

Proceedings of the

**2020 IEEE International Conference on
Computational Electromagnetics (ICCEM 2020)**

24–26 August 2020 | Singapore

Edited by

**Chao-Fu WANG, Zhongxiang SHEN, En-Xiao LIU and
Eng Leong TAN**

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Welcome Messages

Welcome Message from the General Chairs



Chao-Fu WANG
General Chair

National University of Singapore, Singapore



Zhongxiang SHEN
General Co-Chair

*Nanyang Technological University,
Singapore*

On behalf of the Organizing Committee, it is our great pleasure to warmly welcome you to the 2020 IEEE International Conference on Computational Electromagnetics (ICCEM 2020) to be held from August 24 to 26, 2020, in Singapore. ICCEM 2020 is the 6th edition of the IEEE AP-S Topical Meeting on Computational Electromagnetics, which is financially sponsored by the IEEE Antennas and Propagation Society (AP-S).

Due to the outbreak of COVID-19, our ICCEM 2020 could not be held as scheduled during 25-27 March 2020, like many other conferences. Following the suggestions from the IEEE, the organizing committee of ICCEM 2020 postponed the conference to this August. ICCEM 2020 will take place at Resorts World Sentosa (RWS), Singapore, from Monday, August 24, to Wednesday, August 26, 2020, in a hybrid format of combining physical and virtual conference sessions. It will provide an international forum for the live exchange of information on the progress and recent advancements in areas of computational electromagnetics and electromagnetic systems. ICCEM 2020 brings together researchers and practitioners for sharing their latest advances in numerical algorithms, modeling methods, optimization and animation tools, and computing platforms for applications across the entire electromagnetic spectrum. In addition to regular contributing papers, special sessions with particular focuses on current and emerging research topics will be organized by leading experts in the electromagnetics community.

With rapid development of wireless technology and market, the research and development (R&D) of electromagnetic modeling tools for the design of antennas and microwave circuits have made tremendous progress, particularly in the Asia and Pacific regions over the past decades. ICCEM 2020 will offer a rich scientific program of the highest quality with keynote and invited speakers from all over the world and provide a broad forum of exchange for both academia and industry alike. The conference will cover a wide range of topics related to electromagnetics, numerical modeling, antennas, microwave circuits and systems.

We are looking forward to meeting all of you either physically or virtually this August!

**Welcome Message from the TPC Chairs****En-Xiao LIU**

*Technical Programme Committee Chair
Institute of High Performance Computing, A*STAR,
Singapore*

**Eng Leong TAN**

*Technical Programme Committee Chair
Nanyang Technological University, Singapore*

On behalf of the technical program committee (TPC), we warmly welcome you to the 2020 IEEE International Conference on Computational Electromagnetics (ICCEM 2020).

The unprecedented challenge brought by the COVID-19 has changed our original plan of a face-to-face conference in March. With strong support from various parties, the ICCEM 2020 organizing committee has made a bold decision to hold the conference from 24 to 26 August with a mix of physical and virtual sessions.

You would be pleased to know — what has not changed is the quality and richness of the ICCEM program. Thanks to the active contributions of all the authors, who are from 30 countries and regions spanning five continents, we have received more than 250 paper submissions in total. Finally, 211 accepted papers constitute the final technical program. It is interesting to note that 30% of the accepted papers is co-authored by students who actually hold the key to the future of the CEM.

The technical program of ICCEM 2020 spans across 3 days and consists of 30 sessions. About half of the sessions are special sessions organized by leading researchers in the fields. They cover a broad range of traditional as well as emerging topics related to CEM, such as electromagnetic (EM) algorithms and modeling, advanced CEM for large and complex problems, AI for EM modeling, antenna design, radiowave propagation modeling, THz devices and systems, metamaterial and metasurface, microwave imaging, etc.

In the morning of 24 August, we have lined up four keynote speeches including 1 Distinguished Lecture by renowned speakers for you. We believe that they will delight you by arousing your imagination about the future of CEM, information metasurface, and antenna array for planetary mission and radio astronomy. Moreover, we have arranged 19 invited talks, which you don't want to miss. Last but not least, the program offers you more than 200 oral and poster presentations.

