



# Asian Electromagnetics Conference 2019



# ASIAEM 2019

September 15-20, 2019

Xi'an, China

## Program Book

### Organizers



### Co-organizers

Institute of Science & Technology, Xi'an Jiaotong University

Department of International Cooperation & Exchanges, Xi'an Jiaotong University



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## Welcome Message

On behalf of the Asian Electromagnetics Conference (ASIAEM) 2019 Organizing Committee, we would like to express our cordial welcome to your participation in the ASIAEM 2019, which is to be held in Xi'an, China, from 15th to 20th September 2019.

The AMEREM/EUROEM meetings have a rich history behind them. In 1978, Dr. Carl Baum organized the first Nuclear Electromagnetic Pulse Meeting (or the NEM) in Albuquerque, NM. When this meeting was held in 1994 in Bordeaux, France, it was renamed the EUROEM and subsequently, the meetings held in North America have been called the AMEREM. These meetings have been held in every even year since 1978.

The ASIAEM 2019 is the third Asian Electromagnetics Conference. Considering the fact that the research activities in Asia are flourishing in recent years, especially in countries like China, India, Korea and Singapore, we held the first Asian Electromagnetics Conference in 2015 in Jeju, South Korea. The ASIAEM 2017 was held in India. And the ASIAEM is to be held in every odd year.

The ASIAEM 2019 will continue the AMEREM/EUROEM tradition to bring together the 25th High-Power Electromagnetics Conference (HPEM 25), the 18th Ultra-Wideband, Short-Pulse Electromagnetics Conference (UWB SP 18) and the 18th Unexploded Ordnance Detection and Range Remediation Conference (UXO 18).

Meanwhile, there is something new about the ASIAEM. More organizers and chairs from Asian countries are included in the committees and we set up Best Paper Award, Best Student Paper Award and Outstanding Young Scientist Award to encourage young researchers and students to make greater contributions in this field. In addition, the ASIAEM 2019 will add six new technical committees, namely, EM Transients in UHV/EHV Transmission Lines & Substations, Statistical Methods in HPEM, Meta Materials for High-Power Applications, Design of Protective Devices and Test Methods, Evaluation of HEMP/IEMI Impacts on Critical Infrastructures, and Standards for HPEM Protection, which makes the total number of technical committees 18.

The ASIAEM is also interdisciplinary, and researchers from fields such as Electromagnetic theory, Pulsed power technology, EMP/UWB/UXO/HPM, Lightning, Antenna technology as well as biological and medical applications are all welcome. In doing so, we hope to promote the exchange of academic research results, the presentation of latest progress and the discussion of new ideas and challenges in the field of High Power Electromagnetics.



Also, the ASIAEM 2019 is held in the beautiful city of Xi'an. As the capital city for 13 ancient dynasties in about 1200 years, Xi'an records the great changes of China just like a living history book. Called Chang'an (meaning the eternal peaceful city) in ancient times, it is one of the birthplaces of the ancient Chinese civilization in the Yellow River Basin area. Travelers from all over the world marvel at the numerous historical sites and cultural relics in the city. But Xi'an is also a modern city. As a key city on the ancient silk road, it is always regarded as the cultural, industrial and educational center of northwest China and is still undergoing fast development. So, we would like to invite you to participate in the ASIAEM 2019 in Xi'an and we deeply believe that you will find it a technically fruitful trip and enjoy a nice working vacation here.

In the event of any inquiries arising from this message, please contact us by emails to [asiaem2019@mail.xjtu.edu.cn](mailto:asiaem2019@mail.xjtu.edu.cn) or [asiaem2019@126.com](mailto:asiaem2019@126.com). For more information, please visit our website [www.asiaem.org](http://www.asiaem.org).

We are looking forward to seeing you at the ASIAEM 2019 in Xian, China.

Yours faithfully,

Yanzhao Xie

General Chair of the ASIAEM 2019

Professor, Xi'an Jiaotong University, China



# Organizers and Co-organizers

## Organizers



## Co-organizers

Institute of Science & Technology, Xi'an Jiaotong University

Department of International Cooperation & Exchanges, Xi'an Jiaotong University

## Technical Sponsor





# Committee

## General Chair

Yan-zhao Xie

Xi'an Jiaotong University, China

## Technical Program Committee

### TPC Chair:

William Radasky

Metatech, USA

### TPC Co-Chair:

Lihua Shi

E3OE Laboratory, China

Chang-Su Huh

Inha University, South Korea

### Advisors:

D. V. Giri

Pro-Tech, USA

Edl Schamileglu

University of New Mexico, USA

Richard Hoad

QinetiQ, UK

Lars Ole Fichte

Helmut Schmidt University, Germany

## International Scientific Committee

W.-J. Chen,

Y.-Z. Chen,

S.-T. Li,

Y.-D. Li,

Kasmi Chaouki,

M. Bäckström,

S. W. Choi,

J.-H. Deng,

E. Farr,

J.-S. Luo,

H.-G. Ma,

C. Meng,

K. Mittal,

L. Palisek,

W. Prather,

F. Rachidi,

J.-G. Rhee,

F. Sabath,

S.-H. Wang,

S.-Q. Zheng,

A. Wraight,

Janet O'Neill,

Jaimin Lee,

J.-G. Wang,

J. Lee,

P. Smith,

Dong-Ho Kim,



R. Gardner,

Y.-J. Yoon,

Shi Qiu,

J. Guo,

D. C. Pande,

P. Zwamborn,

T.-H. Jang,

M. Nyffeler,

Q. Liu,

S. B. Jeon,

M. Rubinstein ,

Nicolas Mora,

A. Kaelin,

Chang-Su Huh,

F. Vega,

A. Wraight,

Woochul Park,

Dhiraj K. Singh,

Jin Soo Choi,

J.-P. Parmantier,

Jong-Gwan Yook

A. Bhattacharya,

H.-J. Zhou

S. Umbarkar

A. -X. Zhang

H.-L. Yang



## Technical Scope

The Technical Program for ASIAEM 2019 is organized into 18 Technical Committees(TCs) and 6 Special Sessions (SSs), as shown below:

Technical Committee	Description
TC1	HPEM-Sources, Antennas, Facilities
TC2	HPEM-Coupling/Structures/Cables
TC3	HPEM-Meas. Techniques
TC4	HPEM-IEMI Threats/Effects/Protection
TC5	HPEM-System Level Protection and Testing
TC6	HPEM-Lightning EM Effects/Measurement
TC7	HPEM-Analytic and Numerical Modeling
TC8	HPEM-Bioeffects/Medical Applications of EM
TC9	UWB-Antenna Design/Radiation
TC10	UWB-Radar Systems (Signal Processing and Security) Aspects
TC11	UWB-Target Detection/Imaging
TC12	HPEM-Explosive Devices - Effects and Protection
TC13	HPEM-EM Transients in UHV/EHV Trans Lines & Substations
TC14	HPEM-Statistical Methods in HPEM
TC15	HPEM-Meta Materials for High-Power Applications
TC16	HPEM-Design of Protective Devices and Test Methods
TC17	HPEM-Evaluation of HEMP/IEMI Impacts on Critical Infrastructures
TC18	HPEM-Standards for HPEM Protection





<b>Special Sessions</b>	<b>Description</b>
SS01	EM Interactions with Nonlinear Circuits in Complex Systems, Anlage Steven
SS02	Reliability and Stability of HPEM Test (generator, gas switch, peaking capacitor, and sensor)
SS03	Superconductivity and Cryogenics
SS04	Toward Deep Transcranial Magnetic Stimulation
SS05	Gyromagnetic Nonlinear Transmission Line
SS06	Influence of Geomagnetic Disturbance on Infrastructures



## Technical Program at a Glance

Day/Date		Time		Venue
Sunday 15-Sept.		08:00 – 17:30	REGISTRATION	South Lobby
	PM 3	19:00 – 21:00	WELCOME RECEPTION	Liujin Hall (流金厅)
Monday 16-Sept.	AM	08:30 – 12:00	OPENING CEREMONY & GROUP PHOTO & KEYNOTE SPEECH	Room: Function 1
	PM	14:00 – 17:10	ORAL SESSION	Room: Function 2,3,11,12
Tuesday 17-Sept.	AM	08:30 – 11:40	ORAL SESSION	Room: Function 2,3,11,12
	PM	14:00 – 17:30	ORAL SESSION	Room: Function 2,3,11,12
Wednesday 18-Sept.	AM	08:20 – 12:20	PLENARY SESSION	Room: Function 1
	PM1	14:00 – 15:40	ORAL SESSION	Room: Function 2,3,11,12
	PM 2	15:40 – 17:30	POSTER SESSION	Function Hall
	PM 3	19:30 – 21:00	AWARD BANQUET	Grand Ballroom
Thursday 19-Sept.	AM	08:30 – 12:10	ORAL SESSION	Room: Function 2,11,12
	PM	14:00 – 17:00	TECHNICAL VISIT	
Friday 20-Sept.	AM	08:30 – 13:00	TECHNICAL VISIT	

# Technical Program

Day/Date	Time	Room: Function 2	Room: Function 3	Room: Function 11	Room: Function 12
Monday	AM 1 08:30 – 11:40	WELCOME SESSION			
16-Sept.	PM 1 14:00 – 15:20	TC 01 Hongge Ma, Chaouki Kasmi	SS 02 Wei Jia, Jae Wook Lee	TC 07 (IN MEMORY OF PROFESSOR NITSCH) Sergey Tkachenko, Dave Giri	TC 10 + TC 11 + TC 15 Shuhong Wang, Jin Soo Choi
	PM 2 15:50 – 17:10	TC 01 Lihua Shi, Chang-Su Huh	SS 02 + TC 06 Jae Wook Lee, Wei Jia	TC 07 (IN MEMORY OF PROFESSOR NITSCH) Dave Giri, Sergey Tkachenko	TC 12 + SS 01 Jin Soo Choi, Hongzhi Yao
Tuesday 17-Sept.	AM 1 08:30 – 09:50	TC 01 Dave Giri, Hongge Ma	TC 06 Minghao Wang, Marcos Rubinstein	TC 07 Sergey Tkachenko, Shengquan Zheng	TC 13 Bill Radasky, Xiong Wu
	AM 2 10:20 – 11:40	TC 01 Jun Zhang, Dave Giri	TC 06 Marcos Rubinstein, Minghao Wang	TC 07 Shengquan Zheng, Nicolas Mora	TC 13 + TC 17 Xiong Wu, Yury Parfenov
	PM 1 14:00 – 15:20	TC 01 + SS 05 Dave Giri, Zicheng Zhang	TC 06 Farhad Rachidi, Xueling Yao	TC 08 Lars-Ole Fichte, Guirong Ding	TC 17 Bill Radasky, Minghao Wang
	PM 2 15:50 – 17:10	TC 01 + TC 14 Chang-Su Huh, Yazhou Chen	TC 06 + TC 03 Xueling Yao, Farhad Rachidi	TC 08 + TC 04 + SS 04 Guirong Ding, Lars-Ole Fichte	TC 05 + TC 16 Armin Kaelin, Nicolas Mora
Wednesday 18-Sept.	AM 1 08:30 – 12:00	Plenary Session			
	PM 1 14:00 – 15:40	SS 06 Chunming Liu, Edward Savage	TC 02 Dave Giri, Lihua Shi	TC 16 Jie Guo, Armin Kaelin	SS 04 Mai Lu, Lars-Ole Fichte
	PM 2 15:40 – 17:30	Poster Session			
	PM 3 19:30 – 21:00	Banquet			
Thursday 19-Sept.	AM 1 08:30 – 09:50	TC 04 Jun Guo, Bill Radasky	Interactive Forum with Industry	TC 09 Dave Giri, Sen Yan	TC 03 Lihua Shi, Jae Wook Lee
	AM 2 10:20 – 11:40	TC 04 Bill Radasky, Jun Guo		TC 18 Feng Qin, Dave Giri	TC 03 Jae Wook Lee, Lihua Shi
	PM 1 14:00 – 17:00	Technical visit			
Friday 20-Sept.	AM 08:30 – 13:00	Technical visit			

Monday,2019/09/16	Room: Function 2	Room: Function 3
2:00 – 15:20	<b>TC 01: Sources, Antennas, Facilities (I)</b>	<b>SS 02: Reliability and Stability of HPEM Test (I)</b>
Chair	<b>Hongge Ma, Chaouki Kasmi.</b>	<b>Wei Jia, Jae Wook Lee</b>
14:00-14:20	TC01-1 <b>Investigation on Low Impedance High Voltage Generator Based on UV Preionization Gap Switch (#143)</b>  Song Li, Jingming Gao, Chengyu Shi, Xiao Liu, Hao Cai, Hanwu Yang (National University of Defense Technology).	SS02-1 <b>A 400 kV Gas-insulated Low-jitter Compact Marx Generator (#11) (BPA finalist)</b>  Linshen Xie, Zhiqiang Chen, Wei Jia (Northwest Institute of Nuclear Technology).
14:20-14:40	TC01-2 <b>High-Power Beam Steering Antenna Using A Slot Waveguide by Adjusting Its Wide Side Dimension (#7)</b>  Yiming Yang, Shengren Peng, Chengwei Yuan, Baoliang Qian (National University of Defense Technology).	SS02-2 <b>The Self-breakdown Characteristics of the Output Switch for EMP Simulator (#24) (BPA finalist)</b>  Fan Guo, Yanzhao Xie, Wei Jia (Xi'an Jiaotong University).
14:40-15:00	TC01-3 <b>An Overmoded RBWO Operating at Ka Band with Low Magnetic Field (#9)</b>  Shuang Li (Northwest Institute Of Nuclear Technology), Changhua Chen, Dongyang Wang.	SS02-3 <b>Analysis of the Primary Current Distribution in Tesla-type Pulse Generators (#41)</b>  Shi He (Xi'an Jiaotong University).
15:00-15:20	TC01-4 <b>Cost231-Hata Model is Modified Based on Memetic Algorithm (#28)</b>  Han Zhang, Xinli Zhou, Xiaodi Liu.	SS02-4 <b>Analysis of Fields of Irradiation Cavities with Different Sizes (#49)</b>  Xiangqin Zhu, Changhua Chen, Taijiao Du, Long Hu, Libing Cai (Northwest Institute of Nuclear Technology).



