

# APEMC 2017

2017 Asia-Pacific International Symposium on Electromagnetic  
Compatibility (APEMC)

20-23 June, 2017 / The Commons, Yonsei University, Seoul, Korea

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**Final Program : Technical Sessions**

Organized by

Yonsei University

Korea Advanced Institute of Science and Technology (KAIST)

Korean Institute of Electromagnetic Engineering and Science (KIEES)

## Technical Program at a Glance

Data	Time	Industrial Bank of Korea Hall	Kwak Joung-Hwan Challenge Hall	Helinox Hall	Muak Rotary Club Hall	Exhibition
<b>20 June (Tuesday)</b>	09:00~17:00	Registration (Lobby)				
	10:00~11:50	TU-AM-1: Introduction to “EMC Made Simple” – Printed Circuit Board and System Design	TU-AM-2: SI/PI/EMI Modeling, Simulation and Design			
	11:50~13:00	Lunch Break				
	13:00~14:50	TU-PM-1A: Electromagnetic Compatibility of Switched-Mode Power Supplies (I)	TU-PM-2A: The Role of the IEC Advisory Committee on EMC (ACEC) in Coordinating IEC EMC Activities (I)	TU-PM-3: How to Publish a Paper in the EMC Transactions		
	14:50~15:10	Afternoon Break				
	15:10~17:00	TU-PM-1B: Electromagnetic Compatibility of Switched-Mode Power Supplies (II)	TU-PM-2B: The Role of the IEC Advisory Committee on EMC (ACEC) in Coordinating IEC EMC Activities (II)	TU-PM-4: Metamaterials, Periodic Structures and EBG in EMC/Wave Problems/BioEM		
	18:30~21:00	Welcome Reception				
<b>21 June (Wednesday)</b>	08:00~18:00	Registration (Lobby)				
	09:00~10:20	WE-AM-1: EMC Measurements (I)	WE-AM-2: Wireless Power Transfer	WE-AM-3: EMC of Integrated Circuits (I)	WE-AM-4: EMC Materials	
	10:20~10:40	Morning Break				Open
	10:40~12:20	Opening Ceremony (Venue : Kumho Art Hall) Keynote Speech I : Signal and Power Integrity – Research in EMC (Christian Schuster, Hamburg University of Technology, Germany) Keynote Speech II : Biological Effects of Radio Frequency Electromagnetic Fields on the Brain (Young-Hwan Ahn, Ajou University, Korea)				
	12:20~13:30	Lunch Break				
	13:30~14:50	WE-PM-1: EMC Measurements (II)	WE-PM-2: EMC Standards and Design	WE-PM-3: EMC of Integrated Circuits (II)	WE-PM-4: ESD and Transient EMC	
	14:50~15:10	Afternoon Break				
	15:10~16:50	WE-PM-5: Transport and Aerospace EMC	WE-PM-6: EMC Issues on Wireless Power Transfer	WE-PM-7: Hardware Security for Information/Communication Devices	WE-PM-8: Hot Issues Antenna & Wave Propagation	
	17:00~18:00	WE-PM-9: Poster Session (I) (Venue : Lobby)				

Data	Time	Industrial Bank of Korea Hall	Kwak Joung-Hwan Challenge Hall	Helinox Hall	Muak Rotary Club Hall	Exhibition	
<b>22 June (Thursday)</b>	08:00~18:00	Registration (Lobby)					Open
	09:00~10:20	TH-AM-1: System-level EMC	TH-AM-2: Modeling and Simulation Techniques for EMC, SI and PI (I)	TH-AM-3: EMC Issues Related to Common-mode Noise (I)	-		
	10:20~10:40	Morning Break					
	10:40~12:20	TH-AM-4: Signal Integrity and Power Integrity	TH-AM-5: Power Electronics Related EMC	TH-AM-6: Biological Effects of EMC	TH-AM-7: Radio-Frequency Interference		
	12:20~13:30	Lunch Break					
	13:30~14:30	TH-PM-1: Electronic Packaging EMC	TH-PM-2: Modeling and Simulation Techniques for EMC, SI and PI (II)	TH-PM-3: EMC Issues Related to Common-mode Noise (II)	TH-PM-4: Electromagnetic Environment and High Power EMC		
	14:30~14:50	Afternoon Break					
	14:50~16:50	TH-PM-5: Antenna and Wave propagation	TH-PM-6: Computational Electromagnetics and Multiphysics methods for Simulating Complex Electromagnetic Environment Effects	TH-PM-7: Near Field Scanning Technology for EMC	TH-PM-8: EMC & Antenna Design for Wireless Communication Systems		
	17:00~18:00	TH-PM-9: Poster Session (II) (Venue : Lobby)					
	18:30~21:00	Banquet (Venue : Grand Ballroom)					
<b>23 June (Friday)</b>	09:00~17:00	Registration (Lobby)					
	10:00~11:50	FR-AM-1: Testing of Wireless Devices in the Modern World	FR-AM-2: Development of Time-Domain Computational Electromagnetics Methods for Fast Characterizing Complex Electromagnetic Environment Effects	FR-AM-3: Current Activity in the CISPR 16 Series of EMC Standards			
	11:50~13:00	Lunch Break					
	13:00~14:50	FR-PM-1A: Advances in Automotive EMC Test and Measurement (I)	FR-PM-2A: Protection of the Electric Power System from High-altitude Electromagnetic Pulse (HEMP) and Intentional Electromagnetic Interference (IEMI) (I)	FR-PM-3: EMC Standard Measurement in Japanese Industry – Efforts to Improve the Accuracy of Measurement			
	14:50~15:10	Afternoon Break					
15:10~17:00	FR-PM-1B: Advances in Automotive EMC Test and Measurement (II)	FR-PM-2B: Protection of the Electric Power System from High-altitude Electromagnetic Pulse (HEMP) and Intentional Electromagnetic Interference (IEMI) (II)	FR-PM-4: Practical Aspects of a Comprehensive Space Charging Analysis				

# Technical Sessions

## Wednesday, 21 June

**09:00 – 10:20**

### **WE-AM-1: EMC Measurements (I)**

Time 09:00 – 10:20, Wednesday, 21 June

Room Industrial Bank of Korea Hall (B145)

Chairs Ding-Bing Lin (National Taiwan University of Science and Technology, Taiwan)  
Jonghoon Kim (KAIST, Korea)

09:00 **In-Circuit Common-Mode Impedance Measurement for Motor Drive System**

Fei Fan, Kye Yak See and Kangrong Li (Nanyang Technological University, Singapore); Xiong Liu, Michael Adam Zagrodnik and Amit Kumar Gupta (Rolls-Royce Singapore Pte. Ltd., Singapore)

09:20 **Study on Electrical Performance and Reliability Assessment of HEMP Protection Filters Applied in Communication Facilities**

Hyo-Sik Choi, Tae-Heon Jang and Won-Seo Cho (Korea Testing Laboratory, Korea)

09:40 **Design of an Bi-static C-band Radar for Characterisation of Wind Turbine Plants**

Karsten Schubert and Jens Werner (Jade University of Applied Science, Germany); Fabian Schwartau (Technische Universität Braunschweig, Germany)

10:00 **The Noise Source Modulation Technique for the Determination of Electromagnetic Noise Path**

Umberto Paoletti (Hitachi Ltd., Japan)