The Best Student Paper Awards and the Ulrich L. Rohde Innovative Conference Paper Awards add additional colors to ICCEM 2020. In addition, you are invited to expand your conference papers and submit them to the Special Section in the IEEE Journal on Multiscale and Multiphysics Computational Techniques (JMMCT) by August 31, 2020, 11:59 PM (Hawaii Standard Time).

Finally, we would like to thank all the TPC members, reviewers, authors, speakers, and sponsors— together, we make the ICCEM 2020 program possible!

Well, to see is to believe — we hope you enjoy the conference program as much as we do!



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Singapore**

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The Technical Program Committee (TPC) Chairs **En-Xiao Liu** and **Eng Leong Tan** would like to thank all the TPC members for their excellent contributions to the ICCEM 2020 program.

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Special Sessions & Organizers

S1	Session Code	Special Session Title	Organizers
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2	W-AM1-R2 [SS] W-AM2-R2 [SS]	Modeling and Design of Complex Radiations	Da Yi (Chongqing University) Wei-Hua Zong (Qingdao University) Xingchang Wei (Zhejiang University) Huapeng Zhao (University of Electronic Science and Technology of China) Siping Gao (National University of Singapore)
3	T-AM2-R1 [SS]	Advances in FDTD and FEM	Hongxing Zheng (Hebei University of Technology) Yuan Guo Zhou (Xi'an University of Science and Technology)
4	W-AM2-R1 [SS]	Effective CEM and Their Applications in Geophysical and Remote Sensing	Naixing Feng (Shenzhen University) Jinghe Li (Guilin University of Technology)
5	T-PM1-R3 [SS]	Efficient CEM Methods and Their Applications for Health Care	Shaoying Huang (Singapore University of Technology and Design) Yang Liu (Institute of Applied Physics and Computational Mathematics)
6	T-PM2-R2 [SS]	Radio Propagation Modeling, Simulation and Statistical Analysis over Sea Surface	Tao Jiang (Harbin Engineering University) Wanchun Tang (Nanjing Normal University)
7	T-PM1-R1 [SS]	Radio Propagation Modeling, Simulation and Statistical Analysis over Sea Surface	Xudong Chen (National University of Singapore) Abdulkadir C. Yucel (Nanyang Technical University)
8	T-AM2-R2 [SS]	Modern Microwave Imaging techniques and Applications	Xiong Wang (Shanghai Tech University) Xiuzhu Ye (Beijing Institute of Technology)
9	W-AM1-R1 [SS]	Multiple Scattering in Periodic Structures and Random Media	Shurun Tan (Zhejiang University/UIUC Institute)



			Leung Tsang (University of Michigan)
10	M-PM1-R2 [SS] M-PM2-R2 [SS]	THz Device and System	Hang Wong (City University of Hong Kong) Chi Hou Chan (City University of Hong Kong)
11	W-PM1-R1 [SS]	Time Domain CEM and its Applications	Bing Wei (Xidian University)
12	M-PM1-R3 [SS]]	Building the Bridge between CEM and Multiphysics with High Performance	Wen-Yan Yin (Zhejiang University)
13	T-PM1-R2 [SS]	Advances in EM Simulation and its Applications	Xianchang Yue (Wuhan University) Siyuan He (Wuhan University)
14	T-PM1-R2 [SS]	Complex Inverse Problems	Weng Cho Chew (Purdue University) Maokun Li (Tsinghua University) Mert Hidayetoglu (University of Illinois Urbana-Champaign)
15	T-AM1-R3 [SS]	Advanced Techniques for Efficient EM Simulation of Large and Complex Problems	Raj Mittra (University of Central Florida) Xinlei Chen (Nanjing University of Aeronautics and Astronautics)



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The TPC would like to thank all reviewers whose voluntary efforts are indispensable to the high-quality technical program of ICCEM 2020.

