Thursday, 8 September

Oral Sessions

Date: Thursday, 08/Sept/2022

9:00am - 10:20am	**OS-09: ESD** Location: **G1**	**OS-13A: Computational electromagnetics** Location: **G2**	**OS-15: Automotive** Location: **G3**
10:20am - 10:50am	**F-04A: Coffe break** Location: **Exhibition Area**		
10:50am - 12:10pm	**OS-10: Lightning** Location: **G1**	**OS-13B: Computational electromagnetics** Location: **G2**	**OS-16: Electric vehicles** Location: **G3**
12:30pm - 2:30pm	**L-04: Lunch break** Location: **Restaurant Area**		
2:30pm - 3:50pm	**OS-11: EMP** Location: **G1**	**OS-13C: Computational electromagnetics** Location: **G2**	**OS-17: EMC in automotive, aircraft and space applications** Location: **G3**
3:50pm - 4:20pm	**F-04B: Coffe break** Location: **Exhibition Area**		
4:20pm - 5:40pm	**OS-12: Advanced materials and harmonic distortion** Location: **G1**	**OS-14: Power Electronics** Location: **G2**	**OS-18: EMF, EMI and VSWR measurements** Location: **G3**

Session

OS-09: ESD

Time: *Location:* **G1**

Thursday, 08/Sept/2022:
9:00am - 10:20am

Presentations

A fast and efficient Model Extraction Method to predict the Transient Response of ESD Protection Devices

François Ruffat[1], Fabrice Caignet[1], Alexandre Boyer[1], Fabien Escudié[2], Guillaume Mejecaze[2], Frédéric Puybaret[2]
[1]LAAS-CNRS, France; [2]CEA-Gramat, France

Wearable ESD Occurrence Rate Detection with Voltage Level Estimation

Gabriel Fellner[1], David Johannes Pommerenke[1,2], Seyed Mostafa Mousavi[1], Amin Pak[1,2], Matthias Wintersteller[1], Christoph Koger[1], Satyajeet Shinde[3], Michael Hillstrom[3]
[1]Graz University of Technology, Austria; [2]SAL GEMC lab, Austria; [3]Apple Inc., Cupertino, USA

Quantification of ESD Pulses Caused by Collision of Objects

Gabriel Fellner[1], Amin Pak[1,2], Seyed Mostafa Mousavi[1], Christoph Koger[1], Ali Khorrami[3], David Pommerenke[1,2]
[1]Graz University of Technology, Austria; [2]SAL, Austria; [3]Apple Inc.

A Comparative Study on The Effects of PCB Traces, External Components and Hot-Plug Protection Architectures During DPI Simulations on BMS IC With a Predictive Analytical Model

Badr Guendouz[1,3], Kamel Abouda[2], Alexandre Boyer[3], Sonia Ben Dhia[3], Hiba Mediouni[2], Jérôme Dietsch[4]
[1]BMS/EMC-ESD Team, NXP Semiconductors, France, LAAS-CNRS,Univ. de Toulouse, INSA, UPS, LAAS; [2]BMS/EMC-ESD Teams, NXP Semiconductors, France; [3]LAAS-CNRS,Univ. de Toulouse, INSA, UPS, LAAS; [4]BMS/System Architecture team, NXP Semiconductors, France

Session

OS-13A: Computational electromagnetics

Time: *Location:* **G2**

Thursday, 08/Sept/2022:
9:00am - 10:20am

Presentations

Conformal FDTD Simulation of Vibrating Intrinsic Reverberation Chambers

Florian MAHIDDINI, Guillaume ANDRIEU, Christophe GUIFFAUT, Nicolas BUI
XLIM, France

Exact-Kernel Thin-Wire MoM with Geometric Representation by Bézier Curves

Thomas Rylander[1], Matthys M. Botha[2]
[1]Chalmers University of Technology, Sweden; [2]Stellenbosch University

On the Decoupling of Integrals in the Surface PEEC Method

Maria De Lauretis[1], Elena Haller[2], Daniele Romano[3], Giulio Antonini[3], Jonas Ekman[1], Ivana Kovacevic-Badstubner[4], Ulrike Grossner[4]
[1]Luleå Univerisity of Technology, Sweden; [2]Halmstad University, Sweden; [3]University of L'Aquila, Italy; [4]ETH Zurich, Switzerland

Suppression of Power-Bus Resonance and Unintentional Radiation by Lossy Resonator Filter

Sho Kanao, Shuhei Kodama, Kengo Iokibe, Yoshitaka Toyota
Okayama University, Japan

Session

OS-15: Automotive

Time: *Location:* **G3**

Thursday, 08/Sept/2022:
9:00am - 10:20am

Presentations

Opportunities for Intentional Interference with Automotive Radars Using Commercial Sensors