### **WE-AM-2: Wireless Power Transfer**

Time 09:00 – 10:20, Wednesday, 21 June

Room Kwak Joung-Hwan Challenge Hall (B146)

Chairs Seungyoung Ahn (KAIST, Korea)  
Young-Jin Park (Korea Electrotechnology Research Institute, Korea)

09:00 **A Study on Characteristics of Ferrite Sheets in Wireless Power Transfer at 6.78 MHz**

Tae-Hyung Kim, Se-Hwa Yoon and Jong-Gwan Yook (Yonsei University, Korea); Gi-Ho Yun (Sungkyul University, Korea); Woong-Yong Lee (Amotech, Korea)

09:20 **Leakage Magnetic Field Suppression Effects of Expanded Graphite in LF-WPT System**

In Gon Lee, Ic Pyo Hong and Kee-Sun Lee (Kongju National University, Korea)

09:40 **Novel Concepts in the Design of Near-Field Antenna for Short-Distance Wireless Power Transmission With High Transfer Efficiency**

Ding-Bing Lin (National Taiwan University of Science and Technology, Taiwan); Hsi-Tseng Chou and Jui-Hung Chou (National Taiwan University, Taiwan); Yu-Lin Cheng (National Taipei University of Technology, Taiwan)

10:00 **Improvement of Power Transmission Efficiency by Negative Impedance Converter for WPT**

Se-Hwa Yoon, Jong-Gwan Yook and Tae-Hyung Kim (Yonsei University, Korea); Gi-Ho Yun (Sungkyul University, Korea); Woong-Yong Lee (Amotech, Korea)

### **WE-AM-3: EMC of Integrated Circuits (I)**

Time 09:00 – 10:20, Wednesday, 21 June

Room Helinox Hall (B147)

Chairs SoYoung Kim (Sungkyunkwan University, Korea)  
Bo Pu (Samsung Electronics, Korea)

09:00 **Temperature Compensated, Low EMI Relaxation Oscillator**

Sung Jin Kim, Seung Il Huh, Sung Hun Cho and Kang-Yoon Lee (Sungkyunkwan University, Korea)

09:20 **Design and Analysis of Chip-level Wireless Power Transfer Using Magnetic-field Resonance Coupling and 0.18 um CMOS Technology**

Jinwook Song, Seungtaek Jeong, Shinyoung Park and Joungho Kim (KAIST, Korea)

09:40 **Hierarchical Power Distribution Network Design in Fanout Wafer Level Package based Mobile AP-GPU**

Youngwoo Kim, Kyungjun Cho, Gapyeol Park, Subin Kim and Joungho Kim (KAIST, Korea)

10:00 **Capacitor-less LDO Regulator Design Methods for High Noise Immunity**

Soyeon Joo and SoYoung Kim (Sungkyunkwan University, Korea)

### **WE-AM-4: EMC Materials**

Time 09:00 – 10:20, Wednesday, 21 June

Room Muak Rotary Club Hall (B132)

Chairs Kyung Sub Lee (Sungkyunkwan University, Korea)  
Sang-Woo Kim (Korea Institute of Science and Technology, Korea)

09:00 **Performance of Flexible Noise Suppressor for IoT Devices Made Only of Meltblown Non-Woven Fabric**

Masahiro Yamaguchi and Jiang Fu (Tohoku University, Japan); Sho Muroga (National Institute of Technology, Toyota College, Japan); Tomoya Tanaka, Chie Okamura, Lumina Obi and Kazufumi Kato (Asahi Kasei Fibers Corporation, Japan)

09:20 **A Transparent Electromagnetic Shielding Film by Applying Nano-imprinting Technology**

Hyunseok Choi, Kyungsub Lee and Sujeong Suh (Sungkyunkwan University, Korea)

09:40 **Guideline for Improvement of Signal Loss With Using Shielding Materials for FPCB**

Young-Min Im (Korea Electronics Technology Institute, Korea)

10:00 **Electromagnetic Wave Absorbing Properties of Magnetic Particles and Carbon Nanomaterials Reinforced composites**

Sang Bok Lee, Jae Ryung Choi, Byung Mun Jung, Seungchan Cho and Sang-Kwan Lee (Korea Institute of Materials Science, Korea); Ki Hyeon Kim (Yeungnam University, Korea)

**13:30 – 14:50**

### **WE-PM-1: EMC Measurements (II)**

Time 13:30 – 14:50, Wednesday, 21 June

Room Industrial Bank of Korea Hall (B145)

- Chairs Perry Wilson (National Institute of Standards and Technology, USA)  
Chulsoon Hwang (Missouri University of Science and Technology, USA)
- 13:30 **Investigation Into the Influence of Ground Plane Insulation Thickness on Radiated Emission From Mains Cable of EUT**  
Shinichi Okuyama (VCCI Council; NEC Platforms, Japan); Nobuo Kuwabara (Kyushu Institute of Technology, Japan); Kuniyuki Miyata (Fujitsu, Ltd, Japan); Kunihiro Osabe (VCCI Council, Japan)
- 13:50 **Comparison of Configurations for Conducted Emission Measurement Specified in CISPR 32 and CISPR 13**  
Nozomi Miyake (VCCI Council; NEC Corporation, Japan); Koichi Kakuda (NTT Advanced Technology Corporation, Japan); Yoshiaki Hiratsuka (FUJITSU Advanced Technologies Limited, Japan); Hidenori Muramatsu (VCCI Council, Japan)
- 14:10 **Use of FFT-based Measuring Receivers for EMI Compliance Measurements Against CISPR 32**  
Jens Medler (Rohde & Schwarz GmbH & Co. KG, Germany)
- 14:30 **Comparison of Test Standards for Immunity Testing in Reverberation Chambers**  
Soydan Çakir and Çağlar Aslan (TUBITAK UME, Turkey); Frank Leferink (University of Twente, The Netherlands)

### **WE-PM-2: EMC Standards and Design**

- Time 13:30 – 14:30, Wednesday, 21 June  
Room Kwak Joung-Hwan Challenge Hall (B146)  
Chairs Peter S. W. Leung (City University of Hong Kong, Hong Kong)  
Tea-Heon Jang (Korea Testing Laboratory, Korea)
- 13:30 **Smarter Concepts for Future EMI Standards**  
Iwan Setiawan, Cees Keyer and Frank Leferink (University of Twente, The Netherlands)
- 13:50 **The Systematic Design of Integrated Busbar EMI Filter Considering the Coupling Characteristics of Multi-physical Fields**  
Qianceng Lou, Xinxin Gao and Shishan Wang (Nanjing University of Aeronautics and Astronautics, China); Wei Yan (Nanjing Normal University, China)
- 14:10 **Robustness Analysis of Crosstalk-Based Hardware Trojans and Relevant Algorithms to Nonideal Positioning**  
Keliang Yuan (Tsinghua University, China); Flavia Grassi, Giordano Spadacini and Sergio A. Pignari (Politecnico di Milano, Italy)

### **WE-PM-3: EMC of Integrated Circuits (II)**

- Time 13:30 – 14:30, Wednesday, 21 June  
Room Helinox Hall (B147)  
Chairs SoYoung Kim (Sungkyunkwan University, Korea)  
Bo Pu (Samsung Electronics, Korea)
- 13:30 **Embedded Bandstop Filter in Package to Enhance the Susceptibility of Integrated Circuits**  
Bo Pu (Samsung Electronics, Korea); SoYoung Kim and Wansoo Nah (Sungkyunkwan University, Korea)
- 13:50 **Application of EMC Qualification Methodology to Semicustom Digital Design**  
Hai Au Huynh and SoYoung Kim (Sungkyunkwan University, Korea)