Monday, 2019/09/16	Room: Function 11	Room: Function 12
14:00 – 15:20	<b>TC 07: Analytic and Numerical Modeling(I)</b> <b>(IN MEMORY OF PROFESSOR NITSCH)</b>	<b>TC 10: Radar Systems Aspects</b> <b>TC 11 : Target Detection/Imaging</b> <b>TC 15 : Meta Materials for High-Power Applications</b>
Chair	Sergey Tkachenko, Dave Giri	Shuhong Wang, Jin Soo Choi
14:00-14:20	TC07-1 <b>Modeling the Triggering Requirements of Synchronized Marx Generators (#15)</b> Nicolas Mora, Bertrand Daout (Montena Technology).	TC10-1 <b>A FPGA Acceleration for the Singularity Expansion Method (#121)</b> Andres Gallego, Felix Vega (Universidad Nacional de Colombia).
14:20-14:40	TC07-2 <b>Performance Analysis of Follower Jamming in FH-2FSK Communication (#48)</b> Xinfeng Fan, Zhiliang Tan, Peijiao Song.	TC11-1 <b>Enhanced Data Analysis for the Microwave Power Spectroscopy Method (#61) (BPA finalist)</b> Carl Friedrich Rädcl , Marcus Stiemer (Helmut Schmidt University (HSU)), Tomas Hurtig (Swedish Defense Research Agency (FOI)).
14:40-15:00	TC07-3 <b>On the Maximum Voltage Induced by a Wideband HPEM Field in Cascaded Lines with Piecewise-Linear Layout (#65) (BSPA finalist)</b> Tao Liang, Giordano Spadacini, Flavia Grassi, Sergio Pignari (Politecnico di Milano).	TC15-1 <b>Study on the Damage Cumulative Effect of the Microwave Pulse on the Pin Limiter (#109)</b> Jingtao Zhao (Institute of Applied Electronics, CAEP).
15:00-15:20	TC07-4 <b>Singularity Expansion Method (Sem) for Open-Circuited Wires Above Ground (#66)</b> Felix Middelstaedt, Sergey V. Tkachenko, Ralf Vick (Otto von Guericke University).	TC15-2 <b>A Multi-Beam Metamaterial High-Power Microwave Source (#129)</b> Hamide Seidfaraji, Ahmed Elfrgani, Christos Christodoulou, Edl Schamiloglu (University of New Mexico).

Monday, 2019/09/16	Room: Function 2	Room: Function 3
15:50 – 17:10	<b>TC 01: Sources, Antennas, Facilities (II)</b>	<b>SS 02: Reliability and Stability of HPEM Test (generator, gas switch, peaking capacitor, and sensor) (II)+TC 06: Lightning EM Effects/Measurement (V)</b>
Chair	<b>Lihua Shi, Chang-Su Huh</b>	<b>Jae Wook Lee, Wei Jia</b>
15:50-16:10	TC01-5 <b>Numerical Study of Asymmetric Modes Competition in Slow Wave Structure Loaded by Conductivity Anisotropic Media (#39) (BSPA finalist)</b>  Zhiqiang Fan (Tsinghua University), Jun Sun, Zhimin Song, Yibing Cao, Ping Wu, Guangshuai Zhang (Northwest Institute of Nuclear Technology).	SS02-5  <b>Development of EMP Survivability Test Equipment for Conductive Gaskets (#67)</b>  Ya Li, Zhongyuan Zhou (Southeast University).
16:10-16:30	TC01-6 <b>Optimization of the Gtem Cell Resistive Network (#44)</b>  Binwen Wang, Tingyong Jiang, Zhen Liu, Hui Ning, Lei Shi (Northwest Institute of Nuclear Technology).	SS02-6 <b>Process Analysis for the Insulation Failure of a Peaking Capacitor in an EMP Simulator (#69)</b>  Zhiqiang Chen, Wei Jia, Junping Tang, Junna Li, Fan Guo, Shengchang Ji (Xi'an Jiaotong University, Northwest Institute of Nuclear Technology).
16:30-16:50	TC01-7 <b>Influence of Foilless Diode Parameters on Radial Beam Oscillation (#51) (BPA finalist)</b>  Guangshuai Zhang, Jun Sun, Ping Wu (Northwest Institute of Nuclear Technology).	TC06-15 <b>Observations of Lightning Discharges to the 356 m High Shenzhen Meteorological Tower (#142)</b>  Mingli Chen (The Hong Kong Polytechnic University), Zongxu Qiu (Shenzhen Meteorological Bureau), Zilong Qin (The Hong Kong Polytechnic University), Yuexing Yang (Shenzhen Meteorological Bureau), Yan Gao (The Hong Kong Polytechnic University), Hongbo Guo (Shenzhen Meteorological Bureau).
16:50-17:10	TC01-8 <b>Effect of Longitudinal Mode Transition on Power Handling Capacity of TM01 and TM02 in Corrugated Waveguides (#58)</b>  Yan Teng, Dongyang Wang, Shuang Li, Dewen Yang, Yanchao Shi, Ping Wu, Xiaoling Wu (Northwest Institute of Nuclear Technology).	



Monday, 2019/09/16	Room: Function 11	Room: Function 12
15:50 – 17:10	<b>TC 07: Analytic and Numerical Modeling (II) (IN MEMORY OF PROFESSOR NITSCH)</b>	<b>TC 12: Explosive Devices - Effects and Protection</b> <b>SS 01: EM interactions with Nonlinear Circuits in Complex Systems, Anlage Steven</b>
Chair	<b>Dave Giri, Sergey Tkachenko</b>	<b>Jin Soo Choi, Hongzhi Yao</b>
15:50-16:10	TC07-5 <b>Singularity Expansion Method for Thin Wires with the Full-wave Transmission Line Theory (#74)</b>  Juegen Nitsch, Sergey Tkachenko, Felix Middelstaedt, Ralf Vick (Otto-von-Guericke Universität Magdeburg).	TC12-1  <b>Effect Research on HPEM to Explosives (#19)</b>  Hongzhi Yao, Tuan Zhao, Xiangfei Ji, Ming Yin (Science and Technology on Applied Physical Chemistry Laboratory).
16:10-16:30	TC07-6 <b>Uncertainties Evaluation of Numerical Simulations with a FD-TD Solver - GORF3D (#85) (BPA finalist)</b>  Laurent LABARBE, Jean-Pierre ADAM, Jean-Marc LOPEZ (CEA Gramat).	TC12-2  <b>Study on the Test Method of Induced Current of EED (#33)</b>  Tuan ZHAO, Hong Zhi YAO, Xiang Fei JI, Rui ZHAGN (ShaanXi Applied Physic-Chemistry research).
16:30-16:50	TC07-7 <b>Singularity Expansion Method as Applied to a Linear Antennas in Conducting Media (#107)</b>  Dr D V Giri (Pro-Tech and University of New Mexcico), Dr F M Tesche (EM Consultant (Retired)).	TC12-3  <b>Safety Analysis of EED in Nuclear Electromagnetic Pulse Radiation (#35)</b>  Xiangfei JI, Hongzhi YAO, Tuan ZHAO (Shaanxi Applied Physics-chemistry Research Institute).
16:50-17:10	TC07-8 <b>High Frequency Electromagnetic Field Coupling with Transmission Lines of Finite Length in a Rectangular Resonator (#94)</b>  Sergey Tkachenko, Juergen Nitsch, Moustafa Raya, Ralf Vick (Otto-von-Guericke University Magdeburg).	SS01-1  <b>Research on Microwave Suppression Effects on RF Front-end Device (#104)</b>  Zidong Chen (Institute of Applied Electronics).

Tuesday, 2019/09/17	Room: Function 2	Room: Function 3
08:30 – 9:50	<b>TC 01: Sources, Antennas, Facilities (III)</b>	<b>TC 06: Lightning EM Effects/Measurement (I)</b>
chair	<b>Dave Giri, Hongge Ma</b>	<b>Minghao Wang, Marcos Rubinstein</b>
8:30-8:50	TC01-9 <b>Simulation of an X-band Dual-mode Relativistic Backward Wave Oscillator Operating at Low Magnetic Field (#62)</b>  Renzhen Xiao, Yanchao Shi, Huida Wang (Northwest Institute of Nuclear Technology).	TC06-1 <b>Characterization of CG Flashes with Multiple Terminations Using a 3D Lightning Mapping System Falma (#4)</b>  Panliang Gao, Daohong Wang, Dongdong Shi, Ting Wu, Nobuyuki Takagi (Electronic and Computer Engineering Gifu University).
8:50-9:10	TC01-10 <b>Measurement and Analysis of the Breakdown Strength of Different Liquid Dielectric Materials (#63)</b>  Nicolas Mora (Montena Technology), Amir Mostajabi (Swiss Federal institute of Technology, EPFL), Bertrand Daout (Montena Technology), Farhad Rachidi (Swiss Federal Institute of Technology, EPFL).	TC06-2 <b>Simulation on Lightning Electromagnetic Environment (#10)</b>  Hongzhi Ouyang, Xueling Yao, Jingliang Chen (Xi'an Jiaotong University).
9:10-9:30	TC01-11 <b>Advances of X-Band Relativistic Triaxial Klystron Amplifier Research at the National University of Defense Technology (#81) (BPA finalist)</b>  Jinchuan JU, Wei ZHANG, Yunxiao ZHOU, Jun ZHANG, Huihuang ZHONG (National University of Defense Technology).	TC06-3 <b>Characteristics of Lightning Faults of 220kV and above Overhead Transmission Lines in Zhejiang Province in Last 15 Years (#12)</b>  Xiangxian Zhou, Hangwei Tong, Jun Tong, Wendong Jiang (State Grid Zhejiang Electric Power), Yang Zou (CEEC Zhejiang Electric Power Design institute), Te Li (State Grid Zhejiang Electric Power Research institute).
9:30-9:50	TC01-12 <b>Preliminary Test of High Power RF Generation From 6H-SiC Photoconductive Switch (#83)</b>  Qilin Wu, Yuxin Zhao, Tao Xun, Hanwu Yang (National University of Defense Technology), Wei Huang (Chinese Academy of Sciences).	TC06-4 <b>Multiple Antennas Radiation Continuous Observation System and its Application in Lightning Mapping (#21) (BSPA finalist)</b>  Shulei Li, Lihua Shi, Shi Qiu (National Key Laboratory on Electromagnetic Environmental Effects and Electro-Optical Engineering).





