio and Information Systems, Austria*; 2: *International Information Technology University, Kazakhstan*

4:45 pm - 5:07 pm

Models for Evaluating the Shielding Properties of Products Made of Composites

Dzmitry Tsyankenka¹, Eugene Sinkevich¹, Wen-Qing Guo²

1: *Belarusian State University of Informatics and Radioelectronics, Belarus*;
2: *North-China Electromagnetic Protection Research Institute, Taiyuan, China*

5:07 pm - 5:30 pm

Characteristics of Electromagnetic Environment created by Communication Low Earth Orbit Satellite Systems Near the Earth's Surface

Vladimir Mordachev, Dzmitry Tsyankenka, Aliaksandr Svistunou

Belarusian State University of Informatics and Radioelectronics, Belarus

4:00 pm - 5:30 pm WORKSHOPS

WS-AIEMC-II: Workshop on AI/ML for EMI Simulation and Troubleshooting Applications

- Location: Meeting room 12
- Chair: Prof. Mohamed Kheir, SDU, Denmark



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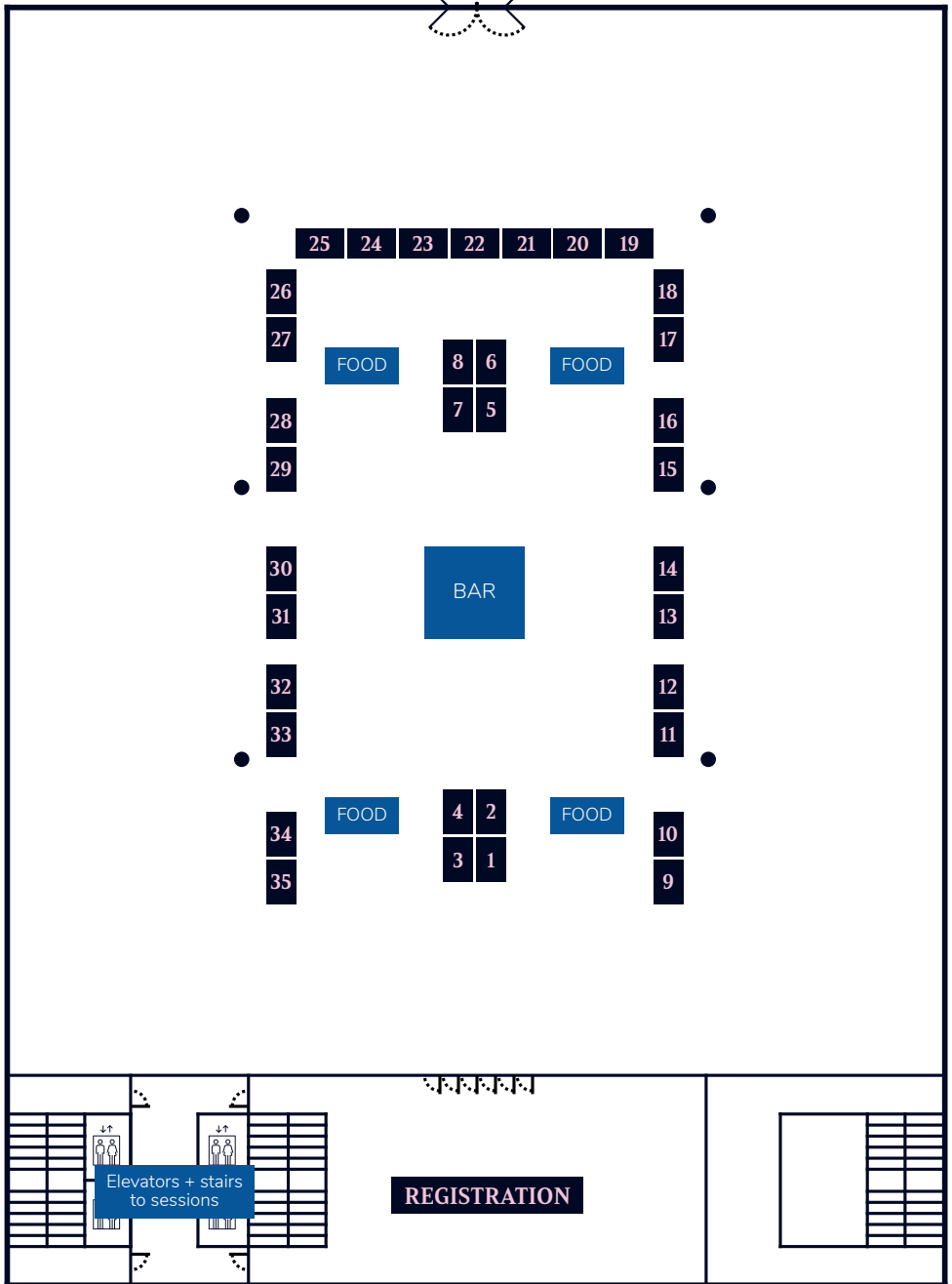


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