- 14:10 **Exploring the Impact of Multi-Frequency Clocking and GALS Design on Power Supply Noises**  
Nguyen Van Toan, Dam Minh Tung and Jeong-Gun Lee (Hallym University, Korea)

#### **WE-PM-4: ESD and Transient EMC**

Time 13:30 – 14:50, Wednesday, 21 June

Room Muak Rotary Club Hall (B132)

Chairs Shinobu Ishigami (Tohoku Gakuin University, Japan)  
Ken Kawamata (Tohoku Gakuin University, Japan)

- 13:30 **Measurement of Electric Field Waveform Caused by Micro Gap ESD in a Pair of Spherical Electrodes**

Shinobu Ishigami, Ken Kawamata and Shigeki Minegishi (Tohoku Gakuin University, Japan); Osamu Fujiwara (Nagoya Institute of Technology, Japan)

- 13:50 **A Study on Response Characteristics Modeling Method for ESD Protection Device by Vector Network Analyzer**

Nobuhiro Kimura and Takahiro Yoshida (Tokyo University of Science, Japan)

- 14:10 **Time Domain Measurement of Discharge Phenomenon Using Optical E-Field Sensor**

Takayoshi Ohtsu, Norihiro Ogishima, Haruki Tashiro and Kohei Obara (National Institute of Technology, Numazu College, Japan); Ryuji Osawa (Seikoh, Giken Co., Ltd., Japan)

- 14:30 **System-level ESD Noise Induced by Secondary Discharges at Voltage Suppressor Devices in a Mobile Product**

Junsik Park (Ulsan National Institute of Science and Technology, Korea); Jongsung Lee, Cheolgu Jo and Byongsu Seol (Samsung Electronics, Korea); Jinguook Kim (Ulsan National Institute of Science and Technology, Korea)

#### **15:10 – 16:50**

#### **WE-PM-5: Transport and Aerospace EMC**

Time 15:10 – 16:30, Wednesday, 21 June

Room Industrial Bank of Korea Hall (B145)

Chairs Sergio A. Pignari (Politecnico di Milano, Italy)  
Haengseon Lee (Sogang University, Korea)

- 15:10 **High Frequency Model of Power Autotransformer for Adjustable Speed Drive System**

Chuang Bi, Yingzhe Wu, Chuan Li and Hui Li (University of Electronic Science and Technology of China, China); Yongjian Zhi (CRRC Zhuzhou Institute Co Ltd, China)

- 15:30 **Mitigation of Current Oscillations in the DC link of Electric Vehicles**

Kelin Jia (Volvo CE, Sweden); Chuang Bi and Hui Li (University of Electronic Science and Technology of China, China)

- 15:50 **3-D Modeling of Common Mode Choke for Thermal Analysis**

Yong Liu and Kye Yak See (Nanyang Technological University, Singapore); Rejeki Simanjorang (Rolls-Royce Singapore Pte. Ltd, Singapore)

- 16:10 **Harmonics and Common Mode Voltage Analysis With Different Power Converter Configurations in Aerospace Applications**

Yong Liu and Kye Yak See (Nanyang Technological University, Singapore); Rejeki Simanjorang (Rolls-Royce Singapore Pte. Ltd, Singapore); Arie Nawawi and Lim Ziyoun (Nanyang Technological University, Singapore)

## **WE-PM-6: EMC Issues on Wireless Power Transfer**

Time 15:10 – 16:50, Wednesday, 21 June

Room Kwak Joung-Hwan Challenge Hall (B146)

Chairs Hiroshi Hirayama (Nagoya Institute of Technology, Japan)  
Seunyoung Ahn (KAIST, Korea)

- 15:10 **Design Formula of a Small Circular Coil With Circular Cross-section for Maximum Q-factor**  
Do-Hyeon Kim and Young-Jin Park (Korea Electrotechnology Research Institute; University of Science and Technology, Korea)
- 15:30 **Suppression of Common-mode Radiation Using Folded-spiral Antenna for Wireless Power Transfer**  
Hiroshi Hirayama, Masanori Ando and Toshihito Sonobe (Nagoya Institute of Technology, Japan)
- 15:50 **Active Implantable Medical Device EMI Estimation for EV-Charging WPT System Based on 3D Full-wave Analysis**  
Takashi Hikage, Masakazu Yamagishi, Kazuki Shindo and Toshio Nojima (Hokkaido University, Japan)
- 16:10 **Reduction of Electromagnetic Interference for Wireless Power Transfer Coils in Mobile Devices**  
Jaehyoung Park and Seunyoung Ahn (KAIST, Korea)
- 16:30 **A Study of Electromagnetic Emission From Evanescent Mode WPT System Through Metal Sheets**  
Nak-Young Ko, Seong-Kyu Song, Jagannath Malik, Woo-Jin Park, Bon-Young Lee, Seok-Tae Seo and Franklin Bien (Ulsan National Institute of Science and Technology, Korea)

## **WE-PM-7: Hardware Security for Information/Communication Devices**

Time 15:10 – 16:50, Wednesday, 21 June

Room Helinox Hall (B147)

Chairs Yuichi Hayashi (Tohoku Gakuin University, Japan)  
Jong-Gwan Yook (Yonsei University, Korea)

- 15:10 **Hardware Security for Information/Communication Devices**  
Yuichi Hayashi (Tohoku Gakuin University, Japan); Jong-Gwan Yook (Yonsei University, Korea); William A. Radasky (Metatech Corporation, USA)
- 15:30 **Signal-to-Noise Ratio Measurements of Side-Channel Traces for Establishing Low-Cost Countermeasure Design**  
Yusuke Yano, Toshiaki Teshima, Kengo Iokibe and Yoshitaka Toyota (Okayama University, Japan)
- 15:50 **A Threat of Malicious Hardware Using On-chip Voltmeter**  
Daisuke Fujimoto, Ryo Miyachi and Tsutomu Matsumoto (Yokohama National University, Japan)
- 16:10 **Hardware Trojan Threats After IT Device Manufacturing**  
Masahiro Kinugawa (National Institute of Technology, Sendai College, Japan); Yu-ichi Hayashi (Nara Institute of Science and Technology, Japan)
- 16:30 **Estimate of the Effect of Concrete Wall for Information Leakage From LCD Monitor**  
Ho Seong Lee and Jong-Gwan Yook (Yonsei University, Korea)



## **WE-PM-8: Hot Issues Antenna & Wave Propagation**

Time 15:10 – 16:30, Wednesday, 21 June

Room Muak Rotary Club Hall (B132)

Chairs Wonbin Hong (Pohang University of Science and Technology, Korea)  
Jungsuek Oh (Inha University, Korea)

15:10 **An Electrically Small, 3D Printed Folded Spherical Meander Antenna**

Myeongjun Kong, Geonyeong Shin, Suhyeon Lee and Ick-Jae Yoon (Chungnam National University, Korea)

15:30 **Analysis of Transparent Coplanar Waveguide With Few Microns - Grid Width**

Seung Yoon Lee, Dooseok Choi and Wonbin Hong (Pohang University of Science and Technology, Korea)