Tuesday, 2019/09/17	Room: Function 11	Room: Function 12
08:30 – 9:50	<b>TC 07: Analytic and Numerical Modeling (III)</b>	<b>TC 13: EM Transients in UHV/EHV Trans Lines &amp; Substations (I)</b>
Chair	<b>Sergey Tkachenko, Shengquan Zheng</b>	<b>Bill Radasky, Xiong Wu</b>
8:30-8:50	TC07-9 <b>Susceptibility Atmosphere Transmission Characteristics of Repetitive High Power Microwave Pulse (#91)</b>  Daojie Yu, Kai He, Tongcheng Zhao, Mengjuan Chai, Beibing Cai, Jinjin Wei, Dongfang Zhou (Information Engineering University).	TC13-1 <b>Prediction of Trichel Pulse Amplitude for Smooth Conductors and Stranded Conductors Based on Improved Effective Ionization Integral (#2)</b>  Pengfei Xu, Bo Zhang, Jinliang He (Tsinghua University), Jianben Liu (China Electric Power Research Institute).
8:50-9:10	TC07-10 <b>Modeling of HEMP Conducted Responses Using State-Space System Identification Method (#88) (BSPA finalist)</b>  Yuhao Chen, Kejie Li, Yanzhao Xie (Xi'an Jiaotong University).	TC13-2 <b>Magnetic Flux Density Distribution Analysis of a Reactor Considering Operating Current and Structure Size (#55)</b>  Fanwu Chu, Xiaoyan Lei (China Electric Power Research Institute), Ying Fu (State Grid Corporation of China), Qian Zhao (Xi'an Herong Electric Power Equipment Co., Ltd.), Xiong Wu, Yi Xiong (China Electric Power Research Institute).
9:10-9:30	TC07-11 <b>HEMP Radiated Environment Distribution Simulation and Statistical Analysis (#110) (BSPA finalist)</b>  Ning Dong, Yan-zhao Xie (Xian Jiaotong university).	SS06 <b>Analysis on Eddy Current Loss and Temperature Distribution for Ultra High Voltage Transformer in No-Load (#126)</b>  Mingyang Li, Zezhong Wang, Bing Li, Ke Liu, Mengzhen Xuan, Suxin Guo (NORTH CHINA ELECTRIC POWER UNIVERSITY).
9:30-9:50	TC07-12 <b>Correlation Between Time and Frequency Domain Shielding Effectiveness of Metallic Enclosures with Apertures (#115) (BPA finalist)</b>  Gang Wu, Peng Chen, Linshen Xie, Wei Wang (Northwest Institute of Nuclear Technology).	TC13-4 <b>Effects of Control Algorithms on Electromagnetics Transient Process in UHVDC Transmission System (#92) (BSPA finalist)</b>  Fang Yu, Jie Guo, Yuying Wu (Xi'an Jiaotong University).



Tuesday, 2019/09/17	Room: Function 2	Room: Function 3
10:20 – 11:40	<b>TC 01: Sources, Antennas, Facilities (IV)</b>	<b>TC 06: Lightning EM Effects/Measurement (II)</b>
Chair	<b>Jun Zhang, Dave Giri</b>	<b>Marcos Rubinstein, Minghao Wang</b>
10:20 – 10:40	TC01-13  <b>A Frequency-agile Relativistic Magnetron with Axial Tuning (#87) (BPA finalist)</b>  Fen Qin (Institute of Applied Electronics, China Academy of Engineering Physics).	TC06-5  <b>The Effect of Current intensity and Propagation Distance on Risetime (#22)</b>  Zhigang Lu, Shi Qiu, Shaolei Li (National Key Laboratory on Electromagnetic Environmental Effects and Electro-Optical Engineering).
10:40-11:00	TC01-14  <b>A Compact, Low Jitter, High Voltage Pulse Generator Based on Fractional-Turn Ratio Saturable Pulse Transformer (#103) (BSPA finalist)</b>  Jiuyuan Geng, Jianhua Yang, Ting Shu (National University of Defense Technology).	TC06-6  <b>Two Scenarios of Positive Lightning Leader Channel Branching (#32)</b>  Xiushu Qie, Shanfeng Yuan, Rubin Jiang (LAGEO, Institute of Atmospheric Science, Chinese Academy of Science).
11:00-11:20	TC01-15  <b>Compact Small-Sized Pulsed Power Sources Arc-01/02 and Their Applications (#117)</b>  Zicheng Zhang, Hanwu Yang, Shifei Liu, Yuwei Wang, Jiande Zhang (National University of Defense Technology).	TC06-7  <b>Assessment of Varistor Withstand Capacity Against CG Generated Transient Voltages (#37)</b>  Nilantha Sapumanage, Sankha Nanayakkara, Sidath Abegunawardana, Mahendra Fernando (Department of Physics University of Colombo), Vernon Cooray (Department of Engineering Science Uppsala University).
11:20-11:40	TC01-16  <b>Impact Ionization Front in the Initially Unbiased Layered Silicon Structure (#118)</b>  Gan-ping Wang (Key Laboratory on High Power Microwave Technology).	TC06-8  <b>Probabilistic Assessment on Selected SPD Efficiency (#38) (BPA finalist)</b>  Nilantha Sapumanage, Sankha Nanayakkara, Sidath Abegunawardana, Mahendra Fernando (Department of Physics University of Colombo), Vernon Cooray (Department of Engineering Science Uppsala University).



Tuesday, 2019/09/17	Room: Function 11	Room: Function 12
10:20 – 11:40	<b>TC 07: Analytic and Numerical Modeling (IV)</b>	<b>TC 13: EM Transients in UHV/EHV Trans Lines &amp; Substations (II)</b> <b>TC 17: Evaluation of HEMP/EMI Impacts on Critical infrastructures (I)</b>
Chair	<b>Shengquan Zheng, Nicolas Mora</b>	<b>Xiong Wu, Yury Parfenov</b>
10:20 – 10:40	TC07-13  <b>The circuit model of linear-mode, vertical SiC PCSS (#119)</b>  Yuxin Zhao, Qilin Wu, Hanwu Yang (National University of Defense Technology).	TC13-5  <b>A Non-Contact Approach for Lightning Strike and Fault Location of Transmission Lines by Broadband Electro-optic Field Sensors (#105) (BPA finalist)</b> Chijie ZHUANG, Huaiyuan Yang, Rong Zeng (Tsinghua University), Shijun Xie (State Grid Sichuan Electric Power Research Institute), Hao Yu, She Wang (Tsinghua University).
10:40-11:00	TC07-14  <b>Analysis of Electromagnetic Coupling to a Shielded Line Based on Extended BLT Equation (#125)</b> Bao-Lin Nie (University of Electronic Science and Technology of China).	TC13-6  <b>Electromagnetic Transient Simulation and Analysis Caused by 500kV Side Switching of Nuclear Power Plant (#116)</b> Yuying Wu, Yunpeng Qiu, Jie Guo (Xi'an Jiaotong University).
11:00-11:20	TC07-15  <b>Modeling of the Non-Vertical Risers at the End of the Transmission Lines Using an Equivalent Partial inductance (#132) (BPA finalist)</b> Jun Guo (Xi'an Jiaotong University), Marcos Rubinstein (University of Applied Sciences Western Switzerland), Vernon Cooray (Uppsala University), Farhad Rachidi (Swiss Federal institute of Technology (EPFL)), Yan-zhao Xie (Xi'an Jiaotong University).	TC13-7  <b>Development of VFT Test Platform (#128)</b>  Jun Zhao, Jiangong Zhang (China Electric Power Research institute), Zhiyang zou (NARI Technology Development Co., LDT).
11:20-11:40	TC07-16  <b>Two-dimensional Numerical Simulation of Nanosecond Pulsed Discharge in Sulfur Hexafluoride Gas at High Pressure (#144)</b>  Haiyang Wang (Northwest Institute of Nuclear Technology).	TC17-1  <b>Prediction of Radio Frequency in a Large Structure from External Electromagnetic Source (#18)</b>  Han-Hee Lee, Jae Wook Lee (Korea Aerospace university), Jong Hwa Kwon, Jeong Hwan Hwang, Chang Hee Hyung (Electronics and Telecommunications Research Institute (ETRI)).



Tuesday,2019/09/17	Room: Function 2	Room: Function 3
14:00 – 15:20	<b>TC 01: Sources, Antennas, Facilities (V)</b>	<b>TC 06: Lightning EM Effects/Measurement (III)</b>
Chair	<b>Dave Giri, Zicheng Zhang</b>	<b>Farhad Rachidi, Xueling Yao</b>
14:00-14:20	TC01-17  <b>High Power Microwave Waveguide Slot Array Antenna with Grooves (#120)</b>  Yong Liao (Institute of Applied Electronics,CAEP).	TC06-9  <b>Application of the FDTD Method to the Surge Analysis of a Transmission Line Tower with a Power Cable (#57)</b>  Akiyoshi Tatematsu (Central Research Institute of Electric Power Industry).
14:20-14:40	TC01-18  <b>Investigation of Frequency Selective Surfaces in HPEM Applications (#123)</b>  Félix Vega, Fernando Albarracin-Vargas (National University of Colombia), Chaouki Kasmi (xen1thLabs, DarkMatter), Lars Ole Fichte (Helmut Schmidt University).	TC06-10  <b>MARCOS: a VHF Lightning Mapping System and Applications (#70) (BPA finalist)</b>  Shi Qiu, Tao Wang, LiHua Shi (National Key Laboratory on Electromagnetic Environment Effects and Electro-Optical Engineering).
14:40-15:00	TC01-19  <b>An UWB Radiation System and its Electromagnetic Interference Effect on UAV System (#138)</b>  Yangxin Qiu, Yanzhao Xie, Mingxiang Gao (Xi'an Jiaotong University).	TC06-11  <b>Technical Paper for Lightning Test Standard of Automobiles from Japanese Automotive Standards Organization (#72) (BPA finalist)</b>  Kazuo Yamamoto (Chubu University).
15:00-15:20	TC01-20(from SS05)  <b>Investigation of Power Loss Caused by The Antenna Connected to a Gyromagnetic Nonlinear Transmission Line (#75)</b>  Yuwei Wang, Dongqun Chen, Zicheng Zhang, Shengguang Cao, Da Li (National University of Defense Technology).	TC06-12  <b>Modeling of Composite Transmission Tower Under Direct Lightning Strokes Based on Electromagnetic Field Energy Principle (#101)</b>  Shuhong Wang, Youpeng Huangfu (Xi'an Jiaotong University).



Tuesday, 2019/09/17	Room: Function 11	Room: Function 12
14:00 – 15:20	<b>TC 08: Bioeffects/Medical Applications of EM (I)</b>	<b>TC 17: Evaluation of HEMP/IEMI Impacts on Critical Infrastructures (II)</b>
Chair	<b>Lars-Ole Fichte, Guirong Ding</b>	<b>Bill Radasky, Minghao Wang</b>
14:00-14:20	TC08-1 <b>Effects of EMP on the Osteogenic Differentiation in hUC-MSCs (#5)</b>  Tian Wang, Gang Rui, Ling Guo, Yan Zhou, Guang-Zhou An, Gui-Rong Ding (Air force Medical University).	TC17-1 <b>Research on HEMP Front-door Coupling Evaluation (#95) (BPA finalist)</b>  Yu Mao, Yan Wang, GuoShuai Zhen, XueFeng Qi (Aviation Key Laboratory of Science and Technology on Electromagnetic Environmental Effects 2Department of Avionics Shenyang Aircraft Design and Research Institute, AVIC).
14:20-14:40	TC08-2 <b>A Compact Width-tunable High-voltage Nanosecond Pulse Generator for Nanoelectroablation (#36)</b>  Xin Rao (University of Electronic Science and Technology of China), Xiaodong Chen (Queen Mary University of London), Jun Zhou (University of Electronic Science and Technology of China).	TC17-2 <b>Strong electromagnetic pulse harm and protection to the aircraft (#97)</b>  Tao Zhang, BaiHan Liu, ZhaoHui Lv, Yan Wang (Aviation Key Laboratory of Science and Technology on Electromagnetic Environmental Effects Shenyang Aircraft Design and Research Institute, AVIC, Shenyang Aerospace University,).
14:40-15:00	TC08-3 <b>Simulation and Experiment Study of a High Shielding Effectiveness Suit (#59)</b>  Zhou Heng, Yao Jiawei, Cai Wanzeng, Jiang Tingyong (Northwest Institute of Nuclear Energy Technology).	TC17-3 <b>Study on Electromagnetic Coupling Characteristics of Fuselage Cover Cavity Irradiated by HEMP (#98)</b>  XueFeng Qi, Yan Wang, GuoShuai Zhen, Yu Mao (Aviation Key Laboratory of Science and Technology on Electromagnetic Environmental Effects Shenyang Aircraft Design and Research Institute, AVIC).
15:00-15:20	TC08-4 <b>Research on the Characteristics of Absorbed Dose in Rats under Radio Frequency (#60)</b>  Jiajin Lin, Jing Li, Guirong Ding, Shenglong Xu, Wei He (Air force Medical University).	TC17-4 <b>Aircraft Nuclear Electromagnetic Pulse Effect and Protection Technology (#99)</b>  JinRong Zhu, WenJie Zhang (Aviation Key Laboratory of Science and Technology on Electromagnetic Environmental Effects 2Department of Avionics Shenyang Aircraft Design and Research Institute, AVIC).