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Keynote & DL Talks

Keynote 1	Computational Electromagnetics after Quantum Computer
Date / Time	09:10am – 09:50am / Monday, 24 August 2020
Speaker	Professor Weng Cho Chew <i>Distinguished Professor of ECE, Purdue University, Member of U.S. NAE, IEEE Fellow</i>

Abstract

The recent advent of quantum computer is an exciting milestone in quantum technologies development. It has taken us 70 years to go from vacuum computers to the cell phone computers of nowadays. It will be interesting to see similar development for quantum computers.

In this talk, we will summarize the challenges faced by modern quantum computers. We will discuss how computational electromagnetics (CEM) can help in the development of future quantum computers. First, we will review modeling of quantum effects in electromagnetics. Then we will outline how computational electromagnetics could be used to model and include these quantum effects. We will also discuss recent advances in CEM that could be useful for improving quantum computing technologies.

Biography



Professor Weng Cho Chew
*Distinguished Professor of ECE, Purdue University,
Member of U.S. NAE,
IEEE Fellow*

W.C. Chew received all his degrees from MIT. His research interests are in wave physics, specializing in fast algorithms for multiple scattering imaging and computational electromagnetics in the last 30 years. His recent research interest is in combining quantum theory with electromagnetics, and differential geometry with computational electromagnetics. After MIT, he joined Schlumberger-Doll Research in 1981. In 1985, he joined U Illinois Urbana-Champaign, was then the director of the Electromagnetics Lab from 1995-2007. During 2000-2005, he was the Founder Professor, 2005-2009 the YT Lo Chair Professor, and 2013-2017 the Fisher Distinguished Professor. During 2007-2011, he was the Dean of Engineering at The University of Hong Kong. He joined Purdue U in August 2017 as a Distinguished Professor. He has co-authored three books, many lecture notes, over 400 journal papers, and over 600 conference papers. He is a fellow of various societies, and an ISI highly cited author. In 2000, he received the IEEE Graduate Teaching Award, in 2008, he received the IEEE AP-S CT Tai Distinguished Educator Award, in 2013, elected to the National Academy of Engineering, and in 2015 received the ACES Computational Electromagnetics Award. He received the 2017 IEEE Electromagnetics Award. In 2018, he served as the IEEE AP-S President.



Keynote 2	Mars Call Earth: A Novel Array Antenna Design for Future Planetary Missions
Date / Time	09:50am – 10:30am / Monday, 24 August 2020
Speaker	Professor Yahya Rahmat-Samii <i>Distinguished Professor of University of California, Member of U.S. NAE, IEEE Fellow</i>

Abstract

The author would like to thank the organizers for inviting him to present a plenary talk in this conference. The presentation is based on some of the work detailed in the author's several papers and the author would like to acknowledge his collaborators. With the recent deployment of larger rovers such as Curiosity, high-performance DTE (Direct to Earth) communication links are now considered a viable link for future Mars missions. Designing novel antennas with higher gain and power handling would enable greater flexibility and higher data rates. First an overview of requirements for such a mission is provided and then potential novel antenna architectures will be highlighted.

Among variety of antenna concepts evaluated, novel multi-tile array antenna architectures have been considered for future Mars Rover Missions. The concept could also be of interest for other planetary missions requiring DTE. In this presentation, we will revisit the construction of the CP Half E-shaped patch antenna for operating at both Tx/Rx X-bands. The dual-band capability (impedance match and axial ratio) of the CP Half E-shaped patch element will be one of the main focuses of our novel design. This element utilizes the CP Half E-shaped element's compact size, approximately 50% size reduction from its full E-shaped element counterpart. Application of advanced nature-inspired optimization techniques are discussed for the selection of the best optimal design. The CP Half E-shaped patch element allows the application of a single-feed and single-layer by considerably reducing the fabrication complexity in the X-band. In the subarray design, a stripline feed network is used to avoid spurious and unwanted radiation. Additionally we will discuss how each of the individual components is integrated, simulated, fabricated, and measured. It will be demonstrated that the desirable axial ratio (AR)-impedance matching (S11) bandwidths, good broadside radiation, and high directivity are achieved. Utilization of the array tile and its integration into a larger array will also be highlighted.

