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TU-PM-II-TC-04 TC-04: EMI Control Methods

04:00 pm - 06:00 pm

Chair: John G. Kraemer, Rockwell Collins, USA

Co-Chair: Arokiaswami Alphones, Nanyang Technological University, Singapore

04:00 pm	Electromagnetic Resonance Analysis of a Shielding Enclosure with Apertures Excited by a Plane Wave	355
	Bao-Lin Nie (<i>University of Electronic Science and Technology of China</i>); Pei Xiao (<i>University of Electronic Science and Technology of China</i>); Ping-An Du (<i>University of Electronic Science and Technology of China</i>)	
04:20 pm	Shielding Effectiveness Prediction of Metallic Structures with Thin Slots using FDTD	359
	Liping Yan (<i>Sichuan University</i>); Mingjiang Fang (<i>Sichuan University</i>); Xiang Zhao (<i>Sichuan University</i>); Qiang Liu (<i>Institute of Applied Physics and Computational Mathematics</i>); Haijing Zhou (<i>Institute of Applied Physics and Computational Mathematics</i>)	
04:40 pm	Effect of Conducting Surfaces on the Performance of Common Mode Chokes	363
	C. Dominguez-Palacios (<i>Universidad de Sevilla</i>); P. Gonzalez-Vizueté (<i>Universidad de Sevilla</i>); J. Bernal (<i>Universidad de Sevilla</i>)	
	<i>Best EMC Paper Finalist and Best Student Paper Finalist</i>	

05:00 pm	A Joint Method of EMT and DEMATEL in Analyzing HEMP Coupling Effect of Phased Array Radar Antenna System	369
	Shenshen Luan (<i>Beihang University</i>); Yan Wei (<i>Beijing Institute of Radio Measurement</i>)	
05:20 pm	Simulation Analysis on the Capacity Occupancy of Reactive Power Equipment under DC Bias of Transformers	N/A
	Zhicheng Xie (<i>Extra-High-Voltage Power Transmission Company of China Southern Power Grid</i>); Hai Qian (<i>Extra-High-Voltage Power Transmission Company of China Southern Power Grid</i>); Jun Deng (<i>Extra-High-Voltage Power Transmission Company of China Southern Power Grid</i>); Jinwei Chu (<i>Extra-High-Voltage Power Transmission Company of China Southern Power Grid</i>); Zhiliang Lu (<i>Extra-High-Voltage Power Transmission Company of China Southern Power Grid</i>); Xiaoxing Wei (<i>Extra-High-Voltage Power Transmission Company of China Southern Power Grid</i>); Chao Zhang (<i>Extra-High-Voltage Power Transmission Company of China Southern Power Grid</i>)	

TU-PM-II-SS-05 SS-05: Potential Electromagnetic

Techniques for Booming Wireless Communications (II)

04:00 pm - 06:00 pm

Chair: Hsi-Tseng Chou, National Taiwan University, Taiwan

Co-Chair: Ding-Bing Lin, National Taiwan University of Science and Technology, Taiwan

04:00 pm	Beam Switching Antenna for Small Cell Applications	379
	Chia-Lun Tang (<i>Auden Techno Corp.</i>); Shih-Chi Lai (<i>Auden Techno Corp.</i>); Gary Chiou (<i>Auden Techno Corp.</i>)	
04:20 pm	Fast Conical-Cut Radiation Measurement by using Lens Fed Reflector for 5G Antenna Application at mmW Frequencies	382
	Yu-Hsi Tsai (<i>Training Research Co.,Ltd.</i>); Hai-Rui Liu (<i>China Academy of Information and Communications Technology</i>); Yuei-Ting Tsai (<i>Training Research. Co., Ltd.</i>)	
04:40 pm	Dual-Band Patch Antenna Array for WLAN Applications	387
	I-Fong Chen (<i>Jinwen University of Science and Technology</i>); Chia-Mei Peng (<i>Jinwen University of Science and Technology</i>)	
05:00 pm	Multiple OAM Modes Generated by Patch Antenna	390
	Dandan Liu (<i>Huazhong University of Science and Technology</i>); Liangqi Gui (<i>Huazhong University of Science and Technology</i>); Han Chen (<i>Huazhong University of Science and Technology</i>); Zixiao Zhang (<i>Huazhong University of Science and Technology</i>); Tao Jiang (<i>Huazhong University of Science and Technology</i>)	
05:20 pm	Design of Balanced Wideband Filtering Circularly Polarized Antenna using Quasi-Self-Complementary Structure	393
	Pei-Shan Ho (<i>National Changhua University of Education</i>); Ching-Her Lee (<i>National Changhua University of Education</i>); Dau-Ming Wu (<i>National Changhua University of Education</i>); Hsun-Hsiang Chen (<i>National Changhua University of Education</i>); Chung-I G. Hsu (<i>National Yunlin University of Science and Technology</i>)	
05:40 pm	Modularized Prototype of 5G mmWave Base Station System at 38 GHz	396
	Li-Hsin Yen (<i>National Taiwan University</i>); Yang-Chih Huang (<i>National Taiwan University</i>); Ssu-Hao Su (<i>ASUSTek Computer Inc.</i>); Che-Yao Fan (<i>ASUSTek Computer Inc.</i>); Fang-Hsien Chu (<i>ASUSTek Computer Inc.</i>); Fang-Yao Kuo (<i>Industrial Technology Research Institute</i>); Hsin-Chia Lu (<i>National Taiwan University</i>); Shau-Gang Mao (<i>National Taiwan University</i>); Kun-You Lin (<i>National Taiwan University</i>); Tsung-Chieh Yen (<i>ASUSTek Computer Inc.</i>); Tzong-Lin Wu (<i>National Taiwan University</i>)	

TU-PM-II-TC-05 TC-05: Lightning and System Protection**04:00 pm - 06:00 pm****Chair:** Yoshihiro Baba, Doshisha University, Japan**Co-Chair:** W. H. Siew, University of Strathclyde, Scotland

- 04:00 pm **LMA Observation of Upward Flashes at Sântis Tower: Preliminary Results** 399
Amirhossein Mostajabi (*EPFL*); Nicolau Pienda (*Meteorological Service of Catalonia*);
David Romero (*Technical University of Catalonia*); Mohammad Azadifar (*EPFL and University of Applied Sciences of Western Switzerland*); Oscar Van der Velde (*Technical University of Catalonia*);
Joan Montanya (*Technical University of Catalonia*); Marcos Rubinstein (*University of Applied Sciences of Western Switzerland*); Farhad Rachidi (*EPFL*)
- 04:20 pm **Modeling of Different Charge Transfer Modes in Upward Flashes Constrained by Simultaneously Measured Currents and Fields** 403
Lixia He (*EPFL and Nanjing University of Information Science and Technology*);
Mohammad Azadifar (*EPFL and University of Applied Sciences of Western Switzerland*); Quanxin Li (*EPFL and Wuhan University*); Marcos Rubinstein (*University of Applied Sciences of Western Switzerland*); Vladimir A. Rakov (*University of Florida and Russian Academy of Sciences*);
Arturo Mediano (*University of Zaragoza*); Davide Pavanello (*University of Applied Sciences of Western Switzerland*); Mario Paolone (*EPFL*); Hongyan Xing (*Nanjing University of Information Science and Technology*); Farhad Rachidi (*EPFL*)
Best EMC Paper Finalist and Best Student Paper Finalist
- 04:40 pm **Modeling of LEMP Propagation in the Lossy Atmosphere** 408
Thang H. Tran (*Tsuruoka College*); Yoshihiro Baba (*Doshisha University*);
Vijaya B. Somu (*University of Florida*); Vladimir A. Rakov (*University of Florida*)
- 05:00 pm **FDTD Computation of Lightning Currents in a Multilayer CFRP Panel with a Conductivity Matrix Approach** 414
Koki Ueno (*Doshisha University*); Teruo Umeda (*Doshisha University*); Yoshihiro Baba (*Doshisha University*); Hiroyuki Tsubata (*Subaru Corporation*); Takayuki Nishi (*Subaru Corporation*)
Best Student Paper Finalist
- 05:20 pm **Grounding Strategies for Solar PV Panels** 418
A.S. Ayub (*University of Strathclyde*); W.H. Siew (*University of Strathclyde*);
F. Peer Mohamed (*Military Technological College*)
- 05:40 pm **Some Examples of EMI/EMC in Wind Power Systems and Large Solar Parks** 423
Ener Salinas (*ABB Corporate Research*); Kazuo Yamamoto (*Chubu University*);
Leonardo Severo (*WEG*); Alexandre Pinhel (*Maelstrom Eng & Inovação*)

WEDNESDAY TECHNICAL PAPERS

Wednesday, May 16, 2018

WE-AM-I-TC-10 TC-10: SI/PI (III)

08:30 am - 10:10 am

Chair: Xiaoning Ye, Intel, USA

Co-Chair: Kye-Yak See, Nanyang Technological University, Singapore

- 08:30 am **Characterization and Verification of Gigabit Ethernet-Based Bus Systems in Vehicles** 428
Sanaz Mortazavi (*Volkswagen AG*); Detlef Schleicher (*Volkswagen AG*);
Friedel Gerfers (*Technische Universität Berlin*)
- 08:50 am **Noise Isolation of PDN using In-Package Filter in LTCC-Based System-in-Package (SiP)** 434
Yue-Hui Huang (*Sun Yat-sen University*); Mu-Shui Zhang (*Sun Yat-sen University*);
Yi-Fei He (*Sun Yat-sen University*); Quan-Chao Su (*Sun Yat-sen University*)
- 09:30 am **Analysis and Experimental Validation of Power Distribution Network with Multi-Slots Parallel-Plane Structure** 437
Yan Li (*Hebei University of Technology*); Wen-Yuan Cao (*Zhejiang University*);
Pan-Pan Zuo (*Hebei University of Technology*); Zhi-Yi Gao (*Hebei University of Technology*);
Hong-Xing Zheng (*Hebei University of Technology*); Er-Ping Li (*Zhejiang University*)
- 09:50 am **Common-Mode Noise Reduction of Bended Differential Lines using Meander Line Structure** 442
Jaehyuk Lim (*Korea University*); Seungjin Lee (*Korea University*); Jaehoon Lee (*Korea University*);
Yonghoon Kim (*Samsung Electronics, Inc.*); Dan Oh (*Samsung Electronics, Inc.*)

WE-AM-I-TC-06 TC-06: Spectrum

08:30 am - 10:10 am

Chair: Jin Meng, Naval University of Engineering, China

Co-Chair: Xudong Chen, National University of Singapore, Singapore

- 08:30 am **A Spectral Fitting Method for Designing Spectrum Compatibility Sequence with Low Correlation Sidelobes** 446
Hao Wu (*Naval University of Engineering*); Jin Meng (*Naval University of Engineering*);
Qing Wang (*Naval University of Engineering*); Jin ling Xing (*Naval University of Engineering*);
Liang Zhou (*Naval University of Engineering*)
- 08:50 am **Adaptive Spatial Filtering for Interference Cancellation between Co-Site Phased Arrays** 451
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- 09:10 am **Analysis of Quantification Effects on Digital-Analog Mixed Adaptive Interference Cancellation System** 456
Jinling Xing (*Naval University of Engineering*); Jin Meng (*Naval University of Engineering*);
Songhu Ge (*Naval University of Engineering*); Jian Tang (*Naval University of Engineering*);
Gouchuan Jie (*Naval University of Engineering*)

- 09:30 am **An Improved Foster Model of Common-Mode Inductor and its Application in EMI Filter Design** 461
Haoqi Zhu (*HangZhou Dianzi University*); Dongliang Liu (*HangZhou Dianzi University*);
Hao Chen (*Zhejiang University*); Guozhu Chen (*Zhejiang University*)

WE-AM-I-TC-09 TC-09: CEM and EMI

08:30 am - 10:10 am

Chair: Hideki Asai, Shizoka University, Japan

Co-Chair: Wen-Yan Yin, Zhejiang University, China

- 08:30 am **Efficient Modeling of Multi-Coil Wireless Power Transfer Systems using Combination of Full-Wave Simulation and Equivalent Circuit Modeling** 466
Peiyu Liang (*Beihang University*); Heinz-D. Brüns (*Hamburg University of Technology*);
Qi Wu (*Beihang University*); Christian Schuster (*Hamburg University of Technology*)
- 09:10 am **Electromagnetic-Thermal Simulation of Lorentz Media by the DGT Method** 472
Yilin Dong (*Shanghai Jiao Tong University*); Min Tang (*Shanghai Jiao Tong University*);
Ping Li (*The University of Hong Kong*); Junfa Mao (*Shanghai Jiao Tong University*)
Best EMC Paper Finalist
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- 09:50 am **A Novel Inverse Method for Automatic UAV Line Patrolling with Magnetic Sensors** 481
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Yang Wu (*Tsinghua University*); Gen Zhao (*Tsinghua University*); Bo Wang (*Tsinghua University*);
Jun Hu (*Tsinghua University*)

WE-AM-I-TC-09 TC-09: Computational Electromagnetics (III)

08:30 am - 10:10 am

Chair: Tzong-Lin Wu, National Taiwan University, Taiwan

Co-Chair: Yueping Zhang, Nanyang Technological University, Singapore

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Peter Kralicek (*Robert Bosch GmbH*)
- 09:30 am **A Novel Line Position Recognition Method in Transmission Line Patrolling with UAV using Machine Learning Algorithms** 491
Yang Wu (*Tsinghua University*); Yi Luo (*Tsinghua University*); Gen Zhao (*Tsinghua University*);
Jun Hu (*Tsinghua University*); Feng Gao (*Shaanxi Electric Power Research Institute*);
Sen Wang (*Shaanxi Electric Power Research Institute*)
- 09:50 am **3D Modelling and Analysis of Parasitic Couplings between Surface-Mount Components of EMI Filters** 496
A. Asmanis (*Riga Technical University*); D. Stepins (*Riga Technical University*);
G. Asmanis (*Riga Technical University*); L. Ribickis (*Riga Technical University*)

WE-AM-I-SS-04 SS-04: Emerging Technologies and EMC**08:30 am - 10:10 am****Chair:** Wee Jin Koh, DSO National Laboratories, Singapore**Co-Chair:** Frank Leferink, University of Twente and Thales Group, Netherlands