Tuesday, 2019/09/17	Room: Function 2	Room: Function 3
15:50 – 17:10	<b>TC 01: Sources, Antennas, Facilities (VI)+TC 14: Statistical Methods in HPEM</b>	<b>TC 06: Lightning EM Effects/Measurement (IV)</b>
Chair	<b>Chang-Su Huh, Yazhou Chen</b>	<b>Xueling Yao, Farhad Rachidi</b>
15:50-16:10	TC01-21 <b>Electrostatic Characteristics of Two Conducting Spheres in a Grounded Cylinder (#1) (BPA finalist)</b>  Dave Giri (Pro-Tech), Shubho Banerjee (Rhodes College).	TC06-13 <b>Some Optimization Techniques of Lightning Field Calculations (#113)</b>  Marcos Rubinstein (University of Applied Sciences Western Switzerland, Yverdon-les-Bains), Antonio Sunjerga, Farhad Rachidi (Swiss Federal Institut of Technology, Lausanne).
16:10-16:30	TC14-01 <b>Assessment Method of Sample Size Requirements for High Power Microwave Test (#130)</b>  Jiangchuan Lin (Institute of Applied Electronics,CAEP).	TC03-1 <b>Detection and Localization of Lightning Damages in CFRP with Lamb Wave (#17) (BPA finalist)</b>  Shangchen Fu, Lihua Shi, Yinghui Zhou (National Key Laboratory on Electromagnetic Environmental Effects and Electro-optical Engineering).
16:30-16:50	TC01-22 <b>A 40kV, 500kHz Solid-state Pulsed Power Generator Based on the Drift Step Recovery Diodes (#145)</b>  Haiyang Wang (Northwest Institute of Nuclear Technology).	TC03-2 <b>Simulation Analysis on Return Conductor Settings for Lightning Indirect Effect of Metal Cabin (#73)</b>  Shangchen Fu, Lihua Shi, Yinghui Zhou (National Key Laboratory on Electromagnetic Environmental Effects and Electro-optical Engineering).
16:50-17:10		TC06-14 A Time Domain Detection Method for Weak NEMP Signal (#114) (BSPA finalist)  Baofeng Cao, Yi Zheng, Rui Liang, Xueqin Zhang (Research Institute of Chemical Defense).



Tuesday, 2019/09/17	Room: Function 11	Room: Function 12
15:50 – 17:10	<b>TC 08: Bioeffects/Medical Applications of EM (II)</b>	<b>TC 05: System Level Protection and Testing</b>
Chair	<b>Guirong Ding, Lars-Ole Fichte</b>	<b>Armin Kaelin, Nicolas Mora</b>
15:50-16:10	TC08-5 <b>Acute Hepatic Effects of Ka-HPM Pulses Exposure on KM Mouse (#76)</b>  Xiaoyun Lu, Haihui Yang, Fan Fan, Yi Zhou, Yangxin Qiu, Yanzhao Xie (Xi'an Jiaotong University).	TC05-1 <b>Study of the Electromagnetic Protection of Infrastructures with Alternative Shielding Strategies (#16)</b>  Nicolas Mora, Zhaoyang Wang (EMC Laboratory, Swiss Federal institute of Technology, EPFL), Carlos Romero, Markus Nyffeler (Armasuisse Science and Technology), Farhad Rachidi (EMC Laboratory, Swiss Federal Institute of Technology, EPFL).
16:10-16:30	TC08-6 <b>Investigation of Gene Expression Alterations in Human Peripheral Blood Cells After Continuous Wave Exposure at 900 MHz (#100)</b>  Fichte Lars Ole (HSU).	TC05-2 <b>Medium-voltage Transformers Under EMP-Conditions (#93) (BPA finalist)</b>  Armin W. Kaelin (EMProtec AG), Markus Nyffeler, Carlos Romero (Armasuisse Science and Technology).
16:30-16:50	TC08-7 (original from TC4) <b>A Systematic Electromagnetic Protection System Based on Human Immune Mechanism (#137)</b>  Yaohui Zhang, Yuebo Li, Jie Yang (Institute of Defense Engineering).	TC05-3 <b>Effect of Penetrating Conductors on Shielding Effectiveness of Metallic Enclosures (#131)</b>  Zhaoyang Wang, Nicolas Mora (EMC Laboratory, Swiss Federal Institute of Technology, EPFL), Carlos Romero, Markus Nyffeler (Armasuisse Science and Technology), Farhad Rachidi (EMC Laboratory, Swiss Federal Institute of Technology, EPFL).
16:50-17:10	TC08-8 (original from SS04) <b>Improved Model of Deep Transcranial Magnetic Stimulation with Temporal Interference (#141)</b>  DongXu Shi, XiLe Wei, Jiang Wang, Bin Deng.	TC05-4 (original from TC16) <b>HF Radio E1 HEMP Protection Using Gas Discharge Tube Surge Protectors (#77)</b>  Edward Savage, William Radasky (Metatech Corporation).



Wednesday,2019/09/18	Room: Function 2	Room: Function 3
14:00 – 15:40	<b>SS 06: Influence of Geomagnetic Disturbance on Infrastructures</b>	<b>TC 02: Coupling/Structures/Cables</b>
Chair	<b>Chunming Liu, Edward Savage</b>	<b>Dave Giri, Lihua Shi</b>
14:00-14:20	SS06-1 <b>Effects of GIC on Winding Currents of Single Phase UHV Autotransformer with Load (#34)</b> Bing Li, Zezhong Wang, Mingyang Li, Ke Liu, Mengzhen Xuan, Suxin Guo (North China Electric Power University).	TC02-1 <b>Research on Interference and Damage of Mesoband EMP Irradiation in System-Level UAV (#23) (BSPA finalist)</b> Jiangnan Zhang, Yong He, Xuchao Pan, Zhijun Qiao, Jie Shen, Ziqi Yang (Nanjing University of Science and Technology).
14:20-14:40	SS06-2 <b>Study on the Influence of Earth Current “Pipeline Effect” on PSP of Pipelines (#108) (BSPA finalist)</b> WEIFENG ZHAI, ZHISHAN LIANG (China University of Petroleum (Beijing)).	TC02-2 <b>Coupling Characteristics Analysis of Low-altitude Targets over Half Space under HPEM Environments (#31)</b> Aote Zhang, Le Cao, Yuanguo Zhou (Xi'an University of Science and Technology).
14:40-15:00	SS06-3 <b>Unified Mechanism of Geo-magnetic Storm and Sub-storm (#112)</b> Zhishan Liang (China University of Petroleum Beijing).	TC02-3 <b>Circuit Modeling of Capacitive and Inductive Couplers of Pulsed Current Injection Tests (#42)</b> Yi Zhou, Yan-zhao Xie, Dao-zhong Zhang (Xi'an Jiaotong University).
15:00-15:20	SS06-4 (FROM TC13-3) <b>Geomagnetic Storms and Electric Power Grid Issues (#78)</b> Edward Savage, William Radasky (Metatech Corporation).	TC02-4 <b>Simulation Study on Lightning Indirect Effect of Metal Cylinder (#45)</b> Ruitao Huang, Yantao Duan, Lihua Shi.
15:20-15:40	SS06-5 <b>Steady-state Security Region of Power System Based on Hyper-plane Under the Influence of Geomagnetic Storms (#134)</b> Xinjie Li, Chunming Liu (North China Electric Power University).	TC02-5 <b>Simulation Evaluation of the Coupling Effect of Cables Crossing Cabins in Frequency Domain (#96) (BPA finalist)</b> GuoShuai Zhen, JiaZuo Zang, XueFeng Qi, Yan Wang (Aviation Key Laboratory of Science and Technology on Electromagnetic Environmental Effects Shenyang Aircraft Design and Research Institute, AVIC).





Wednesday, 2019/09/18	Room: Function 11	Room: Function 12
14:00 – 15:40	<b>TC 16: Design of Protective Devices and Test Methods</b>	<b>SS 04: Toward Deep Transcranial Magnetic Stimulation</b>
Chair	<b>Jie Guo, Armin Kaelin</b>	<b>Mai Lu, Lars-Ole Fichte</b>
14:00-14:20	TC16-1 <b>How to Test a Microcontroller for Immunity to HPEMP Influence? (#6)</b>  Vladimir M Chepelev, Yury V. Parfenov (Joint Institute for High TEMPeratures Russian Academy of Sciences), Yu-hao Chen, Yan-zhao Xie (Xi'an Jiaotong University).	SS04-1 <b>Optimizing the Positioning of the Coil for Deeper Transcranial Magnetic Stimulation (#30)</b>  Lei Yang, Chang Liu, Tongning Wu (China Academy of Information and Communications Technology).
14:20-14:40	TC16-2 <b>EMP Protection Method for Communication RF Front-end (#20)</b>  Yuming Wang, Zhaoxiang Meng, Liyun Ma.	SS04-2 <b>Deep Transcranial Magnetic Stimulation Using Different Coil Configurations (#86)</b>  Mai Lu (Lanzhou Jiaotong University), Shoogo Ueno (Kyushu University).
14:40-15:00	TC16-3 <b>Analysis of Active Surge Protection Gap Impulse Breakdown Voltage (#40)</b>  Yangjing Le, Xueling Yao, Jinru Sun, Tianquan Li, Wenjun Xu, Jingliang Chen (Xi'an Jiaotong University).	SS04-3 <b>Achieving Deep Transcranial Magnetic Stimulation by Activating a White Matter Fiber Tract (#133)</b>  Guanghao Zhang, Xiaolin Huo (Institute of Electrical Engineering, Chinese Academy of Sciences).
15:00-15:20	TC16-4 <b>Refining HEMP Filter Design to Meet Changing PCI Requirements (#68)</b>  John Lindsay (MPE Ltd), David Rimmer (MPE Ltd).	SS04-4 <b>The Computational Model of Deep Transcranial Magnetic Stimulation and Induced Electric Field Optimization (#139)</b>  YuQiao LI, Jiang Wang, XiLe Wei, Bin Deng (Tianjin University).
15:20-15:40	TC16-5 <b>Study on Shielding Effectiveness Measurement Method of Concrete for RF Shield (#84)</b>  Hong-Je Jang, Tae-Seung Song, Hyo-Sik Choi (Korea Testing Laboratory), Sung-Wook Kim, Nam-Kon Lee (Korea Institute of Civil Engineering and Building Technology).	SS04-5 <b>Modeling Subject-Specific Head Model: Application to Calculation of Induce Electric Fields by Transcranial Magnetic Stimulation (#140)</b>  Lin Lin, Jiang Wang, XiLe Wei, Bin Deng (Tianjin University).



Thursday,2019/09/19	Function 2	Room: Function 12
08:30 – 9:50	<b>TC 04: IEMI Threats/Effects/Protection</b>	<b>TC 03: Meas. Techniques (I)</b>
Chair	<b>Jun Guo, Bill Radasky</b>	<b>Lihua Shi, Jae Wook Lee</b>
8:30-8:50	TC04-1 <b>Analysis of Destruction Characteristic of Bipolar Junction Transistor by Repetitive Pulse Injection (#80)</b>  Jeong-Ju Bang, Chang-Su Huh (Inha University).	TC03-1 <b>Short-pulse HPM Measurements Using a Resistive Sensor (#54)</b>  Paulius Ragulis, Rimantas Simniškis, Mindaugas Dagys, Žilvinas Kancleris (Center for Physical Sciences and Technology), Dmitrii andreev, Antonio Alleluia, Edl Schamiloglu (University of New Mexico).
8:50-9:10	TC04-2 <b>EM Failures Analysis of Analogue and Digital Sensors from a Safety and Security Perspective (#135) (BPA finalist)</b>  Chaouki KASMI (Xen1thLabs), Fahad Al Yafei (Tawazun).	TC03-2 <b>A Measure System for Detonation-Generated Plasma Density (#43) (BSPA finalist)</b>  Ziqi Yang, Yong He, Xuchao Pan, Hong Chen, Jiangnan Zhang, Yu Zhou (Nanjing University of Science and Technology).
9:10-9:30	TC04-3 <b>Coupling Path Visualization for Automotive Intentional Electromagnetic Interference (#29) (BSPA finalist)</b>  Yang Zhong, Woncheol Song (Missouri University of Science and Technology), Cheolhan Kim (Hyundai Motor Company), Changyul Park (Korean Testing Laboratory), Chulsoon Hwang Missouri (University of Science and Technology).	TC03-3 <b>Optimization of Double-Frequency Test Technique for Nonlinear Characteristics (#46)</b>  Chen Pang, Zhiyong Yu, Wenzhan Du.
9:30-9:50	TC04-4 <b>Effect of Ground on Wide-band High Power Microwave Testing (#52)</b>  Cai Jinliang, Qin Feng, Fan Jun, Yan Zhiyang (Key Laboratory of Science and Technology on Complex Electromagnetic Environment, CAEP).	TC03-4 <b>PCI Test on Power Line Filter Against HEMP (#47)</b>  Hanming Cui, Zhewen Xu, Yantao Duan, Lihua Shi, Ke Wang (National Key Laboratory on Electromagnetic Environment Effects and Electro-Optical Engineering).