Biography



Professor Yahya Rahmat-Samii
*Distinguished Professor of University of California,
Member of U.S. NAE,
IEEE Fellow*

Yahya Rahmat-Samii is a Distinguished Professor, a holder of the Northrop-Grumman Chair in electromagnetics, a member of the U.S. National Academy of Engineering (NAE), the winner of the 2011 IEEE Electromagnetics Field Award, and the Former Chairman of the Electrical Engineering Department, University of California at Los Angeles (UCLA), Los Angeles, CA, USA. He was a Senior Research Scientist with the Caltech/NASA's Jet

Propulsion Laboratory. He has authored or coauthored more than 1000 technical journal articles and conference articles and has written over 35 book chapters and six books. He has more than 20 cover-page IEEE publication articles.



Dr. Rahmat-Samii is a Fellow of IEEE, AMTA, ACES, EMS, and URSI. He was a recipient of the Henry Booker Award from URSI, in 1984, which is given triennially to the most outstanding young radio scientist in North

America, the Best Application Paper Prize Award (Wheeler Award) of the IEEE Transactions on Antennas and Propagation in 1992 and 1995, the University of Illinois ECE Distinguished Alumni Award in 1999, the IEEE Third Millennium Medal and the AMTA Distinguished Achievement Award in 2000. In 2001, he received an Honorary Doctorate Causa from the University of Santiago de Compostela, Spain. In 2001, he became a Foreign Member of the Royal Flemish Academy of Belgium for Science and the Arts, the Technical Excellence Award from JPL in 2002, the 2005 URSI Booker Gold Medal presented at the URSI General Assembly, the 2007 IEEE Chen- To Tai Distinguished Educator Award, the 2009 Distinguished Achievement Award of the IEEE Antennas and Propagation Society, the 2010 UCLA School of Engineering Lockheed Martin Excellence in Teaching Award, and the 2011 campus-wide UCLA Distinguished Teaching Award. He was also a recipient of the Distinguished Engineering Educator Award from The Engineers Council in 2015, the John Kraus Antenna Award of the IEEE Antennas and Propagation Society and the NASA Group Achievement Award in 2016, the ACES Computational Electromagnetics Award and the IEEE Antennas and Propagation S. A. Schelkunoff Best Transactions Prize Paper Award in 2017, and the prestigious Ellis Island Medal of Honor in 2019. The medals are awarded annually to a group of distinguished U.S. citizens who exemplify a life dedicated to community service. These are individuals who preserve and celebrate the history, traditions, and values of their ancestry while exemplifying the values of the American way of life and are dedicated to creating a better world. He has had pioneering research contributions in diverse areas of electromagnetics, antennas, measurement and diagnostics techniques, numerical and asymptotic methods, satellite and personal communications, human/antenna interactions, RFID and implanted antennas in medical applications, frequency-selective surfaces, electromagnetic band-gap structures, applications of the genetic algorithms, and particle swarm optimizations. His original antenna designs are on many NASA/JPL spacecrafts for planetary, remote sensing, and Cubesat missions.

He is the Designer of the IEEE AP-S logo which is displayed on all IEEE AP-S publications. He was the 1995 President of the IEEE Antennas and Propagation Society and 2009–2011 President of the United States National Committee (USNC) of the International Union of Radio Science (URSI). He has also served as an IEEE Distinguished Lecturer presenting lectures internationally.