- 08:30 am **The Interconnected Wireless World, a Major Challenge for EM-Coexistence** 502
Frank Leferink (*Thales Group and University of Twente*)
- 08:50 am **Probability Statistical Method of Assisting Electromagnetic Compatibility Index Decision-Making** 509
Yumei Wang (*China Ship Development and Design Center*); Wentao Xu (*China Ship Development and Design Center*)
- 09:10 am **EMC Design with Embedded Metamaterial Technology** 513
Richard Xian-Ke Gao (*A*STAR*); Si-Ping Gao (*A*STAR*); Hui Min Lee (*A*STAR*); Wanlan Yang (*Singapore University of Technology and Design*)
- 09:50 am **Non-Ionizing EMF Hazard in the 21th Century** 518
Wee Jin Koh (*DSO National Laboratories*); Shabbir M. Moomchala (*DSO National Laboratories*)

WE-AM-I-SS-13 SS-13: EMC Issues**Related to Common-Mode Noise****08:30 am - 10:10 am****Chair:** Yoshitaka Toyota, Okayama University, Japan

- 08:30 am **Modal Analysis of Reflection of TDR in Overhead Distribution Lines** 523
Tohlu Matsushima (*Kyushu Institute of Technology*); Takashi Hisakado (*Kyoto University*); Osami Wada (*Kyoto University*); Shimpei Oe (*Kansai Electric Power Co. Inc.*); Tsuyoshi Sasaoka (*Kansai Electric Power Co. Inc.*)
- 08:50 am **Mode Analysis of Adjacent Differential-Paired Lines using Extended Mixed-Mode S-Parameters** 527
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- 09:10 am **Measurement Precision Improvement to Estimate the Immunity Performance for In-Vehicle Ethernet** 532
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- 09:30 am **A Study on Design of Differential-Paired Lines with Meander Delay Line by Preference Set-Based Design Method** 536
Yoshiki Kayano (*University of Electro-Communications*); Yoshio Kami (*University of Electro-Communications*); Haruo Ishikawa (*University of Electro-Communications*); Fengchao Xiao (*University of Electro-Communications*); Hiroshi Inoue (*University of Electro-Communications*)
- 09:50 am **Fast and Accurate Yield Rate Prediction of PCB Embedded Common-Mode Filter with Artificial Neural Network** 542
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Best SI/PI Paper Finalist and Best Student Paper Finalist

WE-AM-II-TC-10 TC-10: SI/PI (IV)**10:30 am - 12:30 pm****Chair:** Jose Schutt-Aine, University of Illinois, USA**Co-Chair:** Zi-Liang Liu, National University of Singapore, Singapore

- 10:50 am **Quantification of EMI for Power-Ground Plane and Novel EBG Structure for SSN Suppression** 546
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Yanbo Xu (*Hebei University of Technology*); Hongxing Zheng (*Hebei University of Technology*);
Erping Li (*Zhejiang University*)
Best Student Paper Finalist
- 11:10 am **Floorplanning for 3D-IC with Through-Silicon via Co-Design using Simulated Annealing** 550
Hai-Ying Zhu (*Sun Yat-Sen University*); Mu-Shui Zhang (*Sun Yat-Sen University*);
Yi-Fei He (*Sun Yat-Sen University*); Yue-Hui Huang (*Sun Yat-Sen University*)
- 11:30 am **1 to 4 Way Wideband Power Divider using Substrate Integrated Waveguide and Modified Wilkinson Structures** 554
Vignesh Shanmugam Bhaskar (*Nanyang Technological University*); Eng Leong Tan (*Nanyang Technological University*); King Ho Holden Li (*Nanyang Technological University*);
Man Siu Tsa (*Nanyang Technological University*)
Best SI/PI Paper Finalist

**WE-AM-II-SS-03 SS-03: Wireless Technology
and Wireless Power Transfer (I)****10:30 am - 12:30 pm****Chair:** Seungyoung Ahn, KAIST, South Korea**Co-Chair:** Eakhwan Song, Kwangwoon University, South Korea

- 10:30 am **Magnetic Field Distribution of Resonance Coupling Coils of Wireless Charging System for EV** 558
Yu Cao (*Beijing Institute of Technology*); Li Zhai (*Beijing Institute of Technology*); Liwen Lin (*Beijing Institute of Technology*); Tao Zhang (*Beijing Institute of Technology*)
- 10:50 am **Improved Efficiency Characteristics of Wireless Power Charging System for Superconducting MAGLEV Train using Inserted Permanent Magnets** 564
Yoon Do Chung (*Suwon Science College*); Ji Seong Kim (*Suwon Science College*)
- 11:50 am **Simulation-Based Conducted Susceptibility Testing for Wireless Power Transfer (WPT) Systems** 568
Junho Joo (*Kwangwoon University*); Eakhwan Song (*Kwangwoon University*);
Sang-il Kwak (*Electronics and Telecommunications Research Institute*);
Jonghwa Kwon (*Electronics and Telecommunications Research Institute*)

WE-AM-II-TC-02 TC-02: EMC Measurement (II)**10:30 am - 12:30 pm****Chair:** John Ladbury, National Inst. of Standards and Technology, USA**Co-Chair:** Takehiro Morioka, National Inst. of Advanced Industrial Science and Technology, Japan

- 10:30 am **Influence of Test Table Materials on Radiated Immunity Test: Report on Investigation using a Giant Anechoic Chamber** 572
Hiro Shida (*Token EMC Engineering Co., Ltd.*); Osami Wada (*Kyoto University*); Yasushi Asaji (*Murata Manufacturing Co.*); Kenji Otani (*AIST*); Hisashi Ninomiya (*Roland Corp.*); Yoshitsugu Okuda (*KEC Electronic Industry Development Center*); Masahiro Inoue (*KEC Electronic Industry Development Center*)
- 10:50 am **Electromagnetic Field Coupling to Planar and Triangular Multiconductor Transmission Lines in a Reverberation Chamber** 578
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Best EMC Paper Finalist
- 11:10 am **A Study on Characteristics of 10 MHz to 30 MHz in CISPR 25 ALSE Method: CISPR 25 Annex J Reference Data Verification of Long-wire Method** 584
Takanori Uno (*DENSO EMC Engineering Service Corp.*); Koji Maeda (*Aisin Seiki Co., Ltd.*); Toshiyasu Tanaka (*Microwave Factory Co., Ltd.*); Yoshitsugu Okuda (*Kansai Electronic Industry Development Center*); Osami Wada (*Kyoto University*)
- 11:30 am **Simultaneous Multi-Probe Measurements for Rapid Evaluation of Reverberation Chambers** 590
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- 11:50 am **Problems with Stirred Immunity Measurements in a Reverberation Chamber – Corrections to DO-160G Section 20.6** 595
John Ladbury (*NIST*)

WE-PM-I-FOR Interactive Forum Sessions**12:00 pm - 2:00 pm****Chair:** Hui Min Lee, Institute of High Performance Computing, Singapore**Co-Chair:** Eng Kee Chua, Nanyang Technological University, Singapore

- 12:00 pm **Demonstration of Electromagnetic Waves Propagation along Transmission Lines on iPad** 599
Eng Leong Tan (*Nanyang Technological University*); Ding Yu Heh (*Nanyang Technological University*)
- 12:00 pm **The VLF Field Generated by a Loop Antenna in the Ionosphere** 602
Hui Ran Zeng (*Zhejiang University*)
- 12:00 pm **Field Generated by the Artificial Ionospheric Modulation of ELF/VLF Wave on the Sea Surface** 606
Zhuhong Lin (*Zhejiang University*)

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	Yun Li (<i>China Academy of Space Technology and Xi'an Jiaotong University</i>); He Bai (<i>China Academy of Space Technology</i>); Wanzhao Cui (<i>China Academy of Space Technology</i>); Jun Li (<i>China Academy of Space Technology</i>); Xiang Chen (<i>China Academy of Space Technology</i>); Rui Wang (<i>China Academy of Space Technology</i>); Xinbo Wang (<i>China Academy of Space Technology</i>); Tiansun Hu (<i>China Academy of Space Technology</i>)	
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	Ji Zhao (<i>China North Vehicle Research Institute</i>); Xiaofan Zhao (<i>China North Vehicle Research Institute</i>)	
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	Lei Zhang (<i>Naval University of Engineering</i>); Zhihua Zhao (<i>Naval University of Engineering</i>); Jianxuan Li (<i>Naval University of Engineering</i>); Jin Meng (<i>Naval University of Engineering</i>)	
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	Qi-Feng Liu (<i>Science and Technology on EMC Laboratory</i>); Qi Wu (<i>Beijing Hang Kong Hang Tian University</i>); Sheng-quan Zheng (<i>Science and Technology on EMC Laboratory</i>); Yu Zuo (<i>Science and Technology on EMC Laboratory</i>); Li Tao (<i>Science and Technology on EMC Laboratory</i>)	
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	Xiao Jia Huang (<i>Tongji University</i>); Mei Song Tong (<i>Tongji University</i>)	
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	Tong Zhang (<i>China Ship Development and Design Center</i>); Yiting Shuai (<i>China Ship Development and Design Center</i>)	
12:00 pm	An EMC Perspective of the Benefits of a Seawater Antenna over a Metal Antenna	637
	Liang Zhou (<i>Navy University of Engineering</i>); Qin Wang (<i>Navy University of Engineering</i>); Hao Wu (<i>Navy University of Engineering</i>); Jin Meng (<i>Navy University of Engineering</i>)	
12:00 pm	Study of Electromagnetic Field Distribution in the Human Body under High Voltage Power Lines	N/A
	He Peng (<i>Technical Center of the Ningbo Entry-Exit Inspection and Quarantine Bureau</i>); Yang Yueping (<i>State Grid Zhejiang Ninghai Country Power Supply Company</i>); Zhou Lei (<i>State Grid Zhejiang Ninghai Country Power Supply Company</i>); Jia Lu (<i>Ningbo Institute</i>); Yu Ping (<i>Ningbo Institute</i>); Wang Zhuoyuang (<i>Ningbo Institute</i>); Hong Yuguang (<i>Ningbo Institute</i>); Zhu Ningfeng (<i>Technical Center of the Ningbo Entry-Exit Inspection and Quarantine Bureau</i>)	
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12:00 pm	Adaptive Wideband Homomorphic Filtering for Electromagnetic Interference Source Imaging Testing System	651
	Yanju Zhu (<i>Beihang University</i>); Shuguo Xie (<i>Beihang University</i>)	

12:00 pm	Estimation of Induced Positions of External Electromagnetic Fields by Measuring Waveform at Both Ends of Transmission Line	654
	Xiangyu Chen (<i>Gifu University</i>); Toshikazu Sekine (<i>Gifu University</i>); Yasuhiro Takahashi (<i>Gifu University</i>)	
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	Jinlong Li (<i>Shanghai Institute of Measurement and Testing Technology</i>); Shiping Ma (<i>Shanghai Institute of Measurement and Testing Technology</i>); Qi Liu (<i>Shanghai Institute of Measurement and Testing Technology</i>); Zeng Gong (<i>Shanghai Institute of Measurement and Testing Technology</i>); Heqing Tian (<i>Shanghai Institute of Measurement and Testing Technology</i>); Shanyi Jin (<i>Shanghai Institute of Measurement and Testing Technology</i>)	
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	Hironari Tanaka (<i>VCCI Council / Ohtama Calibration Service Co., Ltd.</i>); Hiroyuki Shimanoe (<i>VCCI Council/S-Tech Inc.</i>); Masaru Yoshihara (<i>VCCI Council/Riken Environmental System Co., Ltd.</i>); Hidenori Muramatsu (<i>VCCI Council</i>)	
12:00 pm	Principle and Electromagnetic Immunity of ADAS Millimeter-Wave Radar	668
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12:00 pm	A Novel Dual Channel Receive Front-End Module with MEMS Technology	674
	Yongzhi Zhao (<i>Hebei Semiconductor Research Institute</i>); Shaodong Wang (<i>Hebei Semiconductor Research Institute</i>); Hongjiang Wu (<i>Hebei Semiconductor Research Institute</i>)	
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12:00 pm	Electromagnetic Emissions from GaN Power IC at Varying Distance and Frequency	687
	Vivek Sangwan (<i>Chang Gung University</i>); Dipesh Kapoor (<i>Chang Gung University</i>); Cher Ming Tan (<i>Chang Gung University</i>)	

WE-PM-I-TM-01 TM-01: IC EMC (II)

01:30 pm - 03:30 pm

Chair: Bernd Deutchmann, Graz University of Technology, Austria

Co-Chair: Sonia Ben Dhia, LAAS CNRS, France

01:30 pm	Conducted Immunity of Bandgap in SOI Technology after Electrical Stress Aging	692
	J. Wu (<i>National University of Defense Technology and Tianjin Binhai Civil-military Integrated Innovation Institute</i>); B. Li (<i>Chinese Academy of Sciences</i>); H. Zhang (<i>Tianjin Binhai Civil-military Integrated Innovation Institute</i>); H. Wang (<i>National University of Defense Technology</i>); L. Zheng (<i>National University of Defense Technology</i>)	

01:50 pm	ICIM-CPI: Integrated Circuits Immunity Model: Conducted Pulse Immunity: Description, Extraction and Example	695
	André Durier (<i>IRT Saint-Exupéry</i>); Priscila Fernandez-Lopez (<i>Valeo</i>); Jean-Luc Levant (<i>Microchip Technology Inc.</i>); Christian Marot (<i>Airbus</i>)	
02:10 pm	Immunity Analysis of an LDO using Identification of Operating Region Transitions	701
	Lammert Duipmans (<i>Eindhoven University of Technology</i>); Dusan Milosevic (<i>Eindhoven University of Technology</i>); Arnoud van der Wel (<i>NXP Semiconductors</i>); Ravi Karadi (<i>NXP Semiconductors</i>); Peter Baltus (<i>Eindhoven University of Technology</i>)	
02:30 pm	The Shielding Effect of a Multi-Cable Harness as Function of IC Output Termination Impedance	707
	Herbert Hackl (<i>Graz University of Technology and NXP Semiconductors Austria</i>); Bernhard Auinger (<i>NXP Semiconductors</i>); Bernd Deutschmann (<i>NXP Semiconductors</i>); Anna Gheonjian (<i>EMCoS Ltd.</i>)	
02:50 pm	Partial and Indirect Non-Reciprocal S-parameter Measurement for (m+n)-Port Fixture with DUT	713
	Yuya Kojima (<i>Gifu University</i>); Toshikazu Sekine (<i>Gifu University</i>); Yasuhiro Takahashi (<i>Gifu University</i>); Noboru Maeda (<i>Soken, Inc.</i>); Shinji Fukui (<i>Soken, Inc.</i>); Yasuyuki Ishikawa (<i>DENSO Corporation</i>)	