Thursday, 2019/09/19	Room: Function 11
08:30 – 9:50	<b>TC 09: Antenna Design/Radiation (I)</b>
Chair	<b>Dave Giri, Sen Yan</b>
8:30-8:50	TC09-1 <b>A TEM Horn Array Fed by UWB Power Divider (#13)</b>  Sen Yan, Yan Zheng, Anxue Zhang (Xi'an Jiaotong University).
8:50-9:10	TC09-2 <b>Realization of a Wide-band Rotationally Symmetric Antenna for Use in Reverberation Chambers (#14)</b>  Ronny Gunnarsson, Carl Samuelsson, Mats Bäckström (Saab Aeronautics).
9:10-9:30	TC09-3 <b>Compariosn of Radiated Emissions in Offshore and Offshore Wind Turbine Towers (#124) (BPA finalist)</b>  Aravind Devaraj, Sajeesh Sulaiman, Aswin R (Siemens Gamesa Renewable Energy).
9:30-9:50	TC09-4 <b>Compact Design of Novel Combined Antenna Array for the UWB Pulse Radiation (#127)</b>  Shao-fei Wang, Yan-zhao Xie (Xi'an Jiaotong University).



Thursday, 2019/09/19	Function 2	Room: Function 12
10:20 – 11:40	<b>TC 04: IEMI Threats/Effects/Protection (II)</b>	<b>TC 03: Meas. Techniques (II)</b>
Chair	<b>Bill Radasky, Jun Guo</b>	<b>Jae Wook Lee, Lihua Shi</b>
10:20 – 10:40	TC04-5 <b>Review of High Intensity Radiated Field Simulation Methods (#50)</b>  Gao Yuan (Institute of Applied Electronics, CAEP).	TC03-5 <b>Frequency-domain Calibration Method for D-dot Sensor (#8) (BSPA finalist)</b>  Ke Wang, Yantao Duan, Lihua Shi (National Key Laboratory on Electromagnetic Environment Effects and Electro-Optical Engineering).
10:40-11:00	TC04-6 <b>The Threat of Electromagnetic Pulse and Countermeasures (#82)</b>  Wenjie Zhang, Guodong Song, Tao Zhang, Zhuo Liu, Jinrong Zhu, Yan Wang (Shenyang Aircraft Design and Research Institute).	TC03-6 <b>Accumulative Effects of Multiple Pulse on Microcontroller (#64)</b>  Yinghui Zhou, Lihua Shi, Shangchen Fu (National Key Laboratory on Electromagnetic Environmental Effects and Electro-optical Engineering).
11:00-11:20	TC04-7 <b>Analysis and Mitigation of Variable Frequency Drive Power Quality Problems (#122)</b>  Aswin R, Aravind Devaraj, Sajeesh Sulaiman (Siemens Gamesa Renewable Energy).	TC03-7 <b>Study on the <math>\delta</math>-Domain Model of Electromagnetic Pulse Test (#56)</b>  Rupo Ma (Jiangsu Police Institute), Lihua Shi (National Key Laboratory on Electromagnetic Environmental Effects and Electro-Optical Engineering), Jun Zhang (Jiangsu Police Institute).
11:20-11:40	TC04-8 <b>Covert information Embedding in Remote Targets with HPEM (#71) (BPA finalist)</b>  José Lopes Esteves, Emmanuel Cottais (National Security Agency of France (ANSSI)).	TC03-8 <b>Design and Test Verification of a Test Fixture for Field-to-line Coupling (#27)</b>  Longquan Zhong (Complicated Electromagnetic Environment Laboratory of CAEP).



Thursday, 2019/09/19	Room: Function 11
10:20 – 11:40	<b>TC 18: Standards for HPEM Protection</b>
Chair	<b>Feng Qin, Dave Giri</b>
10:20 – 10:40	TC18-1  <b>Study on the Characterization of Shielding Effectiveness under Narrow Band High Power Microwave (#25)</b>  Zhiyang Yan, Feng Qin, Jinliang Cai (Key Laboratory of Science and Technology on Complex Electromagnetic Environment, CAEP).
10:40-11:00	TC18-2  <b>HPEM Regulatory Standard (KinAC/RS-020) for IEMI Protection of Nuclear Facilities in ROK (#53)</b>  Jinho Ryu, Donghoon Song, Hojong Hwang, Sujin Park (Korea Institute of Nuclear Nonproliferation and Control).
11:00-11:20	TC18-3  <b>Development of Antenna Waveforms for Updating IEC 61000-2-10 (#89)</b>  William Radasky (Metatech Corporation).
11:20-11:40	TC18-4  <b>Design and Simulation of a 300kV Pulse Generator for a Bounded-wave Simulator (#90)</b>  Beizhen ZHANG, Falun Song, Yanqing Gan, Ping Xie, Fen Qin (Institute of Applied Electronics, CAEP).



## Opening Ceremony & Keynote Speech

Time: 16th, Sept., Monday.

Venue: Function 1, Floor G, Wyndham Grand Xi'an South.

Time	Content	Speaker	Host
8:30 – 8:40	Welcome Speech (1)	Director of State Key Laboratory Electrical Insulation and Power Equipment Prof. Jianhua Wang	Liyun Zhu
8:40 – 8:50	Welcome Speech (2)	Executive Dean of School of Electrical Engineering Prof. Shengtao Li	
8:50 – 9:50	Opening Speech	General Chair of ASIAEM 2019 Prof. Yan-Zhao Xie	
9:50 – 10:10	Awards Introduction	Awards Committee Chair of ASIAEM 2019 Dr. Nicolas Mora	
10:10 – 10:20	EUROEM 2020 Introduction	General Chair of EUROEM 2020 Dr. Lars-Ole Fichte	
10:20 – 10:40	Group Photo		
10:40 – 11:00	Coffee Break		
11:00 – 12:00	Keynote Speech	Prof. Lihua Shi	Yan-zhao Xie

Before the coffee break, a group photo will be taken at the North gate of the hotel . Please follow the instructions of the volunteers or the direction signs on the wall.



Keynote Speech: Lightning Observation from Close Region to Far Field

Speaker: Prof. Lihua Shi

**ABSTRACT**

The lightning process produces a large amount of acoustic, optic and electromagnetic emissions. Measurement and identification of these signals plays an important role in reconstructing and understanding the process and the mechanism of lightning. With the application of novel transducer technologies, large-memory high-speed data acquisition systems and modern signal processing methods, traditional observation techniques are developing to the direction of multi-frequency band and multi-sensor array. More details have been revealed in the same time of obtaining the temporal and spatial evolution of the whole process. Based on several kinds of newly developed measurement systems in our laboratory, field experiments and lightning observation have been conducted in recent years. This talk reviews the progress of lightning observation in our laboratory with the main emphases on joint VHF radiation and high-speed camera detection of CG lightning process, applications of array signal processing in lightning source localization and some new results of multi-station LF/VHF dual-frequency three-dimensional positioning system.

**BIOGRAPHY**

Lihua Shi is a professor and the director in the National Key Laboratory on Environmental Electromagnetic Effects and Electro-optic Engineering, with his main focus on time-domain measurement technology and EMP protection. He is a member of EMC committee, Chinese Institute of Electronics. He has published over 200 technical papers and co-authored 4 books. In 2010, he was elected as a EMP fellow for his contribution to EMP measurement and signal processing technology.





## Plenary Session

Time: 18th, Sept., Wednesday

Venue: Function 1, Floor G, Wyndham Grand Xi'an South.

8:20 – 8:50	Prof. Farhad Rachidi  An Introduction to Electromagnetic Time Reversal	Host:  William A. Radasky
8:50 – 9:20	Dr. Jin Soo Choi  Methodology and Implementation of Automated HPEM Effects Testing	
9:20 – 9:50	Prof. Xueling Yao  Development of Lightning Direct Effect Test and Simulation of Carbon Fiber Composites	
9:50 – 10:10	Coffee Break	
10:10 – 10:40	Dr. William A. Radasky  From DC to Daylight: Let's look at the DC End!	Host:  Chang-Su Huh
10:40 – 11:10	Prof. Jun Zhang  Recent Progress in Narrowband High Power Microwave Sources	
11:10 – 11:40	Dr. Chaouki Kasmi  EMSEC and InfoSec: differences, similarities and challenges	
11:40 – 12:10	Prof. Xiaoyun Lu  Systematic Effects of acute Ka-HPM and L-HPM pulses exposure on KM mice	





## Plenary Talk 1: An Introduction to Electromagnetic Time Reversal

F. Rachidi<sup>1</sup>, M. Rubinstein<sup>2</sup> and Y.-Z. Xie<sup>3</sup>

<sup>1</sup> Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland

<sup>2</sup> University of Applied Sciences of Western Switzerland, Yverdon-les-Bains, Switzerland

<sup>3</sup> Xi'an Jiaotong University, Xi'an, China

**Speaker: Prof. Farhad Rachidi**

### ABSTRACT

Time reversal has emerged as an interesting technique with potential applications in various fields of engineering. It first received a great deal of attention in the field of acoustics, in which it was first developed by Prof. Fink and his team in the 1990s. In the past decade, the technique has also been used in the field of electromagnetics and applied to various other areas of electrical and computer engineering. In particular, it has been successfully applied in the fields of electromagnetic compatibility (EMC) and power systems, leading to mature technologies in source-location identification with unprecedented performance compared to classical approaches.

In the first part of the talk, we will present the general theoretical basis of time reversal. An example from classical mechanics will be used to illustrate, in an intuitive manner, three approaches that can be used to effectively make a system go back in time, in the sense that it retraces the path it came from in the immediate past. The time reversal invariance of physics laws will then be described with special attention given to the time reversal invariance of Maxwell's equations. The concept of time reversal cavity, and the use of time reversal as a means of refocusing electromagnetic waves will then be introduced.

The second part of the talk will be devoted to a brief presentation of two application areas of electromagnetic time reversal: locating lightning strikes and locating faults in power networks.

## Plenary Talk 2: Methodology and Implementation of Automated HPEM Effects Testing

Jin Soo Choi

Agency for Defense Development Daejeon, South Korea

**Speaker: Dr. Jin Soo Choi**

### ABSTRACT

High power electromagnetic waves from antennas propagate in some distance and interact with electronic equipment or targets in



complex ways. These phenomena can be described as a sequential process of HPEM sources, antennas, propagation to targets, external and internal coupling with the targets, and vulnerability of interested circuitries. Many parameters from the sources to the targets affect this process, sometimes in probabilistic or nonlinear ways. So it's very important for the precise assessment of HPEM effects to use well-established numerical and experimental techniques. Especially HPEM effects testing is a time-consuming process and may contain some errors and uncertainties. In the Agency for Defense Development (ADD), many types of simulations and tests have been carried out to analyze and predict high power electromagnetic effects on electronic equipment. These studies range from vulnerability testing of simple devices or circuits to assessment testing of targets in system level such as complex buildings. Some interesting test results conducted in the ADD are first presented in this presentation. And a methodology to conduct HPEM vulnerability and susceptibility tests more effectively and systematically is proposed based on these studies. Based on the proposed methodology, a testing setup for systematic effect research was configured. Coupling and frequency-dependent vulnerability tests were performed by using this system, and these test results were analyzed in real-time and compared with the calculated predictions. Configurations of the testing setup and analysis of the test results are described in this presentation. Finally some recent issues for advanced testings and diagnostics of electromagnetic effects in real and complex environment are suggested.