15:50 **Dual-Polarized Vivaldi Antenna With Quarter-Wave Balun Feeding**

Philip Ayiku Dzagbletey, Jae Yeon Shim, Jin Young Jeong and Jae-Young Chung (Seoul National University of Science and Technology, Korea)

16:10 **Photonic-assisted Imaging System for mm-wave Horn Antenna Near-Field Characterization**

Young-Pyo Hong, Hyunji Koo and Dong-Joon Lee (Korea Research Institute of Standards and Science, Korea)

## **17:00 – 18:00**

### **WE-PM-9: Poster Session (I)**

Time 17:00 – 18:00, Wednesday, 21 June

Room Lobby

Chairs Kyung Sub Lee (Sungkyunkwan University, Korea)  
Taehoon Yoo (Dongyang Mirae University, Korea)

PS1-01 **Study on Measurement Method of Shield Continuity for Shielded Cable with Drain Wire**

Hong-je Jang and Tae-seung Song (Korea Testing Laboratory, Korea); Tae-hyeob Song (Korea Institute of Civil Engineering and Building Technology, Korea)

PS1-02 **Study of EMI Filter Performance Without LISN Based on Noise Impedances**

Kang-Rong Li, Kye-Yak See and Fei Fan (Nanyang Technological University, Singapore)

PS1-03 **"Customization" in EMC Measuring System**

Lei Zhou, Deng Linxiang, Chen Daosheng (Jiangsu Institute of Metrology, China); Yan Wei (Nanjing Normal University, China)

PS1-04 **Effect of ESD Generator Ground Strap Configuration on ESD Waveform**

Jawad Yousaf, Jaeyoung Shin, Rao Leqian and Wansoo Nah (Sungkyunkwan University, Korea); Jinsung Youn, Daehee Lee and Chanseok Hwang (Samsung Electronics, Korea)

PS1-05 **More Insight Into Conducted Immunity Tests and Investigation of Support Influences**

Osman Sen, Soydan Cakir and Savas Acak (TUBITAK UME, Turkey)

PS1-06 **Comparison of Log-Periodic, Dual-Stacked Log-Periodic, and Horn Antenna on the Field Uniformity and Power Efficiency from 80 MHz to 1 GHz**

Dwi Mandaris and Niek Moonan (University of Twente, The Netherlands); Jaap Schuurmans (Thales, The Netherlands); Frank Leferink (University of Twente, The Netherlands)

- PS1-07 **A Study of Measuring a Commercial Antenna Gain Using an R-SAM**  
Jong-Hyuk Lim, Bo-Weon Lee, Yun-Jo Choi, and Hee-Baek Kim (National Radio Research Agency, Korea)
- PS1-08 **Comparison of Measurement Results on the Transfer Impedance of a Coaxial Cable**  
Hyung-uk Kim and Tea-Heon Jang (Korea Testing Laboratory, Korea)
- PS1-09 **Unintentional Radiation of Electromagnetic Waves Caused by Deterioration of Metal Halide Lamps**  
Yeong-Min Lee, Young-Choul Lim and Hongsik Keum (Korea Radio Promotion Association, Korea); Jungyu Yang (Radio Research Agency, Korea); Jong-Gwan Yook (Yonsei University, Korea)
- PS1-10 **Radiated Emission Tests due to the Direction of an Highly Directional EUT in a SAC And a RC**  
Sang Il Kwak, Jong Hwa Kwon and Dong-Uk Sim (Electronics and Telecommunications Research Institute, Korea); Young Joong Yoon (Yonsei University, Korea)
- PS1-11 **Conceptual Design and Characteristics of Wireless Power Charging System for HTS Magnet using Copper Resonance Coupling Coils**  
Yoon Do Chung and Jiseong Kim (Suwon Science College, Korea)
- PS1-12 **Electromagnetic Shielding Structure for Reduction of the Leakage Magnetic Field in Wireless Power Transfer System**  
Jongchan Kim, Domin Choi and Nam Kim (Chungbuk National University, Korea); Seung-Yeop Rhee (Chonnam National University, Korea)
- PS1-13 **Analytic RF Multi Beam Synthesis Method considering Active Element Pattern of Array Antenna**  
Sang Wook Chi and Jeong Hae Lee (Hongik University, Korea)
- PS1-14 **A Method to Improve Transfer Efficiency in Contactless Power Transfer Systems With Magnetically-Coupled Coils**  
Taejun Lim and Yongshik Lee (Yonsei University, Korea)
- PS1-15 **Design and Optimization of Inductive Snubber for DC-DC Converter**  
Hyo Sub Shin, Hai Au Huynh and SoYoung Kim (Sungkyunkwan University, Korea)
- PS1-16 **Investigation on Characteristic Impedance of Transmission Line in Meshed-ground Flexible Printed Circuit**  
Yantao Zhu (University of Electronic Science and Technology of China, China); Fengchao Xiao (University of Electro-Communications, Japan); Xiangyang Sun (University of Electronic Science and Technology of China, China); Yoshiki Kayano and Yoshio Kami (University of Electro-Communications, Japan)
- PS1-17 **Introduction of Outdoor Radar Cross Section (RCS) Measurement System**  
Hyunsung Tae, Minkyong Seo, Eungjoo Lee, Joon Hyuck Kwon and Eungjo Kim (Agency for Defense Development, Korea)
- PS1-18 **A Consideration of Mechanism of Audio Signal Deterioration Caused by Propagation Noise between Audio Equipment**  
Takahiro Fujino and Takahiro Yoshida (Tokyo University of Science, Japan)
- PS1-19 **The Analysis and Design of Milk Pasteurization System by Using Radio Frequency Electric Fields**  
Chanon Srisuma, Samran Santalunai, Thanaset Thosdeekoraphat and Chanchai Thongsopa (Suranaree University of Technology, Thailand)

- PS1-20 **Experiment and Design a Suitable Induction Heating for Air Heat Exchanger Application**  
Keeratidech Thepsatitsilp, Worawut Boonpeang, Phanupong Saeung, Nuttakorn Pukseesang and Chanchai Thongsopa (Suranaree University of Technology, Thailand)
- PS1-21 **Analysis and Verification for Errors of Normalized Site Attenuation Method Below 30 MHz**  
Hongsik Keum (Korea Radio Promotion Association, Korea); Jungyu Yang (Radio Research Agency, Korea); Nam Kim (Chungbuk National University, Korea); Seungwoo Lee (KEPCO, Korea)
- PS1-22 **Bounded-Wave(BW) Outdoor HEMP Simulator**  
Kihwan Song, Joon Hyuck Kwon, Saedong Yeo and Eungjo Kim (Agency for Defense Development, Korea)
- PS1-23 **Measurement of Magnetic Field Levels Generated by EV/HEV Vehicles With Respect to Human Exposure**  
Yunhyeong Jo and Jaehyun Park (I-SPEC, Korea); Seongkyu Lee (Hanyang University, Korea); Jaekon Shin (Korea Automobile Testing and Research Institute, Korea)
- PS1-24 **Non-invasive Detection of Object by UWB Radar**  
Wei Ping Hung (National Chiao Tung University, Taiwan); Tsern-Huei Lee and Chia-Hung Chang (Chinese Culture University, Taiwan)

## Thursday, 22 June

09:00 – 10:20

### TH-AM-1: System-level EMC

Time 09:00 – 10:20, Thursday, 22 June

Room Industrial Bank of Korea Hall (B145)