Keynote 3	Information Metasurface — Bridging the Digital World and Physical World
Date / Time	10:50am – 11:30am / Monday, 24 August 2020
Speaker	Professor Tie Jun Cui <i>Chief Professor of Southeast University, Academician of CAS, IEEE Fellow</i>

Abstract

Computational electromagnetics is an efficient tool for people to know the world of electromagnetic physics, which is also the basis to analyze, design, and realize the electromagnetic devices to transmit, control, and receive the electromagnetic waves for a wide range of applications. In the application of information systems (e.g. radar and wireless communications), the electromagnetic wave is the carrier of digital information. The digital signals must be firstly converted to analog signals, and the analog signals are then mixed to the microwave frequency, to be transmitted to far regions by the electromagnetic waves. Thus, in the current information systems, the digital signal processing and electromagnetic physics are separated, and studied by two different communities.



Metamaterials are arrays of artificial meta-structures in either periodic or nonperiodic fashions. Traditionally, the metamaterials are described by continuously effective medium parameters due to the subwavelength scale of the meta-particles. The ability of metamaterials in achieving arbitrary values and distributions of effective medium parameters makes it possible to control and manipulate the electromagnetic physics world freely. Recently, we propose the concept of digital coding metamaterials, which are characterized by digital coding particles (e.g. 0 and 1

with 180° phase difference for 1-bit coding; 00, 01, 10, and 11 with 90° phase difference for 2-bit coding, ...). It was demonstrated that the electromagnetic waves can be manipulated by changing the digital coding sequences. The coding particles provide a link between the physical world and digital world, leading to digital metamaterials and even field programmable metamaterials, which can be used to control both electromagnetic waves and digital information in real time. The digital coding representation of metamaterials allows the concepts and signal processing methods in information science to be introduced to the physical metamaterials, such as Shannon entropy, convolution theorem, and addition theorem. These studies set up the foundation of information metamaterials, which bridge the physical world and digital world to realize new information systems.

Biography



Professor Tie Jun Cui
Chief Professor of Southeast University,
Academician of CAS,
IEEE Fellow

Tie Jun Cui received the B.Sc., M.Sc., and Ph.D. degrees in electrical engineering from Xidian University in 1987, 1990, and 1993, respectively. In March 1993, he joined in the Department of Electromagnetic Engineering, Xidian University, and was promoted to Associate Professor in November 1993. From 1995 to 1997 he was a Research Fellow with the Institut für Hochfrequenztechnik und Elektronik (IHE) at the University of

Karlsruhe, Germany. In July 1997, he joined in the Center for Computational Electromagnetics, Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, first as a Postdoc and then a Research Scientist. In September 2001, he became Cheung-Kong Professor in the Department of Radio Engineering, Southeast University, Nanjing, China. He is now the Chief Professor of Southeast University. Dr. Cui is an Academician of CAS (Chinese Academy of Sciences). His research interests include metamaterials and computational electromagnetics.

Dr. Cui authored two books, published over 400 peer-review journal papers, which have been cited by more than 25000 times (H-Factor 79; from Google Scholar), and licensed over 70 patents. He received the Natural Science Award (the first class) from the Ministry of Education, China, in 2011, and the National Natural Science Awards (the second class, twice) in 2014 and 2018, respectively. His researches have been selected as one of the “10 Breakthroughs of China Science in 2010”, “Best of 2010” in New Journal of Physics, and “Optics in 2016” by OSA, and has been reported by Nature News, Science, MIT Technology Review, Scientific American, New Scientists, etc. Dr. Cui is an IEEE Fellow.



DL Talk	Design and Simulation of Aperture Arrays for Radio Astronomy: the SKA-LOW Telescope
Date / Time	11:30am – 12:10pm / Monday, 24 August 2020
Speaker	Professor David Davidson <i>Director, Engineering: ICRAR Curtin University, AP-S Distinguished Lecturer, IEEE Fellow</i>

Abstract

In radio astronomy, an aperture array is a phased array with a direct view of the sky (as opposed to a phased array feed). Work towards the Square Kilometre Array (SKA)-LOW radio telescope, which covers much of the VHF radio band, has prompted extensive research on such systems over the last two decades, including the MWA and LOFAR telescopes. Design considerations and aspects of the SKA-LOW telescope, to be deployed in Western Australia, will be outlined. Presently, each of the 512 SKA-LOW “stations” is to comprise 256 dual-polarized log-periodic “SKALA” antennas, deployed on a ground mesh in a semi-random layout with a maximum antenna-boom-to-boom diameter of 38 m. This paper will describe in some detail the numerical modelling of station patterns using embedded element patterns, which fully capture the complex mutual coupling environment of each antenna. In particular, simulations using the Method of Moments with MLFMM acceleration using two different tools, FEKO and IDS, will be discussed. Current results will be shown, as well as measured results using on-site drone metrology. The implications for SKA-LOW will conclude the paper.