### Plenary Talk 3: From DC to Daylight: Let's look at the DC End!

Dr. William A. Radasky

Metatech Corporation, USA

Speaker: Dr. William A. Radasky

#### ABSTRACT

Early in my research career, I dealt with many interesting problems covering time ranges beginning from nanoseconds to seconds. In the early 1990s I had the opportunity to begin work on the problem of geomagnetic storms and the induction of "quasi-DC" currents known as Geomagnetically Induced Currents (GICs) into high voltage power grids and their transformers. This problem was initially raised by John Kappenman, who worked for Metatech at the time. He was a true expert in the behavior of bulk power grids when exposed to geomagnetic storms. With the help of Metatech's expertise in the field of numerical analysis of electromagnetics problems, we were able to solve the induction problem for specific cases of interest. Major contributions to this effort were also made by Drs. Jim Gilbert and Ed Savage.

This paper will describe the development of the complete model for evaluating the flow of "dc" currents in high voltage power grids in many countries throughout the world. The model includes the ability to use measured magnetic field data from past storms acquired at many observatories: to compute the induced electric fields in the time domain (using the local deep profiles of the ground conductivity), to model large numbers of transformers and power lines in an exposed grid, and to compute the currents flowing in those transformer neutrals. In addition, simple models for the generation of reactive power and possible hot-spot heating were also developed. The



emphasis in this paper will be to show the accuracy of the modeling when compared to measurements of GICs flowing through the neutrals of large transformers during specific geomagnetic storms of the recent past.

## Plenary Talk 4: Recent Progress in Narrowband High Power Microwave Sources

Jun Zhang and Dian Zhang

College of Advanced Interdisciplinary Studies, National University of Defense Technology, Changsha 410072, China

**Speaker: Prof. Jun Zhang**

### ABSTRACT

Motivated by some innovative applications, such as directed energy, space propulsion, and high power radars, narrowband high power microwave (HPM) sources technology is still under intense investigation after about 50 years of development. At present, enhancing the output power of a single HPM source to tens or hundreds of gigawatts (GWs) has encountered some physical limitations and it is no longer the main pursuit of HPM technology field. Phase locking and power combination, high power efficiency, compact sources with low/no external magnetic field, and high pulse energy are the four new development directions in this area. Recent progress of narrowband HPM sources in these four aspects in the last decade is summarized in this paper. PSSC based narrowband sources are also introduced because of their flexible parameter adjusting function and potential high power capability. A comprehensive evaluation of various kinds of narrowband HPM sources is presented.

## Plenary Talk 5: EMSEC and InfoSec: differences, similarities and challenges

Chaouki Kasmi

Mobile and Telecom Lab, xen1thLabs, *DarkMatter Group*, Abu Dhabi, United Arab Emirates

**Speaker: Dr. Chaouki Kasmi**

### ABSTRACT

Threats induced by Electromagnetic Compatibility and Electromagnetic interferences have been mainly studied with a focus on emanations and susceptibility testing. When dealing with the application in which the evaluated devices will be placed, the notion of risks become naturally of fundamental interest. Interestingly safety and information security have been dealing with risks management for a while. Unfortunately, the safety and security perspective is still at an early stage in EMC and EMI research communities when the work is performed by EMC experts. We propose in this plenary talk a comparison and the evolution of EMC/EMI-related work performed by the information security community and vis-versa with a focus on similarities and differences in the approaches of risks



management and possible solution to improve these.

## Plenary Talk 6: Development of Lightning Direct Effect Test and Simulation of Carbon Fiber Composites

Xueling Yao

State Key Laboratory of Electrical Insulation and Power Equipment, Xi'an Jiaotong University, Xi'an, 710049, China

Speaker: Prof. Xueling Yao

### ABSTRACT

As a natural discharge phenomenon with high voltage and high current, lightning strike seriously affects the safe operation of aircrafts. With the improvement of aircraft design and the advancement of carbon fiber reinforced polymer (CFRP) composite manufacture technology, the proportion of the CFRP continues to grow in commercial aircraft, military aircraft, unmanned aircraft and stealth aircraft due to its mechanical advantages of superior static strength, low density, high durability and excellent workability [1]. However, the weak electrical and thermal conductivity of CFRP composite compared to those of traditional metallic materials [2]. Thus, the large amounts of charge and heat associated with a lightning strike cannot be transferred and dissipated effectively, causing a sharp increase in local temperature and serious damage, such as fiber sublimation, resin pyrolysis and deep delamination, in CFRP laminates [3, 4]. The lightning protection ability of CFRP has become a technical bottleneck restricting the wild application of CFRP materials in aerospace manufacturing. Therefore, the experimental research and computational simulation on lightning damage properties and lightning protection methods in CFRPs has important scientific and practical value. Based on the research background of the direct lightning strike effect of carbon fiber reinforced composites, the present situation and problems of experimental research, theoretical analysis and simulation modeling were analyzed. The lightning damage characteristics and damage modes of CFRP laminates were obtained by means of ultrasonic scanning imaging, three-dimensional X-ray scanning and scanning electron microscopy observation, and the forming process of lightning damage were analyzed. Based on the analysis of the lightning damage expansion process, the characteristics of lightning current conducting and diversion and the mechanism of lightning damage were explored. A series of studies of carbon fiber lightning direct damage modeling and simulation calculation methods was carried out, and the influence relation of dynamic impedance characteristics of CFRP material on its corresponding lightning damage area and depth was found. The dynamic conductivity characteristics was suggested to be introduced into the coupled thermal-electrical FE model of CFRP to improve the calculation accuracy and decrease the deviation between calculation and experimental results. The lightning damage effect of multiple continuous lightning current strikes was analyzed and compared with that of the single lightning current strike. The experimental results showed that the lightning damage effect of the single lightning current component was significantly different from its damage effect in multiple continuous lightning strike sequence [5]. Therefore, the multiple continuous sequential lightning current components was supposed to be used in the lightning strike test to simulate the actual damage situation of composite materials subjected to natural lightning strike. In



addition, the lightning damage experimental results of CFRP laminates with copper mesh protection layer also support this conclusion. The research results can provide theoretical basis for the modification and structural design of CFRP. At the same time, it will also build a theoretical foundation and experimental data support for the formulation of test waveforms, test methods and test standards of direct lightning effect of CFRP materials used in aircraft industries.

## Plenary Talk 7: Systematic Effects of acute Ka-HPM and L-HPM pulses exposure on KM mice

X.-Y. Lu<sup>1</sup>, H.-H. Yang and Y. Zhou<sup>2</sup>

1. Key Laboratory of Biomedical Information Engineering of Ministry of Education, School of Life Science and Technology, Xi'an Jiaotong University, Xi'an 710049, Shaanxi, China.
2. State Key Laboratory of Electrical Insulation and Power Equipment, School of Electrical Engineering, Xi'an Jiaotong University, Xi'an 710049, Shaanxi, China.

**Speaker: Prof. Xiaoyun Lu**

### ABSTRACT

Many researches have been done to investigate the biological safety of electromagnetic fields either in the extremely low frequency range e.g. HVAC and the radio frequency range e.g. cell phone, etc. While, still much should be done concerning the biosafety of high-power electromagnetic fields. Recently, we investigated the effects of acute Ka-HPM and L-HPM pulses exposure on mice, carrying out the high throughput biological analysis to reveal the systematic responses of mice exposed to Ka-HPM pulses and L-HPM pulses. The data demonstrated that although no obvious histo-morphological alterations could be observed, blood biochemical examination, hepatic metabolomics analysis and white blood cells transcriptome analysis results all revealed the significant change in the molecular level, especially in the immunological and metabolic processes. Specifically, the fatty acid metabolism pathway and the cytokine secretion pathway were most significantly affected. The data provided a comprehensive understand on the bioeffects of HPM pulses exposure. These results also implied the potential health risk of HPM pulses exposure and therefore highlight the necessity for study of long-term effects.



## Social Events

### Welcome Reception

**Time:** 19:00 - 21:00, Sunday, 15, Sept. 2019

**Venue:** Liu jin Hall (流金厅), Floor G, Wyndham Grand Xian South

A warm welcome to all participants!! Let's mingle with each other while enjoy some light food and drink.

### Awards Banquet Dinner

**Time:** 19:30 - 21:00, Wednesday, 18, Sept. 2019

**Venue:** Grand Ballroom, Floor 1, Wyndham Grand Xian South

Enjoy a night of get-together with food, entertainment, and award presentation—Outstanding Young Scientist Award, Best Student Paper Award and Best Paper Award.

### Technical visits

**Time:** 14:00 - 17:00, Thursday, 19, Sept. 2019;

8:00 - 13:00, Friday, 20, Sept. 2019 (Lunch included).

Two technical visits are arranged to CHINA XD GROUP CORPORATION LIMITED and XI'AN ZHONGYANG ELECTRIC CORPORATION on September 19 and 20, respectively. The number of people allowed for each visit is 40. The visit on September 20 will offer a free buffet at noon time. You may please register for the visits at the registration desk on September 15, if you are interested. (The detailed information about the two companies are attached.)



# Technical Visit 1: CHINA XD GROUP CORPORATION LIMITED

## **XI'AN XD SWITCHGEAR ELECTRIC CORPORATION LIMITED**

**Xian XD Switchgear Electric Co., Ltd** (short for XD Switchgear) is established in 1955 which is a core subsidiary of China XD Electric Co., Ltd., —a large enterprise in China T&D line field. Xian XD Switchgear Electric Co., Ltd is the largest and R&D and manufacturing base for HV, EHV and UHV switchgears (GIS) in China with the highest state of arts. And it is also the first enterprise won the “China Quality Award” of the high voltage switch industry in China.

There are two main products of company, one is Gas-insulated metal-enclosed Switchgear (GIS), another is Circuit Breaker, with voltage class ranging from 72.5~1100kV. And in recent years, XD Switchgear has successfully researched and developed Gas-Insulated Line (GIL) and Generator Circuit Breaker (GCB). All the main technical performance indexes have reached or exceeded the similar domestic and abroad products.

Over the past 60 years, our company has supplied the product for the first HV transmission line of 330kV, 500kV, 750kV and 1000kV in China and also supplied for key projects like Three-Gorge-Project. The domestic market share reaches over 30%. Besides, our products also have been exported to Hong Kong, Singapore, Malaysia, Philippines, Russia, Australian, India, Turkey, Egypt, etc., more than 40 countries and regions.

With experienced R&D team, optimized manufacturing capability and enhanced after sales service system, XD switchgear can fully meet clients' requirement with highly efficient solutions. We aim to be a first-class electric overall solution supplier in the world.

## **XI'AN XD HIGH VOLTAGE APPARATUS RESEARCH INSTITUTE CORPORATION LIMITED**

**Xi'an XD High Voltage Apparatus Research Institute Corporation Limited** (XIHARI) was founded in 1958. Mainly engaged in the standardization, testing, calibration, certification, technical consultation of electrical equipment. Carry out relevant technical research, standard revision, industry management and service.

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## Technical Visit 2: XI'AN ZHONGYANG ELECTRIC CORPORATION LIMITED

**Xi'an Zhongyang Electric Co., Ltd.**, located in Xi'an Development Zone for High and New Technology Industries, is the largest professional manufacturers specialized in research, design, manufacture, sale and test of dry type reactors at present. Its products are mainly applied to the field of power transmission & transformation and industrial & mining enterprises covering HV, EHV and UHV field, and capable of satisfying the AC and DC transmission demands.

After years of rapid development, Zhongyang Electric has established partnership with the State Grid Corporation, China Southern Power Grid Co., Ltd. and other dozens of domestic large and medium sized enterprises. Among them, GE, ABB, Siemens, Cooper, Nissin Electric and other world-famous companies have taken Zhongyang Electric as their long-term supporting equipment supplier of dry type reactor.

Zhongyang adheres to the technology development strategy of "market-oriented, independent innovation, breakthroughs in key areas, leading the industry" by increasing R & D investment, strives to make breakthroughs in key technologies for enterprise development, and seize the high ground in market competition. It thus takes the lead in developing reactor products in  $\pm 400\text{kV}$ ,  $\pm 500\text{kV}$ ,  $\pm 800\text{kV}$ ,  $\pm 1100\text{kV}$  UHV AC and DC transmission and distribution equipment.