Chairs Jingook Kim (Ulsan National Institute of Science and Technology, Korea)  
Bumhee Bae (Samsung Electronics, Korea)

09:00 **Study of Currents Induced in Wire Lines Placed inside the Metal Shield of Electronics in the Beginning of the Resonance Mode**

Valentin Butin and Pavel Kundyshev (Dukhov Research Institute of Automatics, Russia)

09:20 **Shielding Effectiveness Performance of Conductive Concrete Structures**

Aaron Krause, Lim Nguyen, Christopher Tuan (University of Nebraska-Lincoln, USA); Joel Blasey, James Zemotel (Department of the Air Force, USA)

09:40 **Recovery Method of S/W Failure Induced by ESD using Far-end Crosstalk between PCB Traces**

JongJin Baek (Samsung Electronics, Korea); Hyosub Shin and SoYoung Kim (Sungkyunkwan University, Korea)

10:00 **Conducted EMI from Motor Drive System of Electric Vehicle Under Load Operation**

Li Zhai and Chao Song (Beijing Institute of Technology, China)

### TH-AM-2: Modeling and Simulation Techniques for EMC, SI and PI (I)

Time 09:00 – 10:20, Thursday, 22 June

Room Kwak Joung-Hwan Challenge Hall (B146)

Chairs Hui Min Lee (A\*STAR Institute of High Performance Computing, Singapore)  
Ikpyo Hong (Kongju National University, Korea)

09:00 **Evaluating Airborne Slotted Waveguide Antenna Arrays Using an Equivalent Model Based on Near-Field Samplings Over Slots**

Si-Ping Gao, Hui Min Lee, Wei-Jiang Zhao, En-Xiao Liu and Ching Eng Png (Institute of High Performance Computing; A\*STAR, Singapore)

09:20 **Evaluation of Electromagnetic Field According to Current Change of Wireless Power Transmission**

SangWook Park, BeomJin Choi and EunHa Kim (Korea Automotive Technology Institute, Korea); SeungDo Kim (Green Power Co. Ltd., Korea)

09:40 **EM Coupling Analysis Between Windscreen Antennas and Power Cables in Electric Vehicles**

Jaehoon Kim (Altair Engineering, Korea)

10:00 **Study of Monopole Antenna's Received Power in Reverberation and Anechoic Chambers**

Huapeng Zhao, Jun Hu and Zhizhang Chen (University of Electronic Science and Technology of China, China)

### TH-AM-3: EMC Issues Related to Common-mode Noise (I)

Time 09:00 – 10:20, Thursday, 22 June

Room Helinox Hall (B147)

- Chairs Yoshitaka Toyota (Okayama University, Japan)  
Wansoo Nah (Sungkyunkwan University, Korea)
- 09:00 **Dependency of Transmission Loss of Shielded-FPC on Thickness of Conductive Shield**  
Yoshiki Kayano (The University of Electro-Communications, Japan); Hiroshi Inoue (The Open University of Japan, Japan)
- 09:20 **An Efficient Partition Analysis for Electromagnetic Interference Estimation of High-Speed Input/Output Differential Interfaces**  
Chi-Kai Shen and Tzong-Lin Wu (National Taiwan University, Taiwan); Tze-Min Shen, Chih-Ying Hsiao, Ting-Kuang Wang and Kuan-Yu Chen (MStar Semiconductor, Taiwan)
- 09:40 **Technique of Immunity Estimation for In-Vehicle 1Gbps Ethernet**  
Miyuki Mizoguchi, Youhei Sekiya, Hiroyuki Mori and Noboru Maeda (Nippon Soken, Inc., Japan); Kaoru Yoshida, Hiroki Keino, Takashi Yasuda and Hideki Goto (Toyota Motor Corporation, Japan)
- 10:00 **Study of Magnetic Field Exposure Emitted From a Motor Drive System of an Electric and Hybrid Vehicle**  
Kyoseung Keum and Seongkyu Lee (Hanyang University, Korea); Jongkyoung Lee (E&R Tech, Korea); Jaekon Shin (Korea Automobile Testing and Research Institute, Korea); Jaehoon Choi (Hanyang University, Korea)

## 10:40 – 12:20

### TH-AM-4: Signal Integrity and Power Integrity

- Time 10:40 – 12:20, Thursday, 22 June  
Room Industrial Bank of Korea Hall (B145)  
Chairs Jun Fan (Missouri University of Science and Technology, USA)  
Ick-Jae Yoon (Chungnam National University, Korea)
- 10:40 **Transmission Line Model for Designing Common-Mode Suppression Filter on Multi Differential Signal Pairs**  
Ding-Bing Lin (National Taiwan University of Science and Technology, Taiwan); Yong-Xun Chen, Yi-Hsien Lee and Lin-Zong Zheng (National Taipei University of Technology, Taiwan)
- 11:00 **Improvement of Eye Diagram of USB 3.0 Signal in Laptop PC Using Passive Equalizer Embedded on Flexible PCB**  
Jun-Young Jang, Ho-Seong Lee and Jong-Gwan Yook (Yonsei University, Korea)
- 11:20 **Fabrication and Evaluation of the Quasi-distributed Constant Line Filter with Multiple Magnetic Cores**  
Yusuke Ohdaira, Koki Harada and Shigeyoshi Yoshida (NEC TOKIN Corporation, Japan); Toshiro Sato (Shinshu University, Japan)
- 11:40 **SI/PI Co-Optimization for LPDDR3 Mobile Interface**  
Nitin Srivastava, Antonio Cicomancini Scogna, Hwan-Woo Shim, Albert Baek, YongHyock Lee, and Dong Sub Kim (Samsung Electronics, Korea)
- 12:00 **Signal Integrity Analysis of High Speed Connector for Multi-Media System**  
Huijin Song, Jonghoon J. Kim and Junyong Park (KAIST, Korea); Junho Lee and Seongmin Choi (Korea Electric Terminal Co., Ltd, Korea); Joungho Kim (KAIST, Korea)

### TH-AM-5: Power Electronics Related EMC

- Time 10:40 – 12:20, Thursday, 22 June

- Room Kwak Joung-Hwan Challenge Hall (B146)
- Chairs Tsuyoshi Funaki (Osaka University, Japan)  
Jingook Kim (Ulsan National Institute of Science and Technology, Korea)
- 10:40 **Design of Effective Surge Protection Circuits for an Active EMI filter**  
Sangyeong Jeong and Dongil Shin (Ulsan National Institute of Science and Technology, Korea); Jongpil Kim and Seokjoon Kim (Hyundai Motor Group, Korea); Jingook Kim (Ulsan National Institute of Science and Technology, Korea)
- 11:00 **A Study on Wiring Pattern Design for Intelligent SiC Power Module With PEEC Method**  
Eisuke Masuda, Takaaki Ibuchi and Tsuyoshi Funaki (Osaka University, Japan); Hirotaka Otake, Yasuo Kanetake, Tatsuya Miyazaki and Takashi Nakamura (ROHM Co., Ltd., Japan)
- 11:20 **Extraction of Network Parameters for the Winding-to-Shaft Coupling Effect of an AC Motor**  
Younggon Ryu and Ki Jin Han (Ulsan National Institute of Science and Technology, Korea)
- 11:40 **Parameter Identification of Noise-source Linear Equivalent Circuit of DC-DC Converter and Its Evaluation**  
Yuhei Osaki, Yusuke Yano, Kengo Iokibe and Yoshitaka Toyota (Okayama University, Japan)
- 12:00 **System-level Modeling of Conducted Emission in Motor Driving Circuit for Brake System**  
Junesang Lee, Jungrae Ha, Minho Kim, Chanho Lee, Sangwon Yun and Yeongsik Kim (MANDO Company, Korea); Wansoo Nah (Sungkyunkwan University, Korea)