Alastair Ruddle, Douglas Ruddle, Jaspal Singh, Richard Blachford
HORIBA MIRA Limited, United Kingdom

Analys is of the Power Coupling Between an Antenna and a Device Under Test in a MSRC to Replace On-board Immunity Tests of Automotive Equipment

BULE MBO Clovis[1,2], KLINGLER Marco[1], PICHON Lionel[2], BENSETTI Mohamed[2]
[1]Stellantis, Centre technique de Vélizy, route de Gisy, 78943 Vélizy-Villacoublay; [2]Université Paris-Saclay, CentraleSupélec, CNRS, Laboratoire de Génie Electrique et Electronique de Paris, 91192, Gif-sur-Yvette, France. Sorbonne Université, CNRS, Laboratoire de Génie Electrique et Electronique de Paris, 75252, Paris, France.

Analytical Method to Estimate Radiated Magnetic Field Emissions in Automotive Electric Drives

Madhavi Dhara, Guido A. Rasek
Valeo Siemens eAutomotive Germany GmbH, Germany

Integrated EMI Detector as Essential Safety Mechanism in Automotive Sensor Applications

Dieter Joos
onsemi, Belgium

Session

OS-10: Lightning

Time: *Location:* **G1**

Thursday, 08/Sept/2022:
10:50am - 12:10pm

Presentations

Distribution of the current from lightning in Sweden

Rebecca Persson[1], Per Westerlund[2], Mahbubur Rahman[1], Milan Radosavljevic[3], Stefan Ståhl[4]
[1]Uppsala University; [2]Luleå University of Technology; [3]Svenska kraftnät; [4]SMHI

Impact of IEMI pulses on a barometric sensor

Louis Cesbron Lavau[1], Michael Suhrke[1], Peter Knott[2,3]
[1]Fraunhofer INT, Germany; [2]Fraunhofer FHR, Germany; [3]RWTH Aachen, Germany

Effects of EMC filter topologies on the destruction senarios of SMPS under high current interference pulses

Laurine CUROS[1,2], Guillaume MEJECAZE[1], Tristan DUBOIS[2], Frédéric PUYBARET[1], Jean-Michel VINASSA[2]
[1]CEA, DAM, CEA-Gramat; [2]Univ. Bordeaux, CNRS, Bordeaux INP, IMS UMR 5218

New Probe Design for Hardware Characterization by ElectroMagnetic Fault Injection

Clément Gaine[1], Driss Aboulkassimi[1], Jean-Pierre Nikolovski[1], Jean-Max Dutertre[2]
[1]Univ. Grenoble Alpes, CEA, LETI, MINATEC Campus, F-38054 Grenoble, France; [2]Mines Saint-Etienne, CEA-Tech, Centre CMP, F-13541 Gardanne France

Session

OS-13B: Computational electromagnetics

Time: *Location:* **G2**

Thursday, 08/Sept/2022:
10:50am - 12:10pm

Presentations

Co-simulation of Circuit/Circuit type Solvers for EMC Applications Using a New Relaxation Method

Amadou Bayaghiou DIALLO[1,2], Christian VOLLAIRE[1], Mohamed BENSETTI[2], Lionel PICHON[2], Arnaud BREARD[1]
[1]Univ Lyon, Ecole Centrale de Lyon, INSA Lyon, Université Claude Bernard Lyon 1, CNRS, Ampère, UMR 5005, Ecully, France; [2]GeePs – Group of electrical engineering - Paris, UMR CNRS 8507, CentraleSupélec, Université Paris-Saclay, Sorbonne Université, 3 & 11 rue Joliot-Curie, Plateau de Moulon 91192 Gif-sur-Yvette, France

Measurement-Based Modeling of PCB-to-Coaxial Cable Transition for 3D Electromagnetic Simulation by Equivalent Circuit Assisted De-Embedding

Herbert Hackl[1], Bernhard Auinger[1], Mate Kovacs[2], Andreas Wagner[2], Christian Stockreiter[2]
[1]Silicon Austria Labs GmbH, Austria; [2]ams osram group, Austria

Density-based Topology Optimization for Conductor Pattern Design with Improved Impedance Boundary Condition

Katsuya Nomura
Kwansei Gakuin University, Japan

Accelerated Modal Network Synthesis for Arbitrary Interconnection Structures Through a Model-Order Reduction by a Static-Mode Extraction

Hannes Schreiber, Marco Leone
Otto-von-Guericke University Magdeburg, Germany

Session

OS-16: Electric vehicles

Time: *Location:* **G3**

Thursday, 08/Sept/2022:
10:50am - 12:10pm

Presentations

Investigation of Ground Impedances effecting EMC during Charging Operations of Electric Vehicles