As the pacesetter in China's electric power transmission and distribution equipment manufacturing industry, Zhongyang Electric bears the heavy responsibility of promoting China's reactor equipment and technological progress and providing key equipment for national key projects. It has provided transmission and distribution equipment and services for China's first  $\pm 100\text{kV}$  DC transmission project, the first  $\pm 500\text{kV}$  EHVDC project, the first  $\pm 800\text{kV}$  UHVDC transmission project, the first  $1000\text{kV}$  UHVAC transmission project, the first northwest to north China back-to-back DC transmission project and the "Three Gorges Project", "west to east power distribution" and other national key projects. All its equipment has been successfully put into operation. In the international market, Zhongyang's electrical products and technology have been exported to more than twenty countries and regions, and successfully entered the United States, Singapore, Australia and other countries and regional markets.

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## Awards

**Outstanding Young Scientist Award, Best Student Paper Award and Best Paper Award** will be presented at the ASIAEM 2019 conference.

-**The Outstanding Young Scientist Award (OYSA)** will be presented to recognize the young researcher(s) under 35 (should be born after January 1, 1984) and have made innovative contributions in fields related to high-power electromagnetics. The young researchers who want to participate in the contest can self-nominate themselves during the paper submission process. Every OYSA applicant must

- ◆ submit a conference paper;
- ◆ upload his/her CV including the list of publications to the paper-submission Web site.

Additionally, the Technical Committee (TC) chairs and the Special Session (SS) chairs will also nominate the possible recipients. The nominees will be asked for the CV by email.

The Award Committee (AC) will assess the application(s) and select the awardee(s).

-**The Best Student Paper Award (BSPA)** will be presented to recognize the student author(s) (must be the first author who is a full-time graduate student) who present at the ASIAEM 2019 conference a valuable paper. The students who want to participate in the contest can self-nominate themselves during the paper-submission process. The TC chairs and SS chairs will also recommend the excellent papers by assessing the quality of the submitted papers. The applicants both from the recommendation and the self-nomination will be asked for the full paper (8 pages maximum). And all the applicants will present their papers in regular or special sessions in addition to a Poster Session on Wed., Sept. 18. The AC selects the BSPA awardee(s) based on the paper quality and the presentation performance.

-**The Best Paper Award (BPA)** will be presented to recognize the author(s) who present at the ASIAEM 2019 conference an outstanding paper in terms of content and impact on fields related to high-power electromagnetics. Researchers who want to participate in the contest can self-nominate themselves during the paper-submission process. The TC chairs and the SS chairs will also recommend the excellent papers by assessing the quality of the submitted papers. The AC selects the BPA awardee(s) among these applicants by evaluating their works according to a series of criteria such as the novelty, originality and contribution.

Since the award announcement and presentation are made at the ASIAEM 2019 banquet, all the candidates are expected to attend the banquet.



# Guidelines

## Guidelines for Registration and Reception

The registration website is <http://www.asiaem.org>. Please proceed with the registration procedure as soon as possible. You can pay the registration fee online with credit card or bank-wire transfer. You can also pay the registration fee on the site of the conference by cash or credit card.

The registration desk is set at the South Lobby of the hotel. The registration time is 8:00-19:00, 15th, Sept. Every registered participant should check in at the registration desk and get conference materials, including Program Book, Voucher, Name Tag, and Parking Permit if you need to drive to the conference.

Contact persons:

Prof. Guo Jun: [junguo@xjtu.edu.cn](mailto:junguo@xjtu.edu.cn)

Dr. Lv Zeqi: [lvzeqi0304@163.com](mailto:lvzeqi0304@163.com)

## Guidelines for Session Chairs and Co-Chairs

Please arrive at least 10 minutes before the start of your session. Gather some brief information about the presenters to introduce them to the audience. Name and affiliation are sufficient in most cases. Familiarize yourself with the presentation topics or abstracts before the session.

There will be a laptop computer and the usual audio/video equipment in each meeting rooms with a technical assistant to help the presenters. Make sure all the presentations are loaded up in the laptop prior to the start of the session.

If both the Chair and Co-Chair are present, they can share the responsibility. If only the Chair or Co-Chair is present, he/she becomes responsible to conduct the entire session. The 20-minute time allotted to each paper should be strictly followed. You can give the presenters a 5- and 2-minute warning. Instruct the presenters to wrap up and allow a question/comment from the audience for at least a couple of minutes within the 20-minute window. Manage audience contributions, questions and answers. Make sure that the session promotes dialogue, as well as respectful and productive interaction.

The sign-in form with the information of the papers be provided in each room before each session starts. If there is a no-show, please leave the gap and do not start the next paper in the wrong time slot. Please follow the time schedule of the Technical Sessions strictly.



Contact persons:

Dr. Guo Jun: [junguo@xjtu.edu.cn](mailto:junguo@xjtu.edu.cn)

Dr. Dong Ning: [dongning96@163.com](mailto:dongning96@163.com)

## Guidelines for Oral Presentation Presenters

Please have a copy of the PDF file of your presentation on a USB disc, if you do not intend to show any video clips, with all fonts embedded so that all the mathematical symbols and equations will be displayed properly. This generally avoids the problem of incompatible PPT files. A laser pointer and a microphone will be provided for your use. Any additional equipment should be requested at least one week in advance of the presentation date.

Each oral presentation of a paper should be no more than 20 minutes. Therefore, presenters are advised to spend 15 minutes on talking and 5 minutes on Q&A. Please keep the talk simple and focus only on the major points. Have the talk arranged in a logical sequence and use simple, clear PowerPoint presentations. Avoid distractions. Know your talk well.

Please arrive at your session venue at least 10 minutes before the start of your session to load your file into the laptop at the venue. If you choose to bring PPT slides with video clips on a USB, we strongly advise you to have your PPT file in a couple of different versions and try them out prior to the start of the session. You may also send your PPT slides to us in advance by e-mail to [asiaem2019@mail.xjtu.edu.cn](mailto:asiaem2019@mail.xjtu.edu.cn) so that we may set up for you. If you insist on using your own laptop, the adjustment of all equipment must occur within the 20 minute time slot allotted to you. Please stick to the schedule strictly. One or two ASIAEM 2019 volunteers will be in each meeting room to help you during the oral presentation sessions.

If you have to be absent from the ASIAEM 2019 for some irresistible causes, please inform the ASIAEM 2019 secretaries of your absence in advance via [asiaem2019@mail.xjtu.edu.cn](mailto:asiaem2019@mail.xjtu.edu.cn) or [asiaem2019@126.com](mailto:asiaem2019@126.com).

Contact persons:

Prof. Guo Jun: [junguo@xjtu.edu.cn](mailto:junguo@xjtu.edu.cn)

Dr. Zhou Yi: [zhouyi107@126.com](mailto:zhouyi107@126.com)

## Guidelines for Poster Presenters

The poster sessions will be held in the Function Room Hall, Floor G (Next to the oral presentation room). You need to set up your posters before the start of the poster session. Your paper ID number will be prominently displayed on the poster board assigned to you.



The poster boards will be in landscape orientation, 0.9 m x 1.5 m. Push pins will be provided for your use. Remain close to your poster during the whole session in order to answer the questions from the visitors. It's up to you to decide whether photos or videos can be taken of your poster.

If you have to be absent from the ASIAEM 2019 for some irresistible causes, please inform the ASIAEM 2019 secretaries of your absence in advance via [asiaem2019@mail.xjtu.edu.cn](mailto:asiaem2019@mail.xjtu.edu.cn) or [asiaem2019@126.com](mailto:asiaem2019@126.com).

Contact persons:

Prof. Guo Jun: [junguo@xjtu.edu.cn](mailto:junguo@xjtu.edu.cn)

Dr. Dong Ning: [dongning96@163.com](mailto:dongning96@163.com)

## Guidelines for the Audience

Please arrive 5 minutes before the start of the session. Do not interrupt the speaker by questions during her/his presentation. Questions are allowed only after the presentation if the chairman gives time for them. If you arrive in the meeting room during a presentation, wait for the end of the presentation to take a seat.

Please DO NOT take photographs of slides or make audio/video recording of any presentation or poster or presenter, unless specifically permitted by the speakers at the conference. Session Chairs are required to enforce this policy.

Contact persons:

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### Golden Sponsors

**Metatech** Corporation is a Business with offices in Goleta, California and Albuquerque, New Mexico. Summary of Experience, Services and Products Available from Metatech:



- Development of IEC HEMP and IEMI standards for protecting civil facilities from high power EM environments.
- Development of IEEE and Cigré IEMI standards and guides for protecting computer and substation electronics from IEMI.
- Susceptibility testing of low-voltage equipment to HPEM threats including HEMP, IEMI and harmonics produced by GMD.
- Susceptibility assessments and protection recommendations for existing buildings and electronics to cover the threats of HEMP and IEMI.
- Consulting support for the design and construction of high-frequency EM shielded buildings (HEMP and IEMI) for the critical infrastructures.
- Evaluations of the susceptibility of regional and national high voltage power grids to severe geomagnetic storms.
- Research into the threat, impacts and protection of the U.S. power grid from HEMP, IEMI and severe geomagnetic storms.

**Montena** Technology is a Swiss company operating in the field of electromagnetic compatibility since 1978. Montena designs and manufactures high voltage fast transient pulse generators and EMC test equipment. From development to installation, montena provides turnkey solutions for electromagnetic compatibility test systems compliant with MIL standards. The product range includes:



- NEMP simulators according to MIL-STD-461 RS105,
- NEMP protecting device testing systems according to MIL-STD-188-125,
- UWB antennas,
- ESD 300kV test setup,
- Pulse electromagnetic field measurement systems,- and many other test systems and accessories for MIL standards testing.

Montena offers a comprehensive range of standard solutions, with the ability to develop and adapt to customers' requirements. Montena is the world leader for small and medium size NEMP simulators according to MIL-STD-461 RS105 and for NEMP protector testing systems according to MIL-STD-188-125.



## Silver Sponsors

**Replex Co., Ltd.** have focused on the research of compact high-voltage pulse generation technology based on Marx Generator & Tesla Transformer since 2001. Now, REPLEX offers battery-powered compact high-voltage pulse generator. Our high-voltage pulse



generators have produced output pulse with pulse rise time about 200ps, amplitude ranging from 100kV to 1MV, and also it is possible to generate monopolar or bi-polar pulse shape. In addition, REPLEX offers EMP (electromagnetic pulse) simulators and PCI (pulse current injection) test systems that satisfied with MIL-STD requirements, and UWB HPEM simulator for IEMI (intentional electromagnetic interference) immunity test by IEC 61000-4-36 requirements.

## Exhibitors

**Pulse Power and Measurement Ltd (PPM)** was founded in 1994 as a distributor of pulse power systems, power electronics components and EMC test equipment. Since 1995 and the acquisition of Electro Optic Developments Ltd, PPM has manufactured RF over fiber equipment.



**I-Spec. Co., Ltd.** is a specialized company which provides the expertise to develop EM waves reduction countermeasure technology, device and parts as a total solution provider from EMI & EMC.



**WEMC Technology Co., Ltd.** is a leading filter specialist in China, whose commitment to RFI/EMC/Tempest/EMP/HEMP industry has resulted in a sound comprehensive range of filter products.



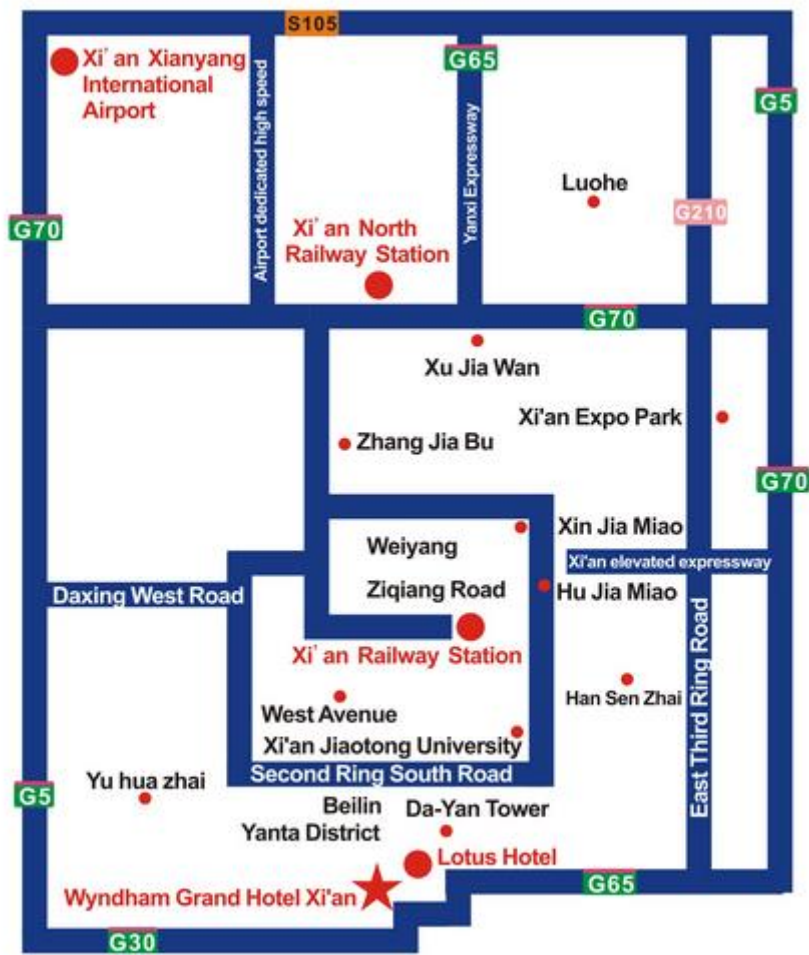
**Qinhuangdao Yanqin Nano Science & Technology Co., Ltd.** is a diversified new material development enterprise. We are dedicated to research and development and offer sales and technical service of amorphous alloy products, nanocrystalline alloy products, measurement and control technology, and machinery as well as electronic products.