#### TH-AM-6: Biological Effects of EMC

- Time 10:40 – 12:20, Thursday, 22 June
- Room Helinox Hall (B147)
- Chairs Nam Kim (Chungbuk National University, Korea)  
Yoon Myoung Gimm (Dankook University, Korea)
- 10:40 **The Effects of RF-EMF in Alzheimer Disease Models**  
Yun-Sil Lee (Ewha Womans University, Korea)
- 11:00 **Time Reversal based Microwave Focusing for Medical Applications**  
Jang-Yeol Kim, Soon-Ik Jeon and Seong-Ho Son (Electronics and Telecommunications Research Institute, Korea)
- 11:20 **Transmission Array of a Focused Microwave Thermotherapy System for Leg Diseases**  
Soon-Ik Jeon, Jang-Yeol Kim and Seong-Ho Son (Electronics and Telecommunications Research Institute, Korea)
- 11:40 **Influence of RF-EMF Exposure on Neurotransmitters in Rat: Glutamate**  
Hye Sun Kim (Ajou University, Korea); Hyung-Do Choi (Electronics and Telecommunications Research Institute, Korea); Jeong-Ki Pack (Chungnam National University, Korea); Nam Kim (Chungbuk National University, Korea); Young Hwan Ahn (Ajou University, Korea)
- 12:00 **Effects of Wrist Model During the Specific Absorption Rate Evaluations on Smart-watch**  
Seon-Eui Hong, Jong-Hwa Kwon and Hyung-Do Choi (Electronics and Telecommunication Research Institute, Korea); Jeong-Ki Pack (Chungnam National University, Korea)

#### TH-AM-7: Radio-Frequency Interference

- Time 10:40 – 12:00, Thursday, 22 June
- Room Muak Rotary Club Hall (B132)

- Chairs Chulsoon Hwang (Missouri University of Science and Technology, USA)  
Hyun Ho Park (The University of Suwon, Korea)
- 10:40 **LCD Baseband Noise Modulation Estimation for Radio Frequency Interference in Mobile Phones**  
Chulsoon Hwang (Missouri University of Science and Technology, USA); Sunkyu Kong (Korea Advanced Institute of Science and Technology, Korea); Takashi Enomoto, Kenji Araki and Junji Maeshima (Sony Global Manufacturing and Operations Corporation, Japan); David Pommerenke and Jun Fan (Missouri University of Science and Technology, USA)
- 11:00 **Analysis of Throughput Performance of Smart TV by Noise Effect Using Simulation Methodology**  
Soonyong Lee and Yeonsik Yu, Hoyong Kim, Yonghee Cho and Sungsoo Choi (Samsung Electronics, Korea)
- 11:20 **SMPS Noise Modeling and Analysis in Mobiles at 3-level Buck Converter-based Fast Charging Mode**  
Kiyeong Kim, Hwan-Woo Shim, Antonio Ciccomancini Scogna, and Dong-Sub Kim (Samsung Electronics, Korea)
- 11:40 **Extraction of Equivalent Array Dipole-Moments Model From Only Magnitude Data of Near-Field Scan**  
Kyungjin Kwak (Ulsan National Institute of Science and Technology, Korea); Taeil Bae, Kichul Hong and Hyungsoo Kim (SK Hynix, Korea); Jinguok Kim (Ulsan National Institute of Science and Technology, Korea)

### 13:30 – 14:30

#### TH-PM-1: Electronic Packaging EMC

- Time 13:30 – 14:30, Thursday, 22 June  
Room Industrial Bank of Korea Hall (B145)  
Chairs Ki Jin Han (Ulsan National Institute of Science and Technology, Korea)  
Myunghoi Kim (Hankyong National University, Korea)
- 13:30 **Mitigation of Unintentional Radiation from the Package Lid Using PMC Packaging**  
Xiao-Li Yang, Er-Ping Li, Yong-Sheng Li, Dong-Ke Zhu and Ping Cheng (Zhejiang University, China); Hui-Chun Yu and Bin Li (Huawei Technologies Co. Ltd, China)
- 13:50 **Miniaturization of Planar EBG Structure using Dual Power Planes**  
Xingxiaoyu Lin, Yoshitaka Toyota and Kengo Iokibe (Okayama University, Japan); Toshiyuki Kaneko (KYOCERA Corporation, Japan)
- 14:10 **Modified Pinwheel Meander-line Perforated Plane Structure for System-in-Package**  
YoungBong Han, Hai Au Huynh and SoYoung Kim (Sungkyunkwan University, Korea)

#### TH-PM-2: Modeling and Simulation Techniques for EMC, SI and PI (II)

- Time 13:30 – 14:30, Thursday, 22 June  
Room Kwak Joung-Hwan Challenge Hall (B146)  
Chairs Ikpyo Hong (Kongju National University, Korea)  
Hui Min Lee (A\*STAR Institute of High Performance Computing, Singapore)
- 13:30 **Estimating Frequency Spectrum of IC Power Supply Current Through Time-Domain Voltage Measurement on Power Distribution Network**

Jun Wu Zhang, Eng Kee Chua and Kye Yak See (Nanyang Technological University, Singapore);  
Wee Jin Koh and Weng Yew Chang (DSO National Laboratories, Singapore)

13:50 **Modeling of Current Sources Near a Wall of Reverberation Chambers in Discrete Singular Convolution Method**

Huapeng Zhao, Jun Hu and Zhizhang Chen (University of Electronic Science and Technology of China, China)

14:10 **Application of Space Object Conjunction Method in the System Level EMC Evaluation**

Asad Husnain Baqar, Ping Xu and Tao Jiang (Harbin Engineering University, China); Yachen Zhang (Heilongjiang University, China)

### **TH-PM-3: EMC Issues Related to Common-mode Noise (II)**

Time 13:30 – 14:30, Thursday, 22 June

Room Helinox Hall (B147)

Chairs Wansoo Nah (Sungkyunkwan University, Korea)  
Yoshiki Kayano (The University of Electro-Communications, Japan)

13:30 **Generation of Common Mode in Non-Uniform Differential Interconnections**

Xinglong Wu, Flavia Grassi, Xiaokang Liu, Jingkai Sun and Sergio A Pignari (Politecnico di Milano, Italy); Paolo Manfredi and Dries Vande Ginste (Ghent University, Belgium)

13:50 **A Novel Differential Serpentine Delay Line to Reduce Differential to Common Mode Conversion and Impedance Discontinuity**

Jianquan Lou and Xiaoxia Zhou (CISCO, China); Shun Li (Ericsson, China); Yingchun Shu (CISCO, China); Alpesh Bhoje (CISCO, USA); Jinghan Yu (CISCO, China)

14:10 **Common Mode Reduction in Bi-directional DC-DC Converter by Changing Position of Parasitic Capacitor**

Tohlu Matsushima, Takao Kuroyanagi, Takashi Hisakado and Osami Wada (Kyoto University, Japan)

### **TH-PM-4: Electromagnetic Environment and High Power EMC**

Time 13:30 – 14:30, Thursday, 22 June

Room Muak Rotary Club Hall (B132)