Inti Runa Supa Stölben[1], Jonas Bertelmann[1], Michael Beltle[1], Stefan Tenbohlen[1], Christian Bersch[2], Konstantin Spanos[2]
[1]University of Stuttgart, Germany; [2]Robert Bosch GmbH, Germany

Experimental Investigation on Magnetic Field Emissions of Wireless Power Transfer Vehicle Charging Systems

Sebastian Jeschke, Michael Kleinen, Marcel Olbrich, Jörg Bärenfänger
EMC Test NRW GmbH, Germany

Flexible Numerical Evaluation of Human Head Exposure to a Transmitter Coil For Wireless Power Transfer at 13.56 MHz

Hamideh Esmaeili, Cheng Yang, Christian Schuster
Hamburg University of Technology, Germany

Inverter Interference on Charging Communication System during 400 V DC Charging of Vehicle

Lennart Hasselgren[1], Georgios Mademlis[2], Åke Lindbeck[2], Oskar Dahl[2]
[1]EMC Services, Sweden; [2]Volvo Cars Corporation, Sweden

Session

OS-11: EMP

Time: *Location:* **G1**

Thursday, 08/Sept/2022:
2:30pm - 3:50pm

Presentations

Uncertainty Propagation with an Asynchronous Temporal Co-simulation Method Applied to a Transmission Line Network

Imane Massaoudi, Pierre Bonnet
Université Clermont Auvergne, Clermont Auvergne INP, CNRS, Institut Pascal, France

Effectiveness of Radiofrequency Field Exposure Assessment for Vehicle Occupants Based on Empty Vehicle Field Data and Field Reference Levels

Alastair Ruddle
HORIBA MIRA Limited, United Kingdom

TEMPEST zoning for complex platforms

Frank Leferink[1,2], Chris Clemens[3], Hans Bergsma[1]
[1]THALES, Hengelo, the Netherlands; [2]University of Twente, Enschede, the Netherlands; [3]Ministry of the Interior and Kingdom Relations Zoetermeer the Netherlands

Distance characteristics of field peak value of transient electric field caused by sphere-gap ESD using a optical E-field probe

Ken Kawamata[1], Shinobu Ishigami[1], Osamu Fujiwara[2]
[1]Tohoku Gakuin University, Japan; [2]Nagoya Institute of Technology, Japan

Session

OS-13C: Computational electromagnetics

Time: *Location:* **G2**

Thursday, 08/Sept/2022:
2:30pm - 3:50pm

Presentations

Mixed Proper Orthogonal Decomposition with Harmonic Approximation for Parameterized Order Reduction of Electromagnetic Models

Riccardo Torchio[1], Alessandro Zanco[2], Francesco Lucchini[3], Piergiorgio Alotto[1], Stefano Grivet-Talocia[2]
[1]Università degli Studi di Padova, Dept. of Industrial Engineering; [2]Politecnico di Torino, Dept. of Electronics and Telecommunications; [3]Università degli Studi di Padova, Centro Ricerche Fusione

Modeling of a Litz Wire with Perfect Strand Pattern

Silvano Cruciani[2], Tommaso Campi[1], Francesca Maradei[2], Mauro Feliziani[1]
[1]University of l'aquila, Italy; [2]La Spienza University of Rome, Italy

Numerical Simulation of Field Distribution Regarding Automotive Component EMC-testing According to ISO 11452-2

Andrea Hofer, Stefan Cecil
Seibersdorf Labor GmbH, Austria

Approach to S-band Antenna Pattern Distortion generated by Spacecraft Plasma Plume

Alessandro Giordani, Davide Morfei, Emiliano Scione, Emanuele Ruà
Thales Alenia Space italia s.p.a., Italy

Session

OS-17: EMC in automotive, aircraft and space applications

Time: *Location:* **G3**

Thursday, 08/Sept/2022:
2:30pm - 3:50pm

Presentations

A Study on EMC Test Methods for ESD-Induced Conducted Noise through Space Structures

Toru KASAI[1], Toshio ONIGATA[2]
[1]Japan Aerospace Exploration Agency: JAXA; [2]e-OHTAMA, LTD.