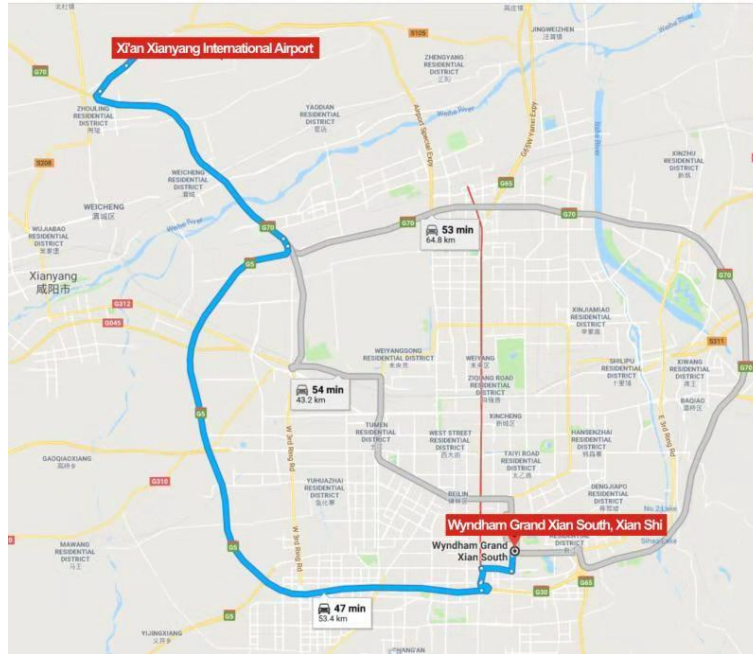
# General Information

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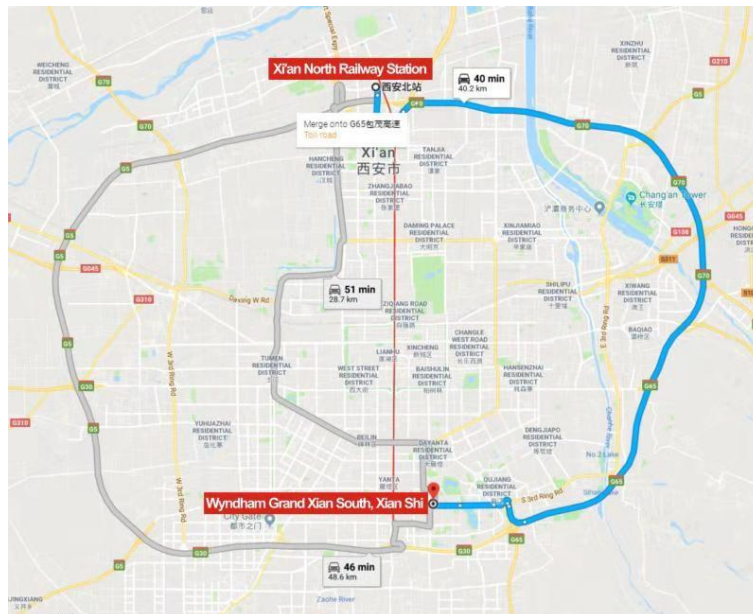




### How to get to Wyndham Grand Xi'an South from Xi'an Xianyang International Airport



### How to get to Wyndham Grand Xi'an South from Xi'an North Railway Station







## Hotel Information

Wyndham Grand Xian South

★★★★★

No.208 Ci'en East Road, Qujiang New District, Xi'an, Shaanxi, China

Welcome to Wyndham Grand Xi'an South

Wyndham Grand Xi'an South is situated at the key position of the prestigious tourism site 'Great Tang All Day Mall' in Xi'an, just minutes away from Dayan Pagoda, international shopping centers, business pedestrian street and many famous historic heritage sites. The hotel is only 5 minutes driving from Xi'an International Conference Center and Qu Jiang International Conference & Exhibition Center. Wyndham Grand is the top brand of the Wyndham family, and Wyndham Grand Xi'an South is the first luxury hotel under direct management of Wyndham Group in China.

Hotel Website: <http://www.wyndhamgrandxian.com/>



### Modern Services and Amenities in Wyndham Grand Xian South

Apart from the ideal location, Wyndham Grand Xi'an South is designed with both contemporary style and traditional Chinese architectural influence. 565 spacious, elegant and comfortable guest rooms and suites. The hotel brings 5-star dining experiences to a high level of creativity, presenting cuisines from around the world, as well as local favorites at the astonishing restaurants and bars. The hotel also provides an elegant setting for hosting high-level meetings and upscale private events. The versatility of our meeting and function rooms makes event planning an enjoyable experience at Wyndham Grand Xi'an South.



Lotus Hotel

★★★★

Yannan Road, Qujiang River, Yanta District, Xi'an City, Shaanxi Province

The hotel is about 800 meters from the meeting place Wyndham Hotel, and it takes about 10 minutes for walk. include 1-2 breakfasts . Free WiFi.

Xi'an Furongfang Hotel is a boutique and imitation Tang style hotel with the theme of "Furong". It is a green and environmentally friendly hotel in Xi'an. The overall style of the hotel is elegant and atmospheric, and the architecture combines the theme of Han and Tang culture with modern style, which is refreshing.

The hotel has more than 100 quality rooms, large and small multimedia conference rooms, western restaurants, recreation departments, beauty salons, shopping centers and so on. The design of the business room breaks through the inherent mode of the previous two rooms, integrating business office and living in the same space, with a 180-degree rotating TV and a unique sun terrace, the space is very strong; and the luxurious suite It is more embodying the cultural color of the Tang Dynasty. For example, although the Tang Dynasty ladies are full of makeup, they are graceful and elegant.





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Guo Jun

**Program Chair:**

Dong Ning

**Paper Submission Chair:**

Zhou Yi

**Session Coordination Chair:**

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### Useful Information and Telephone Numbers

Emergency

Ambulance:120

Police:110

Fire Brigade:119



## Conference

EuroEM 2020 is going to be held in Hamburg, Germany. It will continue the AMEREM/EUROEM/ASIAEM tradition of bringing together the :

- 26<sup>th</sup> High-Power Electromagnetics Conference (HPEM 26)
- 19<sup>th</sup> Ultra-Wideband, Short-Pulse Electromagnetics Conference (UWB SP 19)
- 19<sup>th</sup> Unexploded Ordnance Detection and Range Remediation Conference (UXO 19)

It is our great pleasure to invite you to join us for EuroEM 2020. It offers a forum within the international scientific and engineering community in High-Power Electromagnetics. Internationally renowned experts will await you in Hamburg. We're looking forward to seeing you in Northern Germany.

## Awards

Early Career Award, Best Paper Award and Best Student Paper Award will be established to encourage outstanding investigators especially young investigators and students to make great contributions in the field of High-Power Electromagnetics.

## Important Dates

Open date for submission	1 <sup>st</sup> December 2019
Proposals for special sessions	15 <sup>th</sup> February 2020
Paper submission	1 <sup>st</sup> April 2020
Notification of Acceptance	1 <sup>st</sup> May 2020
Deadline for Author Registration	06 <sup>th</sup> July 2020

## Conference Email

[euroem2020@hsu-hh.de](mailto:euroem2020@hsu-hh.de)

## Organizer



HELMUT SCHMIDT  
UNIVERSITÄT  
Universität der Bundeswehr Hamburg

Helmut Schmidt University,  
Germany

## Technical Sponsor



SUMMA  
FOUNDATION

SUMMA Foundation  
<http://ece-research.unm.edu/summa/index.htm>

## Conference Chair

Lars Ole Fichte  
Helmut Schmidt University, Germany

## Technical Program Committee

TPC Chair: William Radasky  
Metatech, USA

TPC Co-Chair: Lihua Shi  
E3OE Laboratory, China

Advisors: D. V. Giri  
Pro-Tech, USA

Edl Schamiloglu  
Univ. of New Mexico, USA

Yanzhao Xie  
Xi'an Jiaotong  
University, China

Chaouki Kasmi  
Directed Energy Research  
Center, UAE

Richard Hoad  
QinetiQ, UK

## International Scientific Committee

W.-J. Chen,	J.-S. Luo,	S.-H. Wang,
Y.-Z. Chen,	H.-G. Ma,	S.-Q. Zheng,
S.-T. Li,	C. Meng,	A. Wraight,
Y.-D. Li,	K. Mittal,	J. O'Neill,
C. Kasmi,	L. Palisek,	J. Lee,
M. Bäckström,	W. Prather,	J.-G. Wang,
S. W. Choi,	F. Rachidi,	J. Lee,
J.-H. Deng,	J.-G. Rhee,	P. Smith,
E. Farr,	F. Sabath,	D.-H. Kim,
R. Gardner,	Y.-J. Yoon,	Shi Qiu,
J. Guo,	D. C. Pande,	P. Zwamborn,
T.-H. Jang,	M. Nyffeler,	Q. Liu,
S. B. Jeon,	M. Rubinstein,	N. Mora,
A. Kaelin,	C.-S. Huh,	F. Vega,
A. Wraight,	W. Park,	D. K. Singh,
J. S. Choi,	J.-P. Parmantier,	J.-G. Yook
A. Bhattacharya		





## Scope

The Technical Program for EuroEM 2020 is organized into 18 Technical Committees (TCs), as shown below:

Technical Committee	Broad Area	Description
TC 1	HPEM	Sources, Antennas and Facilities (both wideband and narrowband)
TC 2	HPEM	Applications of Coupling to Structures and Cables
TC 3	HPEM	Measurement Techniques
TC 4	HPEM	IEMI Threats, Effects and Protection
TC 5	HPEM	System-level Protection and Testing
TC 6	HPEM	Lightning EM Effects
TC 7	HPEM	Numerical Models and Modeling
TC 8	HPEM	Bio-effects and Medical Applications of EM Fields
TC 9	UWB	Antenna Design, Radiation and Propagation
TC 10	UWB	Radar Systems ( Signal Processing and Security) Aspects
TC 11	UWB	Target Detection, Discrimination and Imaging
TC 12	UXO	Landmine and IED Detection
TC 13	HPEM	Electromagnetic Transients in UHV/EHV Transmission Lines and Substations
TC 14	HPEM	Design of Protective Devices and Test Methods
TC 15	HPEM	Evaluation of HEMP/IEMI Impacts on Critical Infrastructure
TC 16	HPEM	Explosive Devices Effects and Protection for HPEM
TC 17	HPEM	Statistical Methods in HPEM
TC 18	HPEM	HPEM Standards

## Special Sessions

In addition to the 18 TCs identified above, we plan to organize special sessions on topics of current interest. You are welcome to submit your proposals to the Technical Program Committee.

## General Information

The conference will be organized by Helmut Schmidt University, Germany. Working language of the conference is English. There will be a technical exhibition during the conference. Gala banquet and cocktail/welcome reception are being planned.

## Paper Submission

All paper submissions should follow the A4 size Two-Column Format. Each submission will be reviewed by a team of reviewers and can have 1-3 pages containing sufficient information to allow the International Scientific Committee to evaluate their contributions.

## Conference Location

As “Germany’s gate to the world”, Hamburg is a vibrant metropolis that will cater to every visitors’ wishes, from lush parks to a thriving nightlife scene.

## Sponsorship Opportunities

Sponsors will be recognized by logos added to the EuroEM 2020 website with a link to their company website, a half page and company advertisement in the abstract book, and complementary exhibit booth during the conference.

## Contact

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