Chairs Frank Leferink (University of Twente, The Netherlands)  
William A. Radasky (Metatech Corporation, USA)

13:30 **Exposure to Electromagnetic Near-Fields Radiated by an RFID Reader Antenna**

Kassem Jomaa and Fabien Ndagijimana (Grenoble Institute of Technology, France); Houssam Ayad, Majida Fadlallah and Jalal Jomaah (Lebanese University, Lebanon)

13:50 **Spacecraft Design Considerations for Spacecraft Charging Environments**

Nicole Pothier (Electro Magnetic Applications, USA)

14:10 **Analysis and Reduction on Electromagnetic Interference for Photovoltaic Converter**

Zhou Lei (Jiangsu Institute of Metrology, China); Yan Wei (Nanjing Normal University, China)

**14:50 – 16:50**

### **TH-PM-5: Antenna and Wave propagation**



- Time 14:50 – 16:50, Thursday, 22 June  
Room Industrial Bank of Korea Hall (B145)  
Chairs Ick-Jae Yoon (Chungnam National University, Korea)  
Sungtek Kahng (Incheon National University, Korea)
- 14:50 **On Signal-Strength-of-Arrival Based Localization with Unknown Transmit Power**  
Di Wang, Er-Ping Li and Jiao He (Zhejiang University, China)
- 15:10 **A Multi-Horn Antenna Produced by a 3D Printer**  
Yaron Levy and Moshe Raminfar (Azrieli College of Engineering, Israel); Haim Matzner (Holon Institute of Technology, Israel); Ely Levine (Afeka College of Engineering, Israel)
- 15:30 **Phased Array Antenna Modules with Dual Ports for Independent Transmitting and Receiving Beam-Forming Networks**  
Hsi-Tseng Chou and Yen Ting Chen (National Taiwan University, Taiwan)
- 15:50 **Spectrum Analysis of Slit for Real Metal at Terahertz Frequencies**  
Jun Hur, Jong-Eon Park and Hosung Choo (Hongik University, Korea)
- 16:10 **Sidelobe Suppression of Reflector Antennas by Embedding Non-Resonant Periodic Metal Cells along the Reflector Edge Boundary**  
Shih-Chung Tuan (Oriental Institute of Technology, Taiwan); Hsi-Tseng Chou (National Taiwan University, Taiwan); Hsien-Kwei Ho (Yuan Ze University, Taiwan)
- 16:30 **An Analysis on the Compact Quasi-Isotropic Antenna Using Folded Split Ring Resonator**  
Joon-Hong Kim and Sangwook Nam (Seoul National University, Korea)

#### **TH-PM-6: Computational Electromagnetics and Multiphysics methods for Simulating Complex Electromagnetic Environment Effects**

- Time 14:50 – 16:50, Thursday, 22 June  
Room Kwak Joung-Hwan Challenge Hall (B146)  
Chairs Wen-Yan Yin (Zhejiang University, China)  
Jae Wook Lee (Korea Aerospace University, Korea)
- 14:50 **A Discontinuous Galerkin Time-Domain Method for Modeling of Power-Ground Planes With Narrow Slots and Signal Vias**  
Hui Min Lee, Si-Ping Gao and En-Xiao Liu (Institute of High Performance Computing; A\*STAR, Singapore)
- 15:10 **JEMS-FD: Engineering Application Oriented High-Performance Program for Electromagnetic Compatibility Analysis**  
Wei-Jie Wang (China Academy of Engineering Physics, China); Hai-Jing Zhou (Institute of Applied Physics and Computational Mathematics, China)
- 15:30 **Shielding Effectiveness Prediction of Metallic Structures with Thin Slots Using FDTD**  
Mingjiang Fang, Liping Yan, Zhangshuai Cao and Xiang Zhao (Sichuan University, China); Qiang Liu and Haijing Zhou (Institute of Applied Physics and Computation Mathematics, China)
- 15:50 **Multi-GPU based Fast Electromagnetic Simulation Method for Analyzing PCB**  
Yuta Inoue and Hideki Asai (Shizuoka University, Japan)
- 16:10 **Application of Group Theory in 2D Electromagnetic Scattering in Resonant Frequency**  
Changwei Xu, Hao Guo, Li-Fei Geng, and Hong-Tao He (Luoyang Electronic Equipment Test Center, China)
- 16:30 **Hybrid Scheme Combining Iterative Physical Optics and Edge Current Method to Compute Scattering by Conducting Tail-Wing Structure**

### TH-PM-7: Near Field Scanning Technology for EMC

Time 14:50 – 16:50, Thursday, 22 June

Room Helinox Hall (B147)

Chairs Xing-Chang Wei (Zhejiang University, China)  
Er-Ping Li (Zhejiang University, China)

14:50 **Estimation of Initial Guess of Steepest Descent Method for Near Field Phase Retrieval**

Huapeng Zhao, Ying Zhang, Jun Hu and Zhizhang Chen (University of Electronic Science and Technology of China, China)

15:10 **Near-Field-Based Array Failure Diagnosis Using Sparse Source Reconstruction**

Huapeng Zhao, Ying Zhang, Qun Wan, Jun Hu, and Zhizhang Chen (University of Electronic Science and Technology of China, China)

15:30 **Study on the Phase Error of Plane Wave Spectrum Expansion**

Sihong Tao, Huapeng Zhao, Ying Zhang, Jun Hu and Zhizhang Chen (University of Electronic Science and Technology of China, China)

15:50 **An Effective Equivalent Radiation Source Based on Near-field Scanning for Electromagnetic Interference Estimation**

Jun Li, Xing-Chang Wei, Liang Gao and Yufei Shu (Zhejiang University, China)

16:10 **Investigation of the Probe-Factor Deconvolution Methods for Dynamic ESD Fields Measurements**

Myungjoon Park and Jinguok Kim (Ulsan National Institute of Science and Technology, Korea);  
Joungcheul Choi, Jinwoo Kim, Seonghoon Jeong, Manho Seung and Seokkiu Lee (SK Hynix Inc., Korea)

16:30 **Constant Velocity Motion of a Micro-Robot Using Uniform Magnetic Field**

Dongwook Kim and Seungyoung Ahn (KAIST, Korea)

### TH-PM-8: EMC & Antenna Design for Wireless Communication Systems

Time 14:50 – 16:50, Thursday, 22 June

Room Muak Rotary Club Hall (B132)

Chairs Eakhwan Song (Kwangwoon University, Korea)  
Soonyong Lee (Samsung Electronics, Korea)

14:50 **A Novel Robust Design Method for a Mobile Antenna With a Metal Frame**

Sungwoo Lee, Jong Min Lee and Keum Cheol Hwang (Sungkyunkwan University, Korea); Sanguk Park and Soonyong Lee (Samsung Electronics, Korea)

15:10 **Design of the PCB Embedded Active IC Structure for Ultra-thin Wearable Application With Low-RFI**

Bumhee Bae, JongWan Shim, Younho Kim, HyungGeun Kim and HarkByeong Park (Samsung Electronics, Korea); Jonghoon Kim (KAIST, Korea);

15:30 **Advanced Impedance Matching Technology to Optimize RF Circuit Design of Practical Wireless Systems**

Sinhyung Jeon, Kyungho Yoo, Youjin Kim, and Jeongnam Cheon (Samsung Electronics, Korea)