WE-PM-I-SC-07 SC-07: Aeronautics and Space EMC

01:30 pm - 03:30 pm

Chair: Narvaez Pablo, Jet Propulsion Laboratory, USA

Co-Chair: Peter S. W. Leung, City University of Hong Kong, China

01:30 pm	Investigation on Susceptibility of UAV to Radiated IEMI	718
	Yazhou Chen (<i>Shijiazhuang Mechanical Engineering College</i>); Dongxiao Zhang (<i>Shijiazhuang Mechanical Engineering College</i>); Erwei Cheng (<i>Shijiazhuang Mechanical Engineering College</i>); Xiaojia Wang (<i>Shijiazhuang Mechanical Engineering College</i>)	
01:50 pm	Enforcing Correlation between Conducted and Radiated Susceptibility Test Setups for Aerospace Involving Shielded Cables	723
	G. Spadacini (<i>Politecnico di Milano</i>); L. Badini (<i>Politecnico di Milano</i>); F. Grassi (<i>Politecnico di Milano</i>); S.A. Pignari (<i>Politecnico di Milano</i>); A. Piche (<i>Airbus Defence and Space</i>) <i>Best EMC Paper Finalist</i>	
02:30 pm	Electromagnetic Environment Threat Level Requirement for Military Aircraft Susceptibility Testing In Support of High Intensity Radiated Field Qualification	729
	Gordon Slack (<i>QinetiQ</i>); Adrian Monk (<i>QinetiQ</i>); Timothy J. Duggan (<i>QinetiQ</i>)	

WE-PM-I-SS-09 SS-09: Hardware Security for IoT Devices (I) (Recommended by TC-05)

01:30 pm - 03:30 pm

Chair: William A. Radasky, Metatech Corporation, USA

Co-Chair: Yuichi Hayashi, NAIST, Japan

01:30 pm	Introduction to EM Information Security for IoT Devices	735
	Yuichi Hayashi (<i>NAIST</i>); Ingrid Verbauwhede (<i>KU Leuven</i>); William A. Radasky (<i>Metatech Corporation</i>)	

01:50 pm	Comparison of two Setups for Contactless Power Measurements for Side-Channel Analysis	739
	Arthur Beckers (<i>KU Leuven</i>); Benedikt Gierlichs (<i>KU Leuven</i>); Josep Balasch (<i>KU Leuven</i>); Ingrid Verbauwhede (<i>KU Leuven</i>)	
02:10 pm	Extention of Signal-to-Noise Ratio Measurement Method to Byte-by-Byte Side-Channel Attack	745
	Kengo Iokibe (<i>Okayama University</i>); Toshiaki Teshima (<i>Okayama University</i>); Yusuke Yano (<i>Okayama University</i>); Yoshitaka Toyota (<i>Okayama University</i>)	
02:30 pm	Weighted Key Enumeration for EM-Based Side-Channel Attacks	749
	Yang Li (<i>Nanjing University of Aeronautics and Astronautics</i>); Xiaohan Meng (<i>Nanjing University of Aeronautics and Astronautics</i>); Shuang Wang (<i>Nanjing University of Aeronautics and Astronautics</i>); Jian Wang (<i>Nanjing University of Aeronautics and Astronautics</i>)	
02:50 pm	Detection of IEMI Fault Injection using Voltage Monitor Constructed with Fully Digital Circuit	753
	Daisuke Fujimoto (<i>NAIST</i>); Yu-ichi Hayashi (<i>NAIST</i>); Arthur Beckers (<i>KU Leuven</i>); Josep Balasch (<i>KU Leuven</i>); Benedikt Gierlichs (<i>KU Leuven</i>); Ingrid Verbauwhede (<i>KU Leuven</i>)	

WE-PM-I-TC-04 TC-04: EMI

01:30 pm - 03:30 pm

Chair: Ding-Bing Lin, National Taiwan University of Science and Technology, Taiwan

Co-Chair: Jin Meng, Naval University of Engineering, China

01:30 pm	Analytical Description of Contacting Concepts for Shielding Enclosures	756
	Michael Kühn (<i>AUDI AG</i>); Marcel Messer (<i>AUDI AG</i>); Robert Weigel (<i>Universität Erlangen-Nürnberg</i>)	
01:50 pm	Identification of Electromagnetic Interferences based on Adaptive Sparsest Time - Frequency Analysis	761
	Peng Li (<i>Southeast University</i>); Zhongyuan Zhou (<i>Southeast University</i>); Mingjie Sheng (<i>Southeast University</i>)	
02:10 pm	A Multi-Tone Interference Equivalence Method for Analyzing the Impact of LFM Interference on the BER of Communications Data Link System	766
	Kui Zhao (<i>Naval University of Engineering</i>); Fangmin He (<i>Naval University of Engineering</i>); Hongbo Liu (<i>Naval University of Engineering</i>); Qing Wang (<i>Naval University of Engineering</i>); Jin Meng (<i>Naval University of Engineering</i>); Lei Zhang (<i>Naval University of Engineering</i>)	
02:30 pm	A Novel Heatsink with Mushroom-Type EBG Structure for EMI Radiation Suppression	772
	Hang Jin (<i>Zhejiang University</i>); Le Zhang (<i>Zhejiang University</i>); Xiao-Li Yang (<i>Zhejiang University</i>); Ping Cheng (<i>Zhejiang University</i>); Er-Ping Li (<i>Zhejiang University</i>); Yao-Jiang Zhang (<i>Huawei Technologies Co. Ltd.</i>)	
02:50 pm	Resonator Approach for Simple Calculation of Total Microwave Energy Accumulated Inside the Shielding Box	776
	Valentin Butin (<i>Dukhov Research Institute of Automatics</i>); Pavel Kundyshev (<i>Dukhov Research Institute of Automatics</i>)	

**WE-PM-I-TC-12 TC-12: EMC for
Emerging Wireless Technology (II)**

01:30 pm - 03:30 pm

Chair: Lie Liu, General Test Systems Inc., USA

Co-Chair: Franco Fiori, Politecnico di Torino, Italy

- 01:30 pm **Susceptibility of 2.4GHz Low-Power Receivers to Low Frequency EMI** 782
Marco Brignone Aimonetto (*Politecnico di Torino*); Franco Fiori (*Politecnico di Torino*)
Best Student Paper Finalist
- 03:10 pm **Using Low Cost Base-Band Digitizer for Fast Magnetic Emission Test** 788
Iwan Setiawan (*University of Twente and Indonesian Institute of Sciences*); Robert Vogt-Ardatjew
(*University of Twente*); Frank Leferink (*University of Twente and Thales Group*)

**WE-PM-I-SS-01 SS-01: EMC for Wind Farms and Solar PV Plants
(Supported and Sponsored by EMC TC-07;
Technical Sponsored by Cugre SC C4)**

01:30 pm - 03:30 pm

Chair: W. H. Siew, University of Strathclyde, Scotland

Co-Chair: Ener Salinas, ABB, Sweden

- 01:30 pm **Loss of Equipotential during Lightning Ground Potential Rise on Large Earthing Systems** 793
Pieter H. Pretorius (*Terratech*)
- 01:50 pm **Conducted and Radiated Interference on the Interconnections of Renewable Energy Farms** 798
Patricio E. Munhoz-Rojas (*Institutos Lactec*)
- 02:10 pm **Lightning Protection and EMC Issues of Renewable Energy Sources** 805
Toshihisa Funabashi (*Nagoya University*); Kazuo Yamamoto (*Chubu University*);
Shozo Sekioka (*Shonan Institute of Technology*)
- 02:30 pm **Immunity of Solar Inverters to Transient Waveforms** 811
William A. Radasky (*Metatech Corporation*); Edward Savage (*Metatech Corporation*)
- 02:50 pm **Behaviour of Surge Protective Devices under Lightning Ground Potential Rise:
Findings from a Desk-Top Study** 817
Pieter H. Pretorius (*Terratech*)
- 03:10 pm **Harmonics Induced by Inverters from a Photovoltaic Plant in the Power Grid** 821
Petre-Marian Nicolae (*University of Craiova*); Radu-Florin Marinescu (*University of Craiova*);
Diana-Cristina Marinescu (*University of Craiova*); Marian-Ştefan Nicolae (*University of Craiova*);
Ileana-Diana Nicolae (*University of Craiova*)

WE-PM-II-FOR Interactive Forum Sessions

3:00 pm - 5:00 pm

Chair: Hui Min Lee, Institute of High Performance Computing, Singapore

Co-Chair: Eng Kee Chua, Nanyang Technological University, Singapore

- 3:00 pm **Analyzing the EMC Performance of an Automotive Display Module through
3D Electromagnetic Simulation** 827
Lin Biao Wang (*Continental Automotive Singapore Pte Ltd*); Lei Ma (*Continental Automotive
Singapore Pte Ltd*); Eng Ann Koh (*Continental Automotive Singapore Pte Ltd*)

3:00 pm	Near-Field Scan Technique for Reducing Radiated Emissions in Automotive EMC 831 Andrei-Marius Silaghi (<i>Universitatea Politehnica Timisoara</i>); Relu-Adrian Aipu (<i>University of Craiova</i>); Aldo De Sabata (<i>Universitatea Politehnica Timisoara</i>); Petre-Marian Nicolae (<i>University of Craiova</i>)
3:00 pm	Research on EMI Control Techniques of Airborne Power Electronic Equipment 837 Ping Xu (<i>Harbin Engineering University and Ocean Research Centre of China</i>); Jiahe Mei (<i>Harbin Engineering University</i>); Jiahui Qin (<i>Harbin Engineering University</i>)
3:00 pm	Design of Tapered Periodic Meta-Surfaces for Suppressing Edge Electromagnetic Scattering N/A Haiyan Chen (<i>University of Electronic Science and Technology of China</i>); Liandi Han (<i>University of Electronic Science and Technology of China</i>); Lijuan Lu (<i>University of Electronic Science and Technology of China</i>); Difei Liang (<i>University of Electronic Science and Technology of China</i>); Xiaolong Weng (<i>University of Electronic Science and Technology of China</i>); Haipeng Lu (<i>University of Electronic Science and Technology of China</i>); Jianliang Xie (<i>University of Electronic Science and Technology of China</i>); Longjiang Deng (<i>University of Electronic Science and Technology of China</i>)
3:00 pm	Solution to Range and Velocity Ambiguities based on Frequency Diversity MIMO Radar 845 Xiang Lan (<i>Xidian University</i>); Min Zhang (<i>Xidian University</i>)
3:00 pm	Compiler Options Effect on System-Level Near Field EMI 848 Shih-Yi Yuan (<i>Feng Chia University</i>); Po-Yien Lin (<i>Feng Chia University</i>); Chia-Hung Su (<i>Electronics Testing Center</i>); Tzung-Hsien Chen (<i>Bureau of Standards, Metrology and Inspection, MOEA</i>)
3:00 pm	The Impact of TID Effect on EMS of PDSOI Voltage Reference Circuits 852 Z. An (<i>Beijing Jiaotong University and Chinese Academy of Sciences</i>); H. Cao (<i>Beijing Jiaotong University</i>); G. Wang (<i>Beijing Jiaotong University</i>); J. Wu (<i>Tianjin Binhai Civil-military Integrated Innovation</i>); B. Li (<i>Chinese Academy of Sciences</i>); B. Li (<i>Chinese Academy of Sciences</i>); W. Zhao (<i>Chinese Academy of Sciences</i>); J. Luo (<i>Chinese Academy of Sciences</i>); F. Wan (<i>Nanjing University of Information Science and Technology</i>)
3:00 pm	Electromagnetic Coupling Effects of Spacecraft Solar Panel 857 Baofeng Cao (<i>Research Institute of Chemical Defense</i>); Yi Zheng (<i>Research Institute of Chemical Defense</i>); Jianxun Su (<i>Communication University of China</i>); Xueqin Zhang (<i>Research Institute of Chemical Defense</i>); Xin Li (<i>Research Institute of Chemical Defense</i>); Lin Quan (<i>Institute of Aerospace Engineering</i>); Yu Zhou (<i>Aerospace Orient Red Satellite Co., Ltd.</i>); Shijin Wang (<i>Beijing Tian-gong Ke-yi Radiation Technology Co., Ltd.</i>)
3:00 pm	Modeling IC Components based on TLP I-V Curves and Transient Responses from SEED Perspective 862 Yize Wang (<i>Peking University</i>); Yuan Wang (<i>Peking University</i>); Guangyi Lu (<i>Peking University</i>); Gang Du (<i>Peking University</i>); Xing Zhang (<i>Peking University</i>); Ru Huang (<i>Peking University</i>)
3:00 pm	Time Domain FEM Computational Approach for Calibration of Surface Scan Method 866 Susanne Bauer (<i>Graz University of Technology</i>); Oszkár Bíró (<i>Graz University of Technology</i>); Gergely Koczka (<i>Graz University of Technology</i>); Andreas Gleinser (<i>Graz University of Technology</i>); Gunter Winkler (<i>Graz University of Technology</i>); Bernd Deutschmann (<i>Graz University of Technology</i>)

WE-PM-II-TM-05 TM-05: Biomedical Electromagnetic (I) 04:00 pm - 05:20 pm

Chair: Shaoying Huang, Singapore University of Technology and Design, Singapore

Co-Chair: Eisuke Hanada, Saga University Graduate School of Science and Engineering, Japan

- 04:00 pm **Parametric Study of Impact of Static Magnetic Field on Human Cell Viability** 872
Weinong Sun (*City University of Hong Kong*); Yaqing He (*City University of Hong Kong*);
Yinliang Diao (*City University of Hong Kong*); Sai-Wing Leung (*City University of Hong Kong*);
Yun-Ming Siu (*City University of Hong Kong*); Yuen-Chong Kong (*City University of Hong Kong*)

WE-PM-II-SS-08 SS-08: Simulation and

Testing for Automotive EMC (II)

04:00 pm - 05:20 pm

Chair: Sergio Amedeo Pignari, Politecnico di Milano, Italy

- 04:00 pm **Estimation for S-Parameters of a Differential Communication Transceiver IC Applying an Indirect Measurement Method** 875
Noboru Maeda (*Soken, Inc.*); Miyuki Mizoguchi (*Soken, Inc.*); Hiroyuki Mori (*Soken, Inc.*);
Takashi Yasuda (*Toyota Motor Corporation*); Hideki Goto (*Toyota Motor Corporation*)
- 04:20 pm **Current Distribution in Shielded Cable-Connector Systems for Power Transmission in Electric Vehicles** 881
Stephan Frei (*TU Dortmund University*); Abid Mushtaq (*TU Dortmund University*);
Katharina Hermes (*TU Dortmund University*); Robert Nowak (*TU Dortmund University*)
- 04:40 pm **Bulk Current Injection Quantification of BroadR-Reach® Protocol based System by Measurements and Modeling** 887
Waldemar Schulz (*Robert Bosch LLC*); Nicola Toscani (*Politecnico di Milano*); Flavia Grassi (*Politecnico di Milano*); Patrick DeRoy (*CST of America, LLC*); Cyrus Rostamzadeh (*Robert Bosch LLC*); Ryan Frost (*Robert Bosch LLC*)