Design of EMI Optimized Isolated DC/DC Converter for Space-based Applications

Patrick Koch, Johan Dijkstra, Niek Moonen
University of Twente, Netherlands, The

Radiated emissions from power feeders for electric propulsion in aircraft

Jesper Lansink Rotgerink
Royal Netherlands Aerospace Centre, Netherlands, The

Noise Source Modeling for Automotive Components Using a Wire-harness Bench

Noboru Maeda[1], Kengo Fukunaga[1], Keishi Miwa[2]
[1]SOKEN, INC.; [2]Toyota Motor Corporation

Session

OS-12: Advanced materials and harmonic distortion

Time: *Location:* **G1**

Thursday, 08/Sept/2022:
4:20pm - 5:40pm

Presentations

Predicting the EMI Induced Offset of a Differential Amplifier Stage using a Neural Network Model

Dominik Zupan, Daniel Kircher, Nikolaus Czepl
Graz University of Technology, Austria

Impact of Long Distribution Cable to the Harmonic Distortion in Indonesia Remote Microgrids

Ilman Sulaeman[1], Niek Moonen[1], Jelena Popovic[1,2], Frank Leferink[1,3]
[1]University of Twente, Enschede, the Netherlands; [2]Klimop Energy, Deventer, the Netherlands; [3]Thales Nederland B.V., Hengelo, the Netherlands

Broadband Effective Dielectric Permittivity of Heterogeneous 3D Printed PLA Structures

Marco A. Azpurua[1,2], Marc Mateu-Mateus[1], Marc Pous[1,3], Marcos Quílez[1], Ferran Silva[1]
[1]Universitat Politécnica de Catalunya, Spain; [2]EMC Electromagnetic BCN, S.L. (EMC Barcelona), Spain; [3]European Space Agency, the Netherlands

Radiation Reduction from Heatsinks by a PMC Surface

Muhammet Hilmi Nisanci[1], Francesco de Paulis[2]
[1]Sakarya University, Turkey; [2]University of L'Aquila, Italy

Session

OS-14: Power Electronics

Time: *Location:* **G2**

Thursday, 08/Sept/2022:
4:20pm - 5:40pm

Presentations

Deep-Learning Based Transient Identification in Switched-Mode Power Supplies Conducted Emissions

Mattia Simonazzi[1], Leonardo Sandrolini[1], Marcello Iotti[1], Andrea Mariscotti[2]
[1]University of Bologna, Italy; [2]University of Genova, Italy

Impact of routing on the EMC behavior of a GaN HEMT-based full bridge DC-DC converter

Ayawo Roger EKON[1,4], Mickael PETIT[1,3], François COSTA[1,2], François BOUVET[4], Eric DUPUY[4]
[1]Université Paris-Saclay, ENS Paris-Saclay, CNRS, SATIE, 91190 Gif-sur-Yvette, France; [2]Université Paris Est Créteil, INSPE, 94000 Créteil, France; [3]Le CNAM, 75011 Paris, France; [4]Synchrotron SOLEIL, 91190 Gif-sur-Yvette, France

Lumped Circuit Model for Concentrically Arranged Conductors in Power Electronic Systems

Daniel Seyfried[1], Bednarz Christian[2], Matthias Friedrich[3]
[1]University of Applied Science Würzburg-Schweinfurt; [2]Siemens Mobility GmbH; [3]University of Applied Science Fulda

A Transfer Function Approach to Calculate the Radiation of a three-phase Inverter

Alexander Engeln, Kai-Uwe Rathjen, Eric Fritze, Klaus F. Hoffmann, Stefan Dickmann
Helmut Schmidt University Hamburg, Germany

Session

OS-18: EMF, EMI and VSWR measurements

Time: *Location:* **G3**

Thursday, 08/Sept/2022:
4:20pm - 5:40pm

Presentations

Extending Site VSWR to Millimeter Wave using Cylindrical Mode Filtering

Zhong Chen[1], Phil Miller[2]
[1]ETS-Lindgren, United States of America; [2]RATLR, Inc., United States of America

Non-linear hybrid filter for the DC-side ripple current of voltage source converters

Sebastian Raab, Ansgar Ackva
University of Applied Sciences Wuerzburg-Schweinfurt, Germany

Assessment of EMI and Power Quality in Mains Power Distribution Using a Low-Cost Breakout Box for EMC Education

Cathrine E.S. Feloups[1,3], Niek Moonen[1], Frank Leferink[1,2]
[1]Electrical Engineering, Mathematics and Computer Science (EEMCS), University of Twente, Enschede, The Netherlands; [2]Thales Netherlands, 7554 RR, Hengelo, The Netherlands; [3]Department of Electrical Engineering, Faculty of Engineering, South Valley University, Qena, Egypt

Electromagnetic evaluation of UHF-RFID Smartshelf in Healthcare Environments

Pablo Marina[1], Samuel D. Suárez[2], Jose A. Hernández[2], Victor M. Febles[2], Luis E. Rabassa[2], Victoria Ramos[1]
[1]Instituto de Salud Carlos III; [2]Hospital Universitario de Canarias