15:50 **IC Placement Optimization for RF Interference Based on Dipole Moment Sources and Reciprocity**

Chulsoon Hwang and Qiaolei Huang (Missouri University of Science and Technology, USA)

- 16:10 **Design Optimization of Board-level Signal Integrity Depending on PCB Stack-up Configuration in a Mobile Device**  
Inmu Kim, Kipyong Kim and Youngmin Cho (LG Electronics, Korea); Eakhwan Song (Kwangwoon University, Korea)
- 16:30 **Design and Analysis of On-chip Active Power Distribution Network for Efficient Simultaneous Switching Noise Suppression in Mobile AP**  
Subin Kim, Youngwoo Kim and Jounggho Kim (KAIST, Korea)

**17:00 – 18:00**

**TH-PM-9: Poster Session (II)**

Time 17:00 – 18:00, Thursday, 22 June

Room Lobby

Chairs Kyung Sub Lee (Sungkyunkwan University, Korea)  
Hyun Ho Park (The University of Suwon, Korea)

- PS2-01 **Element-Based Electromagnetic Interference Suppression for Modular Systems**  
Aixin Chen, Yue Zhao, Xiaojun Ying and Wenbin Wu (Beihang University, China)
- PS2-02 **Noise Reduction Between High Speed Differential Pairs and Ground Shape**  
Chung-Han Tsai, Hank Lin, Shih-Keng Chuang and Bin-Chyi Tseng (ASUSTek Computer Inc., Taiwan)
- PS2-03 **A Study On EMI Generation From A Capacitive Touch Screen Panel**  
Hoonbae Kim and Byung-Wook Min (Yonsei University, Korea)
- PS2-04 **Experimental Study on Probability Threshold of Electromagnetic Effect of Electronic Equipment**  
Xin Li, Ping Wu, Cui Meng, Yinong Liu and Hanbing Jin (Tsinghua University, China)
- PS2-05 **Evaluation of Fibre Weaving of Substrate on Differential Microstrip Using an Analytical Approach**  
Eng Kee Chua, Jun Wu Zhang and Kye Yak See (Nanyang Technological University, Singapore);  
Wee Jin Koh and Weng Yew Chang (DSO National Laboratories, Singapore)
- PS2-06 **Crosstalk Reduction by Introducing Periodic Structure into Dense Differential Pairs**  
Hiroaki Takeda, Kengo Iokibe and Yoshitaka Toyota (Okayama University, Japan)
- PS2-07 **Crosstalk Suppression by Applying Multilevel Signal Transmission**  
Yafei Wang and Xuehua Li (Beijing Information Science and Technology University, China)
- PS2-08 **Discontinuous Galerkin Time-Domain Analysis of Power/Ground Plate Pairs With Wave Port Excitation**  
Ping Li and Lijun Jiang (The University of Hong Kong, Hong Kong); Hakan Bagci (King Abdullah University of Science and Technology, Saudi Arabia)
- PS2-09 **Surface Charging Dynamics in a Space Plasma**  
Bryon Neufeld (Electro Magnetic Applications, USA)
- PS2-10 **Effective Equation of EMP Shielding Effectiveness with Multi-layered Waveguide-Below-Cutoff Array**

Sangin Kim, Yuna Kim and Jong-Gwan Yook (Yonsei University, Korea)

- PS2-11 **Modeling of Printed Spiral Coils Based on Conformal Mapping Method With Fringing Capacitance Effects**  
Kyungmin Kim, Hyukjun Oh and Eakhwan Song (Kwangwoon University, Korea)
- PS2-12 **Synthesized Network Compensator for Crosstalk Cancellation**  
Sang Seop Song; Jeonghwan Kim; Ki Jin Han (Ulsan National Institute of Science and Technology, Korea)
- PS2-13 **Small Handheld UHF RFID Reader Antenna for Industrial Laundry Applications**  
Guan-Lin Chen, Rong Cao and Chow-Yen-Desmond Sim (Feng Chia University, Taiwan)
- PS2-14 **A Ka-band Parallel-plate Parabolic Reflecting Structure to Implement the Beam Forming Networks for Phased Array of Antennas**  
Hsi-Tseng Chou (National Taiwan University, Taiwan); Ying-Shan Chen (Yuan-Ze University, Taiwan); Chia-Hung Chang (Feng Chia University, Taiwan)
- PS2-15 **High-Performance DOA Estimation for Coprime Arrays With Unknown Number of Sources**  
Anh-Tuan Nguyen, Takashi Matsubara and Takakazu Kurokawa (National Defense Academy, Japan)
- PS2-16 **Research on 8mm-band Elliptic Cylindrical Reflector Antenna and a New Feed Antenna**  
Liqing Wang and Nannan Wang (Harbin Institute of Technology, China)
- PS2-17 **Size Reduction of a Sinuous Antenna Using Planar Meandering**  
Hosang Lee (Sungkyunkwan University, Korea); Taehoon Yoo (Dongyang Mirae University, Korea); Wansoo Nah (Sungkyunkwan University, Korea)
- PS2-18 **Study on the Surface Wave Plasma Column for Plasma Antenna Applications Using Surfaguide Launcher**  
Mohammad Mahdi Abbasi and Shahrooz Asadi (Shahid Beheshti University, Iran)
- PS2-19 **Modal Analysis of Radio Frequency Interference From Shield Can Holes in Mobile Devices**  
Hyun Ho Park (The University of Suwon, Korea); Eakhwan Song (Kwangwoon University, Korea)
- PS2-20 **Modeling of Wave propagation in Thin Graphene Sheets With 3-D ADE-WLP-FDTD Method**  
Ru-Jun Liu and Wei-Jun Chen (Lingnan Normal University, China)
- PS2-21 **Analysis of Impedance Matrix Fill-in Time in CBFM Optimization for Large Scale EMC Problem**  
Chan-Sun Park (Yonsei University, Korea); Ic Pyo Hong (Kongju National University, Korea); Heoung-Jae Chun (Yonsei University, Korea); Yong Bae Park (Ajou University, Korea); Youn-Jae Kim (Agency for Defense and Development, Korea); Jong-Gwan Yook (Yonsei University, Korea)
- PS2-22 **EM Scattering From Dimples in a Circular Cylinder**  
Sangsu Lee and Yong Bae Park (Ajou University, Korea)
- PS2-23 **Impact of Magnetic Field Generated by Wireless Power Transfer System of Electric Vehicle on Retinal Pigment Epithelium Cell in Vitro**  
Weinong Sun, Yaqing He, Yinliang Diao, Sai-Wing Leung, Yun-Ming Siu and Richard Kong (City University of Hong Kong, Hong Kong)
- PS2-24 **Evaluating Human Exposure to Electromagnetic Field Radiated by the Commercial Wireless Power Charging Device**

Jun Seok Kang, Byung Nam Kang, Kang Hui Jeon and Nam Kim (Chungbuk National University, Korea)

PS2-25 **Implementation of Chip-Level EMC Strategies in 0.18  $\mu\text{m}$  CMOS Technology**

Yin-Cheng Chang, Ping-Yi Wang and Shawn S. H. Hsu (National Tsing Hua University, Taiwan); Mao-Hsu Yen (National Taiwan Ocean University, Taiwan); Yen-Tang Chang and Jian-Li Dong (Bureau of Standards, Metrology and Inspection, Taiwan); Ta-Yeh Lin and Da-Chiang Chang (National Applied Research Laboratories, Taiwan)