WE-PM-II-TC-09 TC-09: Computational Electromagnetics (IV)

04:00 pm - 05:20 pm

Chair: Matthias Tröscher, CST, Germany

Co-Chair: Chao-Fu Wang, National University of Singapore, Singapore

- 04:00 pm **Efficient Electromagnetic Simulation of PCB with SPICE Elements by using HIE-FDTD Method** 893
Yuta Inoue (*Shizoka University*); Hideki Asai (*Shizoka University*)
- 04:20 pm **Modeling of EMP Coupling to Lossless MTLs in Time Domain based on Analytical Gauss-Seidel Iteration Technique** 897
Jun Guo (*Xi'an Jiaotong University*); Yan-zhao Xie (*Xi'an Jiaotong University*);
Farhad Rachidi (*Swiss Federal Institute of Technology*)
- 04:40 pm **Parallel DGTD Method for Transient Electromagnetic Problems** 903
Haoqing Chen (*Jiangsu Normal University*); Zhenbao Ye (*Institute of Applied Physics and Computational Mathematics*); Lei Zhao (*Jiangsu Normal University*); Haijing Zhou (*Institute of Applied Physics and Computational Mathematics*); Wenhua Yu (*Jiangsu Normal University*)

WE-PM-II-TC-11 TC-11: Nano and Advanced Materials**04:00 pm - 05:20 pm****Chair:** Sungtek Kahng, Incheon National University, South Korea**Co-Chair:** Alessio Tamburrano, Sapienza University of Rome, Italy

- 04:00 pm **Small Left-Handed Balun Designed to Increase MIMO Antenna Isolation for AP Systems** 907
C. Lee (*Incheon National University*); D. Han (*Incheon National University*); H. Park (*Incheon National University*); M.S. Khattak (*Incheon National University*); A.R. Khan (*Incheon National University*); S. Kahng (*Incheon National University*)
- 04:20 pm **Smart Metasurface with Non-Reciprocity for Fog Layer in IoT Environment** 912
Toshiro Kodera (*Meisei University*)
- 04:40 pm **Plasmonic Enhanced Emission from Nanostructured Embedded InGaN/GaN MQWs with Silver Nanoparticles** 915
C.B. Soh (*Singapore Institute of Technology*); C.M. Simon Yu (*Singapore Institute of Technology*); Samuel Lim (*Singapore Institute of Technology*); G.S. Kwang (*University of Glasgow*); Y.Y. Cheng (*Institute of Materials Research and Engineering, A*STAR*)
- 05:00 pm **Modelling of Electrical Percolation and Conductivity of Carbon Nanotube based Polymer Nanocomposites** 919
Lekshmi Mohan (*National Institute of Technology Calicut*); Sunitha K (*National Institute of Technology Calicut*); Sindhu T K (*National Institute of Technology Calicut*)

WE-PM-II-TC-05 TC-05: IEMI and Transients**04:00 pm - 05:20 pm****Chair:** William Radasky, Metatech Corporation, USA**Co-Chair:** Yanzhao Xie, Xi'an Jiaotong University, China

- 04:00 pm **Performance Improvement for Sub-Nanosecond Marx Generator based on Avalanche Transistors by Considering the Traveling Wave Process** 925
Mingxiang Gao (*Xi'an Jiaotong University*); Yanzhao Xie (*Xi'an Jiaotong University*); Yangxin Qiu (*Xi'an Jiaotong University*); Yahan Hu (*Xi'an Jiaotong University*); Kejie Li (*Xi'an Jiaotong University*)
- 04:40 pm **About the Possibility of Mistakes when using Unipolar Electric Field Pulses when Assessing Electronic Device Immunity to UWB Pulses** 928
Yury V. Parfenov (*Russian Academy of Sciences*); Vladimir M. Chepelev (*Russian Academy of Sciences*); William A. Radasky (*Metatech Corporation*)

THURSDAY TECHNICAL PAPERS

Thursday, May 17, 2018

TH-AM-I-TM-05 TM-05: Biomedical Electromagnetic (II)

08:30 am - 10:10 am

Chair: Kazuyuki Saito, Chiba University, Japan

Co-Chair: Jianqing Wang, Nagoya Institute of Technology, Japan

- 08:30 am **Study on the Searching Strategies of Assessing the MRI RF-Induced Heating for an Implantable Plate and Screw System** 932
Xiaohe Ji (*University of Houston*); Meiqi Xia (*University of Houston*); Jianfeng Zheng (*University of Houston*); Ji Chen (*University of Houston*); Wolfgang Kainz (*Food and Drug Administration*)
- 08:50 am **Impact on Human Exposure to Low Frequency Radiation with Psychological and Brainwave Changes** 936
Yaqing He (*City University of Hong Kong*); Weinong Sun (*City University of Hong Kong*); Peter S.W. Leung (*City University of Hong Kong*); Timothy Y.M. Siu (*City University of Hong Kong*); K.T. Ng (*City University of Hong Kong*)
- 09:10 am **Managing the Electromagnetic Environment of Hospital IoT Systems** 940
Eisuke Hanada (*Saga University*); Takato Kudou (*Oita University*)

TH-AM-I-TM-02 TM-02: EMC in Railway Systems (II)

08:30 am - 10:10 am

Chair: Peter S. W. Leung, City University of Hong Kong, China

Co-Chair: Samuel Chan, Land Transport Authority, Singapore

- 08:30 am **Analysis of Induced Voltage at Close Proximity with High Voltage Cables of Electrified Railways** 944
W.K. Lo (*EMC Consortium Limited and City University of Hong Kong*); Sai Wing Leung (*EMC Consortium Limited and City University of Hong Kong*); Patrick Wong (*EMC Consortium Limited*); Y.M. Siu (*City University of Hong Kong*); W.N. Sun (*City University of Hong Kong*)
- 08:50 am **Research on the Influence of Metal Groove on Wires Coupling in EMU** 948
Yali Song (*Beijing Jiaotong University*); Yinghong Wen (*Beijing Jiaotong University*); Dan Zhang (*Beijing Jiaotong University*); Lu Xing (*Beijing Jiaotong University*); Liangde Ma (*China Academy of Railway Sciences*)
- 09:30 am **Modeling and Simulation on Overall-Train EMI of China Standardized High-Speed Train** 953
Junpeng Ji (*Xi'an University of Technology and Xi'an Jiaotong University*); Yikun Liu (*Xi'an University of Technology*); Wenjie Chen (*Xi'an Jiaotong University*); Jingang Li (*Xi'an University of Technology*); Xu Yang (*Xi'an Jiaotong University*)

**TH-AM-I-SS-11 SS-11: Advanced
Measurements Technologies for 5G (II)**

08:30 am - 10:10 am

Chair: Lie Liu, General Test Systems Inc., USA

Co-Chair: Benoit Derat, Rohde & Schwarz, Italy

- 08:50 am **A Measurement System for Passive Intermodulation with Real Time
Environment Parameter Detection** 956
Wanzhao Cui (*Xi'an Institute of Space Radio Technology*); Rui Wang (*Xi'an Institute of Space Radio
Technology*); Jun Li (*Xi'an Institute of Space Radio Technology*)
- 09:10 am **5G Antenna Characterization in the Far-Field: How Close can Far-Field Be?** 959
Benoît Derat (*Rohde & Schwarz GmbH & Co. KG*)

**TH-AM-I-TM-03 TM-03: Efficient and Accurate
Simulation of Multi-Scale EMC and SI/PI (I)**

08:30 am - 10:10 am

Chair: Siping Gao, National University of Singapore, Singapore

Co-Chair: Huapeng Zhao, University of Electronic Science and Technology of China, China

- 09:10 am **Electromagnetic Analysis of Massive Vertical Interconnects for Dense Pin
Assignment Optimization using Multiple Scattering Techniques** 963
Boping Wu (*Huawei Technologies*)
- 09:50 am **Analysis of the Accuracy and Limitation of Contour Integral Equation
Modeling of Planar Structures** 966
Kangning Li (*University of Electronic Science and Technology of China*); Huapeng Zhao (*University
of Electronic Science and Technology of China*); Zhizhang Chen (*Dalhousie University and
University of Electronic Science and Technology of China*); Jun Hu (*University of Electronic
Science and Technology of China*)

**TH-AM-I-SS-05 SS-05: Potential Electromagnetic
Techniques for Booming Wireless Communications (III)**

08:30 am - 10:10 am

Chair: Han-Chang Hsieh, Bureau of Standards Metrology & Inspection, Taiwan

Co-Chair: Chow-Yen-Desmond Sim, Feng Chia University, Taiwan

- 08:30 am **Design Procedure of a CPW-Fed Monopole Antenna for Dual-Band Operation** 970
Jun-Yu Lai (*National University of Tainan*); Ji-Xiang Zheng (*National University of Tainan*);
Chien-Jen Wang (*National University of Tainan*)
- 08:50 am **On the Simultaneous Switching Noise Suppression by the Integration of
Z-Shape Power Bus and Bandstop Filter** 973
Tse-Hsuan Wang (*National Taipei University of Technology*); Lin-Zong Zheng (*National Taipei
University of Technology*); Ding-Bing Lin (*National Taiwan University of Science and Technology*);
Min-Hung Hsieh (*National Taiwan University of Science and Technology*)
- 09:10 am **A Compact CPW-Fed Monopole Antenna for Dual-Band Circular Polarization** 977
Ji-Xiang Zheng (*National University of Tainan*); Jun-Yu Lai (*National University of Tainan*);
Chien-Jen Wang (*National University of Tainan*)

09:30 am **An Ultrathin Wideband Capsule Antenna with Low Level Specific Absorption Ratio** 981
Wang Mengjun (*Hebei University of Technology*); Zhao Jun (*Hebei University of Technology*);
Zheng Hongxing (*Hebei University of Technology*); Wang Mengjun (*Hebei University of Technology*); Cai Lulu (*Hebei University of Technology*); Yang Ze (*Hebei University of Technology*);
Ma Ping (*Hebei University of Technology*); Zheng Hongxing (*Hebei University of Technology*)

09:50 am **An Effective EMI-Suppression Technique for Modern Wideband Common-Mode Filters** ... 986
Chien-Ting Kao (*Yuan Ze University*); Cheng-Nan Chiu (*Yuan Ze University*); Yu-Chou Chuang (*Yuan Ze University*); Tsung-Ching Lin (*Yuan Ze University and Ministry of Economic Affairs*);
Han-Chang Hsien (*Ministry of Economic Affairs*)

TH-AM-I-TM-04 TM-04: EMC in

Power Electronics and Smart Grid (II)

08:30 am - 10:10 am

Chair: Henglin Chen, Zhejiang University, China

Co-Chair: Flavia Grassi, Politecnico di Milano, Italy

08:30 am **Conducted Emissions Simulation Technology for an Inverter Device Integrated into the Motor** 991
Yoshitaka Nishiguchi (*Soken, Inc.*); Yoshihiro Kida (*Soken, Inc.*); Shinji Ohoka (*Soken, Inc.*);
Kazutoshi Shiomi (*DENSO Corporation*)

08:50 am **Variability Analysis of a Boost Converter based on an Iterative and Decoupled Circuit Implementation of the Stochastic Galerkin Method** 996
Paolo Manfredi (*Politecnico di Torino*); Riccardo Trincherio (*Politecnico di Torino*);
Dries Vande Ginste (*Ghent University*)

09:10 am **Electromagnetic Modeling of High Voltage Multi-Level Converter Substations** 1001
Didier Cottet (*ABB Switzerland Ltd.*); Bernhard Wunsch (*ABB Switzerland Ltd.*); Göran Eriksson (*ABB Sweden AB*); Filip Grecki (*ABB Switzerland Ltd.*); Magdalena Ostrogorska (*ABB Switzerland Ltd.*);
Wojciech Piasecki (*ABB Switzerland Ltd.*); Jenny Skansens (*ABB Switzerland Ltd.*);
Olof Andersson (*ABB Switzerland Ltd.*)

09:30 am **Broadband Models of High Voltage Power Transformers and Their use in EMC System Simulations of High Voltage Substations** 1007
Bernhard Wunsch (*ABB Switzerland Ltd.*); Didier Cottet (*ABB Switzerland Ltd.*);
Göran Eriksson (*ABB Sweden AB*)

09:50 am **Common Mode Noise Analysis of Buck-Boost Converter for Hybrid Energy Storage Systems** 1013
Minghai Dong (*University of Electronic Science and Technology of China*); Hui Li (*University of Electronic Science and Technology of China*); Qishui Zhong (*University of Electronic Science and Technology of China*); Yingzhe Wu (*University of Electronic Science and Technology of China*)

TH-AM-II-TC-10 TC-10: SI/PI (V)

10:30 am - 12:30 pm

Chair: Tzong-Lin Wu, National Taiwan University, Taiwan

Co-Chair: Binfang Wang, A*STAR, Singapore

10:30 am **A Pseudo-Supervised Machine Learning Approach to Broadband LTI Macro-Modeling** 1018
Thong Nguyen (*University of Illinois at Urbana - Champaign*); Jose E. Schutt-Aine (*University of Illinois at Urbana - Champaign*)

10:50 am	Most Energy-Efficient Input Voltage Function for RC Delay Line	1022
	Radit Smunyahirun (<i>Nanyang Technological Univ.</i>); Eng Leong Tan (<i>Nanyang Technological Univ.</i>)	
11:30 am	Statistical Eye-Diagram Estimation Method for High-Speed Channel with N-Tap Decision Feedback Equalizer (DFE)	1027
	Junyong Park (<i>KAIST</i>); Huijin Song (<i>KAIST</i>); Dong-Hyun Kim (<i>KAIST</i>); Sumin Choi (<i>KAIST</i>); Joung-ho Kim (<i>KAIST</i>)	
11:50 am	Advanced PDN Analysis and Optimization within a 3D SoC, SiP, PCB Co-Design Environment	N/A
	Ralf Bruening (<i>Zuken GmbH</i>); Narayanan T. V. (<i>Zuken USA</i>); Humair Mandvia (<i>Zuken USA</i>)	
12:10 pm	Comprehensive Signal and Power Co-Investigation on DDR4 Simulation and Measurement	1041
	Nick K.H. Huang (<i>ASUSTek Computer Inc.</i>); Chih-Yao Hsieh (<i>ASUSTek Computer Inc.</i>); Bin-Chyi Tseng (<i>ASUSTek Computer Inc.</i>); Liang-Yu Shih (<i>ASUSTek Computer Inc.</i>)	

TH-AM-II-SS-03 SS-03: Wireless Technology and Wireless Power Transfer (II)

10:30 am - 12:30 pm

Chair: Seungyoung Ahn, KAIST, South Korea

Co-Chair: Chulsoon Hwang, Missouri University of Science and Technology, USA

12:10 pm	45-Degree Polarized Microstrip Grid Arrays for Millimeter-Wave Micro Base Station	1045
	Shan Li (<i>Shanghai Jiao Tong University</i>); Li-Yun Shi (<i>Shanghai Jiao Tong University</i>); Lin-Sheng Wu (<i>Shanghai Jiao Tong University</i>); Ying Liu (<i>Xidian University</i>); Yue Ping Zhang (<i>Nanyang Technological University</i>)	

TH-AM-II-SS-09 SS-09: Hardware Security for IoT Devices (II)

10:30 am - 12:30 pm

Chair: William A. Radasky, Metatech Corporation, USA

Co-Chair: Yuichi Hayashi, NAIST, Japan

10:30 am	On the Evaluation of Electromagnetic Information Leakage from Mobile Device Screens ...	1050
	Ville Yli-Mäyry (<i>Tohoku University</i>); Daisuke Miyata (<i>Tohoku University</i>); Naofumi Homma (<i>Tohoku University</i>); Yuichi Hayashi (<i>NAIST</i>); Takafumi Aoki (<i>Tohoku University</i>)	
10:50 am	Information Leakage and Recovery from Multiple LCDs	1053
	Dong Hoon Choi (<i>Yonsei Univ.</i>); Ho Seong Lee (<i>Yonsei Univ.</i>); Jong-Gwan Yook (<i>Yonsei Univ.</i>)	
11:10 am	A Possible Information Leakage from DVI Cable Corresponding to Display Color	1056
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TH-AM-II-TM-03 TM-03: Efficient and Accurate Simulation of Multi-Scale EMC and SI/PI (II)

10:30 am - 12:30 pm

Chair: Shiquan He, University of Electronic Science and Technology of China, China

Co-Chair: Siping Gao, National University of Singapore, Singapore

10:30 am	Research on Sparse Adaptive Beam-Forming based on Non-Uniform Norm for Failure Elements	1059
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- 11:10 am **Finite-Difference Time-Domain Method for Multilayer Carbon-Fiber-Reinforced Polymer Panel using Tensorial Conductivity Matrix** 1062
 Zaifeng Yang (*Institute of High Performance Computing, A*STAR*); Hui Min Lee (*Institute of High Performance Computing, A*STAR*); Si-Ping Gao (*Institute of High Performance Computing, A*STAR*); Richard Xian-Ke Gao (*Institute of High Performance Computing, A*STAR*); Ching Eng Png (*Institute of High Performance Computing, A*STAR*)

TH-AM-II-SS-05 SS-05: Potential Electromagnetic

Techniques for Booming Wireless Communications (IV)

10:30 am - 12:30 pm

Chair: Han-Chang Hsieh, Bureau of Standards Metrology & Inspection, Taiwan

Co-Chair: Chow-Yen-Desmond Sim, Feng Chia University, Taiwan

- 10:30 am **A High-Gain Circularly-Polarized Patch Antenna Design using an Advanced Shielding Technique** 1067
 Shao Po Sun (*Yuan Ze University*); Cheng-Nan Chiu (*Yuan Ze University*); Yu-Chou Chuang (*Yuan Ze University*); Tsung-Ching Lin (*Yuan Ze University and Ministry of Economic Affairs*); Han-Chang Hsieh (*Ministry of Economic Affairs*)
- 10:50 am **Near- and Far-Field Shielding Effectiveness Analysis of Magnetic Materials and their Effect on Wireless Power Charger** 1071
 Han-Nien Lin (*Feng Chia University*); Cheng-Hau Wu (*Feng Chia University*); Jen-Fu Huang (*Feng Chia University*); Wei-Ding Tseng (*Feng Chia University*); Jeffrey Lin (*National Kaohsiung University*); Min-Shang Lin (*Bureau of Standards, Metrology and Inspection, MOEA*)
- 11:30 am **Microwave Orbital Angular Momentum Mode Multiplexing using Circular Slot Antenna** 1077
 Zixiao Zhang (*Huazhong University of Science and Technology*); Liangqi Gui (*Huazhong University of Science and Technology*); Dandan Liu (*Huazhong University of Science and Technology*); Han Chen (*Huazhong University of Science and Technology*)
- 11:50 am **Circular Sector Antenna Pair with Harmonic Rejection Property for Near-Field Wireless Power Transmission** 1081
 Ding-Bing Lin (*National Taiwan University of Science and Technology*); Ifong Wu (*NICT*); Ling Tien (*National Taipei University of Technology*); Yi-Hao Huang (*National Taiwan University of Science and Technology*)
- 12:10 pm **Small-Sized, Printed 2.4/5-GHz WLAN Notebook Antenna Aimed for 4 x 4 Multiple Transmit/Receive Antennas in Future Gbps Communications** 1084
 Saou-Wen Su (*ASUSTek Computer Inc.*); Bin-Chyi Tseng (*ASUSTek Computer Inc.*)

TH-AM-II-TM-04 TM-04: EMC in Power

Electronics and Smart Grid (III)

10:30 am - 12:30 pm

Chair: Yanzhao Xie, Xi'an Jiaotong University, China

Co-Chair: Junhong Deng, TÜV SÜD PSB Pte Ltd, Singapore

- 10:30 am **Non-Ideal Electric Field Shielding with Grounding Resistor for Suppressing EMI Coupling in a Power Converter** 1089
 Shize Ye (*Zhejiang University*); Xiaoyan Zheng (*Zhejiang University*); Zhichao Zheng (*Zhejiang University*); Ji Xiao (*State Grid Corp. of China*); Henglin Chen (*Zhejiang University*)

- 10:50 am **Numerical Approach to Study Layout Influence on Electromagnetic Emissions Signature** 1093
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Jaleddine Ben Hadj Slama (*University of Sousse*); Christian Vollaire (*University of Lyon*)
- 11:10 am **Overvoltage of Secondary Cables in Substation due to Short Circuit Fault** 1099
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Yutang Ma (*Yunnan Electric Power Research Institute*)
- 11:30 am **Automated Equivalent Circuit Extraction of Impedance Curves using a
Gauss-Newton Algorithm** 1103
Niek Moonen (*University of Twente*); Jesper Lansink Rotgerink (*University of Twente and
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Zhitong Cui (*Xidian University*); Flavia Grassi (*Politecnico di Milano*); Sergio A. Pignari
(*Politecnico di Milano*); Bing Wei (*Xidian University*)

TH-PM-I-SS-02 SS-02: Metamaterials/Metasurfaces for Manipulations of Electromagnetic Waves

01:30 pm - 03:30 pm

Chair: He-Xiu Xu, Air Force Engineering University, China

Co-Chair: Yongjun Huang, University of Electronic Science and Technology of China, China

- 02:10 pm **Broadband Wide-Angle Polarization-Independent Diffusion using
Parabolic-Phase Metasurface** 1114
He-Xiu Xu (*Fudan University*); Shaojie Ma (*Fudan University*); Xiaohui Ling (*Fudan University*);
Lei Zhou (*Fudan University*); He-Xiu Xu (*Air Force Engineering University*); Xiao-Kuan Zhang (*Air
Force Engineering University*)
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of Aeronautics and Astronautics*); Changqing Gu (*Nanjing University of Aeronautics and Astronautics*);
Baijie Xu (*Nanjing University of Aeronautics and Astronautics*); Kuan Wang (*Nanjing University of
Aeronautics and Astronautics*); Zhuo Li (*Nanjing University of Aeronautics and Astronautics*)
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Shuang Ma (*Harbin Institute of Technology*); Fan-Yi Meng (*Harbin Institute of Technology*);
Guo-Hui Yang (*Harbin Institute of Technology*); Kuang Zhang (*Harbin Institute of Technology*);
Xu-Ming Ding (*Harbin Institute of Technology*); Qun Wu (*Harbin Institute of Technology*);
Lei Zhu (*Qiqihar University*)

TH-PM-I-SS-14 SS-14: Radio Frequency Remote Sensing (Supported by IET Electromagnetics Technical and Professional Network)

01:30 pm - 03:30 pm

Chair: Julien Le Kernec, University of Glasgow, UK

Co-Chair: Alistair Duffy, De Montfort University, UK

- 01:50 pm **Analysis of the Impacts of Ionospheric Scintillation on Geosynchronous SAR
based on Spherical Wave Correction** 1126
Cheng Hu (*Beijing Institute of Technology*); Jiaqi Hu (*Beijing Institute of Technology*);
Xichao Dong (*Beijing Institute of Technology*); Yuanhao Li (*Beijing Institute of Technology*);
Dandan Zhang (*Beijing Institute of Technology*)

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02:50 pm **Aluminium Feeds for Reflector for NadirSAR** 1140
 D. Gray (*Xi'an Jiaotong Liverpool University*); J. Le Kerneec (*University of Glasgow*)

TH-PM-I-TC-02 TC-02: EMC Measurement (III) 01:30 pm - 03:30 pm

Chair: Ed Hare, American Radio Relay League, USA

Co-Chair: Zaifeng Yang, A*STAR, Singapore

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TH-PM-I-TM-03 TM-03: Efficient and Accurate Simulation of Multi-Scale EMC and SI/PI (III) 01:30 pm - 03:30 pm

Chair: Huapeng Zhao, University of Electronic Science and Technology of China, China

Co-Chair: Xingchang Wei, Zhejiang University, China

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Shingo Seto (*Sony GM&O Corp.*); Kenji Araki (*Sony GM&O Corp.*); Jun Fan (*Missouri University of
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TH-PM-I-SS-06 SS-06: Design and Modeling of Emerging EM Components and devices (I)

01:30 pm - 03:30 pm

Chair: Zhixiang Huang, Anhui University, China

Co-Chair: Min Hu, University of Electronic Science and Technology of China, China

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Yongjian Zhi (*CRRC Zhuzhou Institute Co., Ltd.*); Weizheng Yao (*XUJI Group Corp.*);
Gang Liu (*XUJI Group Corp.*)

TH-PM-I-TC-05 TC-05: Electrostatic Discharge and Arcs

01:30 pm - 03:30 pm

Chair: William Radasky, Metatech Corporation, USA

Co-Chair: Yoshihiro Baba, Doshisha University, Japan

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Pujitha Davuluri (*Intel Corporation*); Hao-Han Hsu (*Intel Corporation*); Min Keen Tang (*Intel
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Best EMC Paper Finalist

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Myeongko Park (*Sungkyunkwan University*); Wansoo Nah (*Sungkyunkwan University*);
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Chanseok Hwang (*Samsung Electronics Co. Ltd*)

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Best Student Paper Finalist

TH-PM-II-TC-04 TC-04: EMI/EMC**03:50 pm - 05:30 pm****Chair:** Cheng-Nan Chiu, Yuan Ze University, Taiwan**Co-Chair:** Wei-Jiang Zhao, A*STAR, Singapore

- 03:50 pm **Antenna Calibration in Anechoic Chambers (30 MHz to 1 GHz): New Approach to Antenna Calibration** 1230
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**TH-PM-II-TC-01 TC-01/02/03: EMC Management,
 Measurement and Environment**

03:50 pm - 05:30 pm

Chair: Frank Leferink, University of Twente and Thales Group, Netherlands

Co-Chair: Zhongxiang Shen, Nanyang Technological University, Singapore

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 Keith Armstrong (*Cherry Clough Consultants Ltd*)
Best Student Paper Finalist

**TH-PM-II-TC-02 TC-01/02/03: EMC Management,
 Measurement and Environment**

03:50 pm - 05:30 pm

Chair: Frank Leferink, University of Twente and Thales Group, Netherlands

Co-Chair: Zhongxiang Shen, Nanyang Technological University, Singapore

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 Zhiliang Lu (*Extra-High-Voltage Power Transmission Company of China Southern Power Grid*);
 Liang Zhang (*Extra-High-Voltage Power Transmission Company of China Southern Power Grid*);
 Zhicheng Xie (*Extra-High-Voltage Power Transmission Company of China Southern Power Grid*);
 Zhilong Zou (*Extra-High-Voltage Power Transmission Company of China Southern Power Grid*)

**TH-PM-II-TC-03 TC-01/02/03: EMC Management,
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03:50 pm - 05:30 pm

Chair: Frank Leferink, University of Twente and Thales Group, Netherlands

Co-Chair: Zhongxiang Shen, Nanyang Technological University, Singapore

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**TH-PM-II-TM-03 TM-03: Efficient and Accurate
Simulation of Multi-Scale EMC and SI/PI (IV)**

03:50 pm - 05:30 pm

Chair: Xingchang Wei, Zhejiang University, China

Co-Chair: Chao-Fu Wang, National University of Singapore, Singapore

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Singapore Pte. Ltd.*)

**TH-PM-II-SS-06 SS-06: Design and Modeling of
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03:50 pm - 05:30 pm

Chair: Zhixiang Huang, Anhui University, China

Co-Chair: Min Hu, University of Electronic Science and Technology of China, China

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03:50 pm - 05:30 pm

Chair: Petre-Marian Nicolae, University of Craiova, Romania

Co-Chair: Flavia Grassi, Politecnico di Milano, Italy

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Wayne Chen (*SMRT Corporation Ltd.*)
Best EMC Paper Finalist and Best Student Paper Finalist

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Co-Chair: Blaise Ravelo, Normandy University UNIROUEN, France

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Co-Chair: Ram Achar, Carleton University, Canada

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TU-PM-I-SS-07 SS-07: Aerospace EMC (Supported by SC-07)

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Co-Chair: Flavia Grassi, Politecnico di Milano, Italy

03:10 pm **Effect of Electron Density in Multipaction on the Electromagnetic Characteristics of Microwave Device** 5
Xinbo Wang (*Xi'an Jiaotong University*); Wanzhao Cui (*Xi'an Jiaotong University*);
Yongdong Li (*Xi'an Jiaotong University*); Xiaoning Zhang (*Xi'an Jiaotong University*);
Chunliang Liu (*Xi'an Jiaotong University*)

TU-PM-I-SS-05 SS-05: Potential Electromagnetic

Techniques for Booming Wireless Communications (I)

01:30 pm - 03:30 pm

Chair: Hsi-Tseng Chou, National Taiwan University, Taiwan

Co-Chair: Ding-Bing Lin, National Taiwan University of Science and Technology, Taiwan

02:10 pm **An Introduction to MIMO Antenna Array Designs for Future 5G Smartphone Applications** 7
Chow-Yen-Desmond Sim (*Feng Chia University*); Chih-Heng Lin (*Feng Chia University*); Heng-Yu Liu (*Feng Chia University*)

TU-PM-I-TC-05 TC-05: EM Information Leakage**01:30 pm - 03:30 pm****Chair:** Yuichi Hayashi, NAIST, Japan**Co-Chair:** William Radasky, Metatech Corporation, USA

- 01:30 pm **Fundamental Study on Non-invasive Frequency Injection Attack against RO-Based TRNG** 8
 Saki Osuka (NAIST); Daisuke Fujimoto (NAIST); Yu-ichi Hayashi (NAIST);
 Naofumi Homma (Tohoku University); Arthur Beckers (KU Leuven); Josep Balasch (KU Leuven);
 Benedikt Gierlich (KU Leuven); Ingrid Verbaauwhede (KU Leuven)
- 01:50 pm **Study on the Effect of Clock Rise Time on Fault Occurrence under IEMI** 9
 Naoto Saga (Tohoku University); Takuya Itoh (Tohoku University); Yu-ichi Hayashi (NAIST);
 Takaaki Mizuki (Tohoku University); Hideaki Sone (Tohoku University)
- 02:10 pm **Data Injection Attacks using a Hardware Trojan on a Transmission Line** 10
 Shugo Kaji (NAIST); Masahiro Kinugawa (Sendai College); Daisuke Fujimoto (NAIST);
 Yu-ichi Hayashi (NAIST)
- 02:30 pm **HT-Detection Method based on Impedance Measurements of ICs** 11
 Shota Nin (NAIST); Daisuke Fujimoto (NAIST); Yu-ichi Hayashi (NAIST); Noriyuki Miura (Kobe
 University); Makoto Nagata (Kobe University); Tsutomu Matsumoto (Yokohama National University)
- 02:50 pm **EM Security Analysis of Compact ECDSA Hardware** 12
 Kosuke Koiwa (Tohoku University); Daisuke Fujimoto (NAIST); Yuichi Hayashi (NAIST);
 Makoto Nagata (Kobe University); Makoto Ikeda (University of Tokyo); Tsutomu Matsumoto
 (Yokohama National University); Naofumi Homma (Tohoku University)
- 03:10 pm **A Study on an Evaluation Method for EM Information Leakage
 Utilizing Controlled Image Displaying** 13
 Ryota Birukawa (Tohoku University); Gentaro Tanabe (Tohoku University); Yu-ichi Hayashi
 (NAIST); Takaaki Mizuki (Tohoku University); Hideaki Sone (Tohoku University)

TU-PM-I-FOR Interactive Forum Sessions**3:00 pm - 5:00 pm****Chair:** Hui Min Lee, Institute of High Performance Computing, Singapore**Co-Chair:** Eng Kee Chua, Nanyang Technological University, Singapore

- 3:00 pm **Paper-Like FeSiAl/Cellulose Nanofiber Composite** N/A
 Jiagen Jiang (University of Electronic Science and Technology of China); Peiheng Zhou (University
 of Electronic Science and Technology of China); Wenxin Li (University of Electronic Science and
 Technology of China); Xiaojia Luo (University of Electronic Science and Technology of China);
 Wanli Chen (University of Electronic Science and Technology of China); Yang Zhou (University of
 Electronic Science and Technology of China); Guorui Zhang (University of Electronic Science and
 Technology of China); Fengxia Li (University of Electronic Science and Technology of China);
 Longjiang Deng (University of Electronic Science and Technology of China)
- 3:00 pm **ESD Housing Effect** N/A
 Huasheng Zhao (Cisco Systems Inc.)
- 3:00 pm **Improving Performance of Shipboard HF Communication Antennas by
 Antenna Placement** 17
 Can Bayseferogullari (Aselsan Inc.); Mustafa Ural (Aselsan Inc.)

3:00 pm	Amplitude Characteristics of Frequency Band-Limited LED Emission for Evaluation of Impact on Wireless Medical Telemeter	23
	Sazu Arie (<i>National Institute of Information and Communications Technology</i>); Kai Ishida (<i>National Institute of Information and Communications Technology</i>); Minoru Hirose (<i>Kitasato University</i>)	
3:00 pm	Electromagnetic Compatibility of Industrial Robots Caused by Power Supply Networks	N/A
	Sun Tianfei (<i>Chongqing Dexin Robot Testing Center Co., Ltd.</i>)	
3:00 pm	Antenna Diversity Method for Emission Measurements in a Reverberation Chamber	26
	Sang il Kwak (<i>Electronics and Telecommunications Research Institute</i>); Jung-hwan Hwang (<i>Electronics and Telecommunications Research Institute</i>); Dong-Uk Sim (<i>Electronics and Telecommunications Research Institute</i>); Jong Hwa Kwon (<i>Electronics and Telecommunications Research Institute</i>); Myunghoi Kim (<i>Hankyong National University</i>)	
3:00 pm	Nonlinear Dielectric Behaviour of Semiconductor Material under Microwave Field	27
	Yong Gao (<i>University of Electronic Science and Technology of China</i>); En Li (<i>University of Electronic Science and Technology of China</i>); Gaofeng Guo (<i>University of Electronic Science and Technology of China</i>)	
3:00 pm	A Study on Nonlinear Effect of Modulated Radio Signals at 1 kHz on Stimulus Response	28
	Hiroki Shinoda (<i>Nagoya Institute of Technology</i>); Daisuke Anzai (<i>Nagoya Institute of Technology</i>); Jianqing Wang (<i>Nagoya Institute of Technology</i>)	
3:00 pm	Research on Conducted and Radiated Electromagnetic Interference of VSC-HVDC Transmission System	29
	Xiuwu Zhang (<i>North China Electric Power University</i>); Weidong Zhang (<i>North China Electric Power University</i>); Bo Xu (<i>North China Electric Power University</i>); Jian Zhang (<i>North China Electric Power University</i>)	
3:00 pm	Efficient Analysis of Switching Noise Suppression of SMPS Boards using Segmentation Method	30
	Myunghoi Kim (<i>Hankyong National University</i>); Dongkyu Roh (<i>LIG Nex1 Co., Ltd.</i>); Sungseok Jung (<i>LIG Nex1 Co., Ltd.</i>); Kyumin Kwak (<i>LIG Nex1 Co., Ltd.</i>)	
3:00 pm	Differential-Skew Mitigation by Rotating Meshed Ground	31
	Chenyu Wang (<i>Okayama University</i>); Kengo Iokibe (<i>Okayama University</i>); Yoshitaka Toyota (<i>Okayama University</i>)	
3:00 pm	Novel Intermodulation Reference for Passive Intermodulation Measurement Calibration	N/A
	Xiong Chen (<i>Xi'an Jiaotong University</i>); Qianwen Chen (<i>Hunan University</i>); Yongning He (<i>Xi'an Jiaotong University</i>)	
3:00 pm	A High-Efficiency and Wideband Tunable Converter based on a Petal Metasurface	N/A
	Fengxia Li (<i>University of Electronic Science and Technology of China</i>); Haiyan Chen (<i>University of Electronic Science and Technology of China</i>); Yang Zhou (<i>University of Electronic Science and Technology of China</i>); Linbo Zhang (<i>University of Electronic Science and Technology of China</i>); Difei Liang (<i>University of Electronic Science and Technology of China</i>); Haipeng Lu (<i>University of Electronic Science and Technology of China</i>); Jianliang Xie (<i>University of Electronic Science and Technology of China</i>); Longjiang Deng (<i>University of Electronic Science and Technology of China</i>)	
3:00 pm	Some Typical Problems in Electromagnetic Compatibility Testing of an Electric Vehicle	N/A
	Dou Manyi (<i>Chongqing Dexin Robot Testing Center Co., Ltd.</i>); Sun Tianfei (<i>Chongqing Dexin Robot Testing Center Co., Ltd.</i>)	

3:00 pm	Ultralow-Noise Isolated Switch-Mode Power Supply	39
	Yu-Meng Yang (<i>University of Science and Technology of China</i>); Yue-Fei Wang (<i>University of Science and Technology of China</i>); Xiao Jiang (<i>University of Science and Technology of China</i>)	
3:00 pm	Bias-Dependent Power Distribution Network Impedance Analysis with MOS Capacitor	40
	Dong-Hyun Kim (<i>KAIST</i>); Subin Kim (<i>KAIST</i>); Junyong Park (<i>KAIST</i>); Youngwoo Kim (<i>KAIST</i>); Sumin Choi (<i>KAIST</i>); Kyungjun Cho (<i>KAIST</i>); Joungho Kim (<i>KAIST</i>)	
3:00 pm	An Ultrathin Multi-Band Flexible Metamaterial Absorber with Gradient Resistive Sheet Unit	N/A
	Guorui Zhang (<i>University of Electronic Science and Technology of China</i>); Yang Zhou (<i>University of Electronic Science and Technology of China</i>); Peiheng Zhou (<i>University of Electronic Science and Technology of China</i>); Haiyan Chen (<i>University of Electronic Science and Technology of China</i>); Longjiang Deng (<i>University of Electronic Science and Technology of China</i>); Difei Liang (<i>University of Electronic Science and Technology of China</i>)	
3:00 pm	Wave Modulating for Oblique Incidence based on Coding Metasurface	N/A
	Yang Zhou (<i>University of Electronic Science and Technology of China</i>); Guo-Rui Zhang (<i>University of Electronic Science and Technology of China</i>); Pei-Heng Zhou (<i>University of Electronic Science and Technology of China</i>); Hai-Yan Chen (<i>University of Electronic Science and Technology of China</i>); Di-Fei Liang (<i>University of Electronic Science and Technology of China</i>)	
3:00 pm	Planar Hybrid Common Mode Filter	43
	Jens Werner (<i>Jade University of Applied Science</i>); Jan Preibisch (<i>Nexperia Germany GmbH</i>); Jennifer Schütt (<i>Nexperia Germany GmbH</i>)	

TU-PM-II-TM-01 TM-01: IC EMC (I) 04:00 pm - 06:00 pm

Chair: Fabian Vargas, Catholic University – PUCRS, Brazil

Co-Chair: Sonia Ben Dhia, LAAS CNRS, France

05:40 pm	Fault State Behaviour of Smart Power Devices during Electromagnetic Interference	44
	Bernd Deutschmann (<i>Graz University of Technology</i>); Paul Kastner (<i>Graz University of Technology</i>); Gunter Winkler (<i>Graz University of Technology</i>)	

TU-PM-II-SS-08 SS-08: Simulation and Testing for Automotive EMC (I) 04:00 pm - 06:00 pm

Chair: Sergio Amedeo Pignari, Politecnico di Milano, Italy

05:00 pm	EMC Simulation of Automotive Ethernet Systems	50
	Andreas Barchanski (<i>CST - Computer Simulation Technology GmbH</i>); Matthias Tröscher (<i>CST - Computer Simulation Technology GmbH</i>)	

TU-PM-II-SS-12 SS-12: EM Shielding Technology for Mobile Devices 04:00 pm - 06:00 pm

Chair: Hyunho Park, University of Suwon, South Korea

Co-Chair: Chulsoon Hwang, Missouri University of Science and Technology, USA

04:20 pm	Optimized FPC Design with EMI Film	51
	Liang-Yu Shih (<i>ASUSTek Computer Inc.</i>); Hank Lin (<i>ASUSTek Computer Inc.</i>); Chung-Han Tsai (<i>ASUSTek Computer Inc.</i>); Bin-Chyi Tseng (<i>ASUSTek Computer Inc.</i>)	

05:00 pm	Shielding Effectiveness Estimation for Shielding Box having Unknown Aperture	54
	Jung-Hwan Hwang (<i>Electronics and Telecommunications Research Institute</i>); Hyun-Ho Park (<i>University of Suwon</i>); Sang-il Kwak (<i>Electronics and Telecommunications Research Institute</i>); Dong-wook Sim (<i>Electronics and Telecommunications Research Institute</i>); Jong-Hwa Kwon (<i>Electronics and Telecommunications Research Institute</i>)	

WEDNESDAY ABSTRACT REVIEWED PAPERS

Wednesday, May 16, 2018

WE-AM-I-TC-10 TC-10: SI/PI (III) **08:30 am - 10:10 am**

Chair: Xiaoning Ye, Intel, USA

Co-Chair: Kye-Yak See, Nanyang Technological University, Singapore

09:10 am	EMI Shielding Film Modeling Study for High-Speed Interconnect in Flexible Printed Circuit Board	N/A
	Hanfeng Wang (<i>Google Inc.</i>); Tony Lin (<i>Google Inc.</i>); Ken Wu (<i>Google Inc.</i>)	

WE-AM-I-TC-09 TC-09: CEM and EMI **08:30 am - 10:10 am**

Chair: Hideki Asai, Shizuoka University, Japan

Co-Chair: Wen-Yan Yin, Zhejiang University, China

08:50 am	An Optimized GPU Accelerated Pre-Conditioned Biconjugate Gradient Stabilized Method to Speed up the Scalar Potential Finite-Difference Method	58
	Congsheng Li (<i>China Academy of Information and Communications Technology</i>); Chen Zhang (<i>China Academy of Information and Communications Technology</i>); Tongning Wu (<i>China Academy of Information and Communications Technology</i>)	

WE-AM-I-TC-09 TC-09: Computational Electromagnetics (III) **08:30 am - 10:10 am**

Chair: Tzong-Lin Wu, National Taiwan University, Taiwan

Co-Chair: Yueping Zhang, Nanyang Technological University, Singapore

08:30 am	Some Analytical Formulas for the Directivity Calculation of Antenna Arrays	60
	A. Shlamberg (<i>Holon Institute of Technology</i>); H. Matzner (<i>Holon Institute of Technology</i>); E. Levine (<i>Afeka College of Engineering</i>)	

08:50 am	Time-Domain Coupling Analysis of Unequal Length MTLs Excited by Plane Wave	61
	Qiang Liu (<i>Institute of Applied Physics and Computational Mathematics</i>); Zhihong Ye (<i>Chongqing University of Posts and Telecommunications</i>)	

WE-AM-I-SS-04 SS-04: Emerging Technologies and EMC **08:30 am - 10:10 am**

Chair: Wee Jin Koh, DSO National Laboratories, Singapore

Co-Chair: Frank Leferink, University of Twente and Thales Group, Netherlands

09:30 am	Status of IEMI Activities at the End of 2017	62
	William A. Radasky (<i>Metatech Corporation</i>)	

WE-AM-II-TC-10 TC-10: SI/PI (IV)**10:30 am - 12:30 pm****Chair:** Jose Schutt-Aine, University of Illinois, USA**Co-Chair:** Zi-Liang Liu, National University of Singapore, Singapore

- 10:30 am **Rapid Electro-Thermal Modeling for 3D Integration using Circuit Simulation Techniques** 63
Gene Shiue (*University of Illinois*); José Schutt-Ainé (*University of Illinois*)
- 11:50 am **Scalable Platform Power Integrity Design Approach with Standard PI Model (SPIM) and Unified PI Target** 64
Xingjian Kinger Cai (*Intel Corporation*); Jimmy Hsiao (*Intel Corporation*);
Chi-te Chen (*Intel Corporation*); Yun Ling (*Intel Corporation*);
Steven Yun Ji (*Intel Corporation*); Denis Chen (*Intel Corporation*)
- 12:10 pm **Modeling and Measurement of a Common-Mode Filter based on the 3-D Transmission Line Structure** 67
Yong-Sheng Li (*Zhejiang University*); Madhavan Swaminathan (*Georgia Institute of Technology*);
Er-Ping Li (*Zhejiang University*)

WE-AM-II-SS-03 SS-03: Wireless Technology and Wireless Power Transfer (I)**10:30 am - 12:30 pm****Chair:** Seungyoung Ahn, KAIST, South Korea**Co-Chair:** Eakhwan Song, Kwangwoon University, South Korea

- 11:10 am **Dual-Mode RFID Tag Antenna on Flexible Silk** 68
Xiaoyang Yin (*National University of Singapore*); Siping Gao (*National University of Singapore*)
- 11:30 am **Single Metal Path Power Transfer Technology without Return Path at 13.56MHz ISM Band** 69
Bonyoung Lee (*Ulsan National Institute of Science and Technology*); Woojin Park (*Ulsan National Institute of Science and Technology*); Seongkyu Song (*Ulsan National Institute of Science and Technology*); Franklin Bien (*Ulsan National Institute of Science and Technology*)

WE-PM-I-FOR Interactive Forum Sessions**12:00 pm - 2:00 pm****Chair:** Hui Min Lee, Institute of High Performance Computing, Singapore**Co-Chair:** Eng Kee Chua, Nanyang Technological University, Singapore

- 12:00 pm **Immunity Tests in a Reverberation Chamber using a Correction Factor** 70
Sang il Kwak (*Electronics and Telecommunications Research Institute*); Jung-Hwan Hwang (*Electronics and Telecommunications Research Institute*); Dong-Uk Sim (*Electronics and Telecommunications Research Institute*); Jong Hwa Kwon (*Electronics and Telecommunications Research Institute*)

WE-PM-I-SC-07 SC-07: Aeronautics and Space EMC**01:30 pm - 03:30 pm****Chair:** Narvaez Pablo, Jet Propulsion Laboratory, USA**Co-Chair:** Peter S. W. Leung, City University of Hong Kong, China

- 02:10 pm **Analysis of Signal Environment on 1030/1090MHz Aeronautical Surveillance Systems** 71
 Takuya Otsuyama (*Electronic Navigation Research Institute*); Junichi Honda (*Electronic Navigation Research Institute*); Junichi Naganawa (*Electronic Navigation Research Institute*);
 Hiromi Miyazaki (*Electronic Navigation Research Institute*)

WE-PM-I-TC-04 TC-04: EMI**01:30 pm - 03:30 pm****Chair:** Ding-Bing Lin, National Taiwan University of Science and Technology, Taiwan**Co-Chair:** Jin Meng, Naval University of Engineering, China

- 03:10 pm **EMI Prediction of Packages by Deep Neural Network** 72
 Hang Jin (*Zhejiang University*); Hanzhi Ma (*Zhejiang University*); Er-Ping Li (*Zhejiang University*)

**WE-PM-I-TC-12 TC-12: EMC for
Emerging Wireless Technology (II)****01:30 pm - 03:30 pm****Chair:** Lie Liu, General Test Systems Inc., USA**Co-Chair:** Franco Fiori, Politecnico di Torino, Italy

- 01:50 pm **Millimeter-Wave Propagation Measurement during Rainy Days in Beijing** 73
 Congzheng Han (*Chinese Academy of Sciences*); Yongheng Bi (*Chinese Academy of Sciences*);
 Shu Duan (*Chinese Academy of Sciences*)
- 02:10 pm **A Novel Stochastic Integral Equation Method for MIMO Communication
in Diffuse Multipath Environments** 74
 Zhen Peng (*University of New Mexico*); Shen Lin (*University of New Mexico*)
- 02:30 pm **Some Phase-Shifterless Scanning Array Antennas** 75
 L. Volynsky (*Holon Institute of Technology*); J. Vargas (*Holon Institute of Technology*);
 H. Matzner (*Holon Institute of Technology*); E. Levine (*Holon Institute of Technology*)
- 02:50 pm **A 60 GHz Incabin Wireless Transmitting System with Interference Mitigation** 76
 Wei-Jiang Zhao (*A*STAR*)

WE-PM-II-FOR Interactive Forum Sessions**3:00 pm - 5:00 pm****Chair:** Hui Min Lee, Institute of High Performance Computing, Singapore**Co-Chair:** Eng Kee Chua, Nanyang Technological University, Singapore

- 3:00 pm **The Dispersion Relation of Surface Plasmon Polaritons of Metal Bulk** 77
 Lingxi Hu (*University of Electronic Science and Technology of China*); Min Hu (*University of Electronic Science and Technology of China*); Sen Gong (*University of Electronic Science and Technology of China*); Xiaodong Feng (*University of Electronic Science and Technology of China*); Tao Zhao (*University of Electronic Science and Technology of China*); Renbin Zhong (*University of Electronic Science and Technology of China*); Shenggang Liu (*University of Electronic Science and Technology of China*)
- 3:00 pm **Electromagnetic Scattering Model of the Near Field Waves Induced by a Moving Vessel** 78
 Letian Wang (*Xidian University*); Min Zhang (*Xidian University*); Pengbo Wei (*Xidian University*)

WE-PM-II-TM-05 TM-05: Biomedical Electromagnetic (I) **04:00 pm - 05:20 pm**

Chair: Shaoying Huang, Singapore University of Technology and Design, Singapore

Co-Chair: Eisuke Hanada, Saga University Graduate School of Science and Engineering, Japan

- 04:20 pm **In-vitro Measurement System for Induced Voltages in Medical Implants in Magnetic Resonance Imaging** 80
Sven Kuehn (*ETH Zurich*); Niels Kuster (*ETH Zurich*); Oliver Munz (*ZMT ZurichMedTech AG*); Maria Cabanes (*ZMT ZurichMedTech AG*)
- 04:40 pm **Electromagnetic Interference Evaluation at Myoelectric Signal Detector for Robot Control** 82
Wei Liao (*Shanghai University of Engineering Science*); Jianqing Wang (*Nagoya Institute of Technology*)
- 05:00 pm **Numerical Calculations of Body Temperature during Thermal Treatment by Capacitive Heating Device** 83
Kazuyuki Saito (*Chiba University*); Norihiro Tsukamoto (*Chiba University*)

WE-PM-II-SS-11 SS-11: Advanced Measurements Technologies for 5G (I) **04:00 pm - 05:20 pm**

Chair: Farhad Rachidi, Swiss Federal Institute of Technology, Switzerland

Co-Chair: Lie Liu, General Test Systems Inc., USA

- 04:00 pm **Measured MIMO Throughput Under Different Transmit Power of DUT** 84
J. Li (*Hunan University*); Y.H. Qi (*Hunan University*); W. Yu (*Hunan University*); F.H. Li (*General Test Systems Inc.*)
- 04:20 pm **Novel OTA Evaluation for WLAN MIMO UE based on Improved Radiated Two-Stage Method** N/A
Qianwen Chen (*Hunan University and General Test System Co. Ltd.*); He Wen (*Hunan University*); Yihong Qi (*Hunan University and General Test System Co. Ltd.*)
- 04:40 pm **Probe Calibrations for Phased Array Measurement** 86
J. Wu (*Hunan University*); Y. Qi (*Hunan University*); J. Qi (*Hunan University*); F. de Paulis (*University of L'Aquila*); A. Orlandi (*University of L'Aquila*)
- 05:00 pm **Recent Progress of Radiated Two Stage Method for MIMO OTA Measurement** 88
Penghui Shen (*Hunan University*); Yihong Qi (*Hunan University*); Wei Yu (*General Test Systems Inc.*)

WE-PM-II-TC-09 TC-09: Computational Electromagnetics (IV) **04:00 pm - 05:20 pm**

Chair: Matthias Tröscher, CST, Germany

Co-Chair: Chao-Fu Wang, National University of Singapore, Singapore

- 05:00 pm **Mutual Coupling Analysis of Multiple On-Board Antennas with Sub-Domain MoM-PO Method** 89
Zi-Liang Liu (*National University of Singapore*); Chao-Fu Wang (*National University of Singapore*)

WE-PM-II-TC-05 TC-05: IEMI and Transients**04:00 pm - 05:20 pm****Chair:** William Radasky, Metatech Corporation, USA**Co-Chair:** Yanzhao Xie, Xi'an Jiaotong University, China

- 04:20 pm **Experiments and Comparisons of Power to Failure for SiGe-Based Low-Noise Amplifiers under High-Power Microwave Pulses** 90
 Xiang Chen (*Shanghai Jiao Tong University*); Liang Zhou (*Shanghai Jiao Tong University*); Wen-Yan Yin (*Shanghai Jiao Tong University and Zhejiang University*); Jun-Fa Mao (*Shanghai Jiao Tong University*)
- 05:00 pm **Antenna Gain of Folded Rhombic Antenna for Transient Electric-Field Measurements** 91
 Shinobu Ishigami (*Tohoku Gakuin University*); Masaki Saka (*Tohoku Gakuin University*); Ken Kawamata (*Tohoku Gakuin University*)

THURSDAY ABSTRACT REVIEWED PAPERS**Thursday, May 17, 2018****TH-AM-I-TM-05 TM-05: Biomedical Electromagnetic (II)****08:30 am - 10:10 am****Chair:** Kazuyuki Saito, Chiba University, Japan**Co-Chair:** Jianqing Wang, Nagoya Institute of Technology, Japan

- 09:30 am **Solutions for EM Exposure Assessment of 5G Wireless Devices** 92
 M.G. Douglas (*IT'IS Foundation*); S. Pfeifer (*IT'IS Foundation*); S. Kuehn (*IT'IS Foundation*); E. Neufeld (*IT'IS Foundation*); K. Pokovic (*Schmid & Partner Engineering AG*); E. Carrasco (*IT'IS Foundation*); T. Samaras (*Aristotle University of Thessaloniki*); A. Christ (*IT'IS Foundation*); M. Capstick (*IT'IS Foundation*); N. Kuster (*IT'IS Foundation and Swiss Federal Institute of Technology Zurich*)
- 09:50 am **Development of Wearable ECG based on Human Body Communication Technology** 95
 Yusuke Sawatari (*Nagoya Institute of Technology*); Daisuke Anzai (*Nagoya Institute of Technology*); Jianqing Wang (*Nagoya Institute of Technology*)

TH-AM-I-TM-02 TM-02: EMC in Railway Systems (II)**08:30 am - 10:10 am****Chair:** Peter S. W. Leung, City University of Hong Kong, China**Co-Chair:** Samuel Chan, Land Transport Authority, Singapore

- 09:10 am **German EMC Homologation Requirement EMV 06** N/A
 Lorenz Jung (*Siemens AG*)
- 09:50 am **Simulations of Railway VCB Switching Noise** 99
 Umberto Paoletti (*Hitachi, Ltd.*); Kiyoto Matsushima (*Hitachi, Ltd.*)

**TH-AM-I-SS-11 SS-11: Advanced
Measurements Technologies for 5G (II)**

08:30 am - 10:10 am

Chair: Lie Liu, General Test Systems Inc., USA

Co-Chair: Benoit Derat, Rohde & Schwarz, Italy

- 08:30 am **Fast Measurement of Phased Array Antenna for 5G base Station** 100
Q. Jin (*General Test Systems Inc.*); P.H. Shen (*General Test Systems Inc. and Hunan University*);
S.Y. He (*Hunan University*); Y.H. Qi (*General Test Systems Inc. and Hunan University*);
W. Yu (*General Test Systems Inc.*); L. Liu (*General Test Systems Inc. and Hunan University*)
- 09:30 am **Equivalent Sources Approach on Radiation Performance Evaluation of
Personal Wireless Devices with Head and Hand Phantom** 101
Qingchun Luo (*General Test System Inc.*)
- 09:50 am **High-power Broadband Honeycomb Absorber for 5G Millimeter Wave Chambers** 103
Y. Zhang (*General Test Systems Inc.*); Y.J. Zhu (*General Test Systems Inc.*);
Y.H. Qi (*General Test Systems Inc.*); W. Yu (*General Test Systems Inc.*);
L. Liu (*General Test Systems Inc. and Hunan University*)

**TH-AM-I-TM-03 TM-03: Efficient and Accurate
Simulation of Multi-Scale EMC and SI/PI (I)**

08:30 am - 10:10 am

Chair: Siping Gao, National University of Singapore, Singapore

Co-Chair: Huapeng Zhao, University of Electronic Science and Technology of China, China

- 08:30 am **A Novel Hybrid 2D/Q-2D Finite Element Method for Power/Ground Plane Analysis** 106
Ping Li (*The University of Hong Kong*); Li Jun Jiang (*The University of Hong Kong*);
Hakan Bagci (*King Abdullah University of Science and Technology*)
- 08:50 am **A Combined 1D and 2D DGTD Method for Modeling Multilayer Power-Ground
Planes with Narrow Slots** 107
Hui Min Lee (*Institute of High Performance Computing, A*STAR*); Si-Ping Gao (*National University
of Singapore*); En-Xiao Liu (*Institute of High Performance Computing, A*STAR*)
- 09:30 am **An Improved Expression of via Barrel-Plate Capacitance
based on a Convergence Study** 109
Si-Ping Gao (*National University of Singapore*); Francesco de Paulis (*University of L'Aquila*);
En-Xiao Liu (*Institute of High Performance Computing, A*STAR*); Antonio Orlandi (*Institute of
High Performance Computing, A*STAR*); Hui Min Lee (*University of L'Aquila*)

TH-AM-II-TC-10 TC-10: SI/PI (V)

10:30 am - 12:30 pm

Chair: Tzong-Lin Wu, National Taiwan University, Taiwan

Co-Chair: Binfang Wang, A*STAR, Singapore

- 11:10 am **Electrical-Thermal Co-Simulation for Through Silicon via and Active Tier in 3-D IC** 110
Qiu Min (*Zhejiang University*); Shi-Yun Zhou (*Zhejiang University*); Cheng Zhuo (*Zhejiang University*);
Jian-Ming Jin (*University of Illinois at Urbana Champaign*); Er-Ping Li (*Zhejiang University*)

**TH-AM-II-SS-03 SS-03: Wireless Technology
and Wireless Power Transfer (II)**

10:30 am - 12:30 pm

Chair: Seungyoung Ahn, KAIST, South Korea

Co-Chair: Chulsoon Hwang, Missouri University of Science and Technology, USA

- 10:30 am **An Ambient Energy Harvester using Metasurface** 111
Qi Zhao (*Xidian University*); Long Li (*Xidian University*); Xuanming Zhang (*Xidian University*);
Xuefang Zhang (*Xidian University*); Jianing Chen (*Xidian University*)
- 10:50 am **Design of Toroidal Core for Magnetic Energy Harvester Near
Power Line Considering Saturation** 113
Bumjin Park (*KAIST*); Dongwook Kim (*KAIST*); Jaehyoung Park (*KAIST*); Yujun Shin (*KAIST*);
Jay Koo (*Ferraris Power Inc.*); Seungyoung Ahn (*KAIST*)
- 11:10 am **High Efficiency Wireless Power Transfer System Robust against Misalignment** 114
Chen Xu (*University of Liverpool*); Yuan Zhuang (*University of Liverpool*); William W. Lee
(*Zhejiang University of Technology*); Yi Huang (*University of Liverpool*);
Jiafeng Zhou (*University of Liverpool*)
- 11:30 am **The Study on Permeability Parameter of WPT Coil Substrate Effect of
Shielding Effectiveness and Transfer Efficiency** N/A
Weijia Li (*University of Electronic Science and Technology of China*); Yun Wang (*University of
Electronic Science and Technology of China*); Hui Chen (*University of Electronic Science and
Technology of China*); Chao Pang (*University of Electronic Science and Technology of China*);
Difei Liang (*University of Electronic Science and Technology of China*); Longjiang Deng (*University
of Electronic Science and Technology of China*)
- 11:50 am **Wireless Power Transfer System for Unmanned Vehicle using T-Shape Ferrite Structure** 117
Yujun Shin (*KAIST*); Jaehyoung Park (*KAIST*); Jonghoon Kim (*EMC Doctors*); Byunggi Kwon (*LIG
Nex1 Co., Ltd.*); Heehyun Eun (*LIG Nex1 Co., Ltd.*); Seungyoung Ahn (*KAIST*)

TH-AM-II-SS-09 SS-09: Hardware Security for IoT Devices (II)

10:30 am - 12:30 pm

Chair: William A. Radasky, Metatech Corporation, USA

Co-Chair: Yuichi Hayashi, NAIST, Japan

- 11:30 am **Range of Information Leakage from IoT Devices with Hardware Trojans** 118
Masahiro Kinugawa (*Sendai College*); Yu-ichi Hayashi (*NAIST*)

**TH-AM-II-TM-03 TM-03: Efficient and Accurate
Simulation of Multi-Scale EMC and SI/PI (II)**

10:30 am - 12:30 pm

Chair: Shiquan He, University of Electronic Science and Technology of China, China

Co-Chair: Siping Gao, National University of Singapore, Singapore

- 10:50 am **The Associated Hermite FDTD Method: Developments and Applications** 119
Zheng-Yu Huang (*Nanjing University of Aeronautics and Astronautics and Army Engineering
University*); Li-Hua Shi (*Army Engineering University*)
- 11:30 am **Transient Analysis of Magnetic Balance Sensor with Field-Circuit Combined Simulation** 123
Yongfu Liu (*University of Electronic Science and Technology of China*); Shiquan He (*University of
Electronic Science and Technology of China*); Juping Li (*University of Electronic Science and
Technology of China*); Li Cao (*Ningbo CSR Times Transducer Technique Ltd.*)

11:50 am **Radiation Physics Analysis of High-Speed Connectors with Sub-Structure Characteristic Modes** 124
 Xu Wang (*University of Electronic Science and Technology of China*); Shiquan He (*University of Electronic Science and Technology of China*); Ying S. Cao (*University of Electronic Science and Technology of China*)

12:10 pm **A Measurement Verification for EMI Source Reconstruction Method based on Amplitude-Only Near-Field Scanning** 125
 Jing Zhou (*Huawei Technologies Co. Ltd.*); Yu-Fei Shu (*Zhejiang University*);
 Jun Li (*Huawei Technologies Co. Ltd.*); Nan Xia (*Huawei Technologies Co. Ltd.*);
 Zhengdong Gu (*Huawei Technologies Co. Ltd.*); Xing-Chang Wei (*Zhejiang University*)

TH-AM-II-SS-05 SS-05: Potential Electromagnetic Techniques for Booming Wireless Communications (IV) **10:30 am - 12:30 pm**
Chair: Han-Chang Hsieh, Bureau of Standards Metrology & Inspection, Taiwan
Co-Chair: Chow-Yen-Desmond Sim, Feng Chia University, Taiwan

11:10 am **On Investigation of Near-Field Antenna for Pulse-Based Vital-Sign Monitoring Application** 126
 Chia-Hung Chang (*Feng Chia University*); Wei-Ping Hung (*National Chiao Tung University*)

TH-AM-II-TM-04 TM-04: EMC in Power Electronics and Smart Grid (III) **10:30 am - 12:30 pm**
Chair: Yanzhao Xie, Xi'an Jiaotong University, China
Co-Chair: Junhong Deng, TÜV SÜD PSB Pte Ltd, Singapore

11:50 am **Analysis of Conducted EMI in Si IGBT + SiC MOSFET Hybrid Switch based Converters** 127
 Amol Deshpande (*University of Arkansas*); Balaji Narayanasamy (*University of Arkansas*);
 Fang Luo (*University of Arkansas*)

TH-PM-I-SS-02 SS-02: Metamaterials/Metasurfaces for Manipulations of Electromagnetic Waves **01:30 pm - 03:30 pm**
Chair: He-Xiu Xu, Air Force Engineering University, China
Co-Chair: Yongjun Huang, University of Electronic Science and Technology of China, China

01:30 pm **Verification and Crosstalk of Chirowaveguides** 128
 Zhi Hao Jiang (*Southeast University*)

01:50 pm **Metalens in Microwave Region for the Generation of Orbital Angular Momentum** 129
 Kuang Zhang (*Harbin Institute of Technology*); Yueyi Yuan (*Harbin Institute of Technology*);
 Qun Wu (*Harbin Institute of Technology*)

02:50 pm **Metasurfaces for Specific Beams Generations** 130
 Jian Li (*University of Electronic Science and Technology of China*); Yongjun Huang (*University of Electronic Science and Technology of China*); Guangjun Wen (*University of Electronic Science and Technology of China*)

**TH-PM-I-SS-14 SS-14: Radio Frequency Remote Sensing
(Supported by IET Electromagnetics Technical
and Professional Network)**

01:30 pm - 03:30 pm

Chair: Julien Le Kernec, University of Glasgow, UK

Co-Chair: Alistair Duffy, De Montfort University, UK

- 01:30 pm **Synthesis of Wide-Band Radar Signals using Multiple Subbands in Complex Noise Environment** 132
Huapeng Zhao (*University of Electronic Science and Technology of China*); Ying Zhang (*University of Electronic Science and Technology of China*); Zhizhang Chen (*Dalhousie University and University of Electronic Science and Technology of China*); Jun Hu (*University of Electronic Science and Technology of China*)
- 03:10 pm **The Role of FSV in EMC Characterization** 133
Alistair Duffy (*De Montfort University and Harbin Institute of Technology*); Gang Zhang (*Harbin Institute of Technology*)

TH-PM-I-TC-02 TC-02: EMC Measurement (III)

01:30 pm - 03:30 pm

Chair: Ed Hare, American Radio Relay League, USA

Co-Chair: Zaifeng Yang, A*STAR, Singapore

- 02:10 pm **WLAN MIMO Antennas for Smart Watch Applications** 134
Ting-Yan Zhuo (*Southern Taiwan University of Science and Technology*); Wen-Shan Chen (*Southern Taiwan University of Science and Technology*); Chow-Yen-Desmond Sim (*Feng Chia University*)
- 02:50 pm **The Future of Immunity Testing** 135
Sangam Baligar (*Amplifier Research Corp*); Flynn Lawrence (*Amplifier Research Corp*)
- 03:10 pm **New Standardized EMC Evaluation Methods for Communication Transceivers** 139
Frank Klotz (*Infineon Technologies AG*); Marlon Röbl (*Infineon Technologies AG*); Bernd Körber (*WHZ University of Applied Sciences*); Norman Müller (*WHZ University of Applied Sciences*)

**TH-PM-I-TM-03 TM-03: Efficient and Accurate
Simulation of Multi-Scale EMC and SI/PI (III)**

01:30 pm - 03:30 pm

Chair: Huapeng Zhao, University of Electronic Science and Technology of China, China

Co-Chair: Xingchang Wei, Zhejiang University, China

- 01:30 pm **Challenges of Multi-Scale Modelling for System-Level EMI Simulation** 145
Ming Zhou (*Huawei Technologies Co. Ltd.*); Jing Li (*Huawei Technologies Co. Ltd.*); Qinghai Wang (*Huawei Technologies Co. Ltd.*); Yaojiang Zhang (*Huawei Technologies Co. Ltd.*); Xu Wang (*University of Electronic Science and Technology of China*); Shiquan He (*University of Electronic Science and Technology of China*)
- 01:50 pm **A Statistical Equivalent Circuit Modelling based on Measured and De-Embedded S-Parameters** 151
De-Cao Yang (*Huawei Technologies Co. Ltd.*); Shi Yao (*Huawei Technologies Co. Ltd.*); Liang Gao (*Zhejiang University*); Jing Zhou (*Huawei Technologies Co. Ltd.*); Nan Xia (*Huawei Technologies Co. Ltd.*); Zheng-Dong Gu (*Huawei Technologies Co. Ltd.*); Xing-Chang Wei (*Zhejiang University*)

**TH-PM-I-SS-06 SS-06: Design and Modeling of
Emerging EM Components and devices (I)**

01:30 pm - 03:30 pm

Chair: Zhixiang Huang, Anhui University, China

Co-Chair: Min Hu, University of Electronic Science and Technology of China, China

- 02:30 pm **Broadband THz Generation from Plasmonic Metasurface** N/A
Ming Fang (*Anhui University*); Zhixiang Huang (*Anhui University*); Wei E.I. Sha (*Zhejiang University*); Xianliang Wu (*Anhui University*)
- 02:50 pm **Theoretical Calculation and Electromagnetic Simulation of
Smith-Purcell in Photonic Crystals** 153
Xiaoqiuyan Zhang (*University of Electronic Science and Technology of China*); Min Hu (*University of Electronic Science and Technology of China*); Sen Gong (*University of Electronic Science and Technology of China*); Zhenhua Wu (*University of Electronic Science and Technology of China*); Yueheng Cao (*University of Electronic Science and Technology of China*); Pengfei Hu (*University of Electronic Science and Technology of China*); Shenggang Liu (*University of Electronic Science and Technology of China*)
- 03:10 pm **Bended Differential Transmission Lines using Asymmetric Stepped-Impedance
Lines for Common-Mode Noise Suppression** 154
Hao-Jie Zhu (*Ningbo University*); Jian Wang (*Ningbo University*);
Xiao-Yang Yin (*National University of Singapore*)

TH-PM-I-TC-05 TC-05: Electrostatic Discharge and Arcs

01:30 pm - 03:30 pm

Chair: William Radasky, Metatech Corporation, USA

Co-Chair: Yoshihiro Baba, Doshisha University, Japan

- 01:50 pm **A Study on Transient Current Distribution caused by Micro-Gap ESD
in Spherical Electrode** 157
Masato Oikawa (*Tohoku Gakuin University*); Chihiro Okamura (*Tohoku Gakuin University*);
Ken Kawamata (*Tohoku Gakuin University*); Shinobu Ishigami (*Tohoku Gakuin University*);
Shigeki Minegishi (*Tohoku Gakuin University*); Osamu Fujiwara (*Nagoya Institute of Technology*)
- 02:30 pm **Time Domain Measurement of Collision ESD using Optical E-Field Sensor** 158
Takayoshi Ohtsu (*Numazu College*); Norihiro Ogishima (*Numazu College*);
Haruki Tashiro (*Numazu College*); Ryuji Osawa (*Numazu College*)

TH-PM-II-TC-04 TC-04: EMI/EMC

03:50 pm - 05:30 pm

Chair: Cheng-Nan Chiu, Yuan Ze University, Taiwan

Co-Chair: Wei-Jiang Zhao, A*STAR, Singapore

- 04:30 pm **Observation of Electromagnetic Noise from LED Shadowless Lights** 159
Kai Ishida (*National Institute of Information and Communications Technology*); Tomoe Yoshida (*Kitasato University*); Sazu Arie (*National Institute of Information and Communications Technology*); Masaki Matsuzuki (*Mie University Hospital*); Eisuke Hanada (*Saga University*); Minoru Hirose (*Kitasato University*)

**TH-PM-II-TC-03 TC-01/02/03: EMC Management,
Measurement and Environment**

03:50 pm - 05:30 pm

Chair: Frank Leferink, University of Twente and Thales Group, Netherlands

Co-Chair: Zhongxiang Shen, Nanyang Technological University, Singapore

04:50 pm **Safety Aspects of LTE Wearable Antenna** 160

Ely Levine (*Afeka College of Engineering*); Shimon Kahlon (*Afeka College of Engineering*);

Haim Matzner (*Holon Institute of Technology*)

**TH-PM-II-SS-06 SS-06: Design and Modeling of
Emerging EM Components and Devices (II)**

03:50 pm - 05:30 pm

Chair: Zhixiang Huang, Anhui University, China

Co-Chair: Min Hu, University of Electronic Science and Technology of China, China

04:10 pm **Microwave Plasmonic Waveguides and Devices** 161

Hui Feng Ma (*Southeast University*); Meng Wang (*Southeast University*);

Hao Chi Zhang (*Southeast University*)

04:50 pm **A Compact Antenna for UWB Indoor Positioning** 162

Binfang Wang (*Institute of High Performance Computing*); Wei-Jiang Zhao (*Institute of High
Performance Computing*)