Biography



Professor David Davidson
Director, Engineering: ICRAR, Curtin University
AP-S Distinguished Lecturer
IEEE Fellow

Professor David Bruce Davidson is a Fellow of the IEEE. He received the B.Eng, B.Eng (Hons), and M.Eng degrees (all cum laude) from the University of Pretoria, South Africa, in 1982, 1983, and 1986 respectively, and the Ph.D. and D.Eng. degrees from Stellenbosch University, South Africa, in 1991 and 2017 respectively. From 1985 to 1988 he was with the Council for Scientific and Industrial Research, Pretoria, South Africa. From 1988 until 2017, he was with Stellenbosch University, South Africa; from 2011–17, he held the South African Research Chair in Electromagnetic Systems and EMI Mitigation for SKA there and was also a Distinguished Professor. As of 2018, he joined Curtin University, Perth, Western Australia, where he is presently Engineering Director of the Curtin Institute of Radio Astronomy, and holds the Chair of Radio Astronomy Engineering.



He has held a number of visiting appointments, including at the University of Arizona (1993); Cambridge University, UK (1997); Delft University of Technology, The Netherlands (2003); and the University of Manchester, UK (2009).

Prof. Davidson's main research interest through most of his career has been computational electromagnetics (CEM) and its applications in RF and microwave engineering, and he has published extensively on this topic. He was also

closely involved in the development of FEKO, a widely-used EM simulation tool. In recent years, his interests have expanded to include engineering electromagnetics for radio astronomy. He has authored around 250 technical journal articles and conference papers in the areas of computational electromagnetics, high-performance computing, antenna design, electromagnetic compatibility and radio astronomy. He is the author of "Computational Electromagnetics for RF and Microwave Engineering" (Cambridge Univ. Press, 1st ed, 2005, 2nd ed., 2011), and he is a co-author of "Phased Arrays for Radio Astronomy, Remote Sensing, and Satellite Communications" (Cambridge Univ. Press, 2018).

Prof. Davidson is registered as a Professional Engineer with the Engineering Council of South Africa. He was a recipient of the South African FRD (now NRF) President's Award in 1996. He received the Rector's Award for Excellent Research from Stellenbosch University in 2005. He received the inaugural IEEE-SAIEE Joint Distinguished Award for 2014. He has been actively involved with various IEEE activities; he served on the IEEE Antennas and Propagation AdCom (2011–13); he was Chair of the local organizing committee of ICEAA'12-IEEE APWC- EEIS'12, held in Cape Town in September 2012; he was an associate editor of the IEEE Antennas and Propagation Magazine from 1999-2017, and is currently an associate editor of the IEEE Transactions on Antennas and Propagation. He served on the (South African) Astronomy Advisory Council from 2014–2017.



2020
iCCEM

24-26 August 2020
Singapore

Invited Speakers

Chi-Hou Chan, *City University of Hong Kong*
Zhi Ning Chen, *National University of Singapore*
Xudong Chen, *National University of Singapore*
Hsi-Tseng Chou, *National Taiwan University*
Karu Esselle, *University of Technology Sydney*
Jun Fan, *Missouri University of Science and Technology*
Takeshi Fukusako, *Kumamoto University*
Christophe Fumeaux, *University of Adelaide*
Roberto Graglia, *Polytechnic of Turin*
Lixin Guo, *Xidian University*
Yong Xin Guo, *National University of Singapore*
Wei Hong, *Southeast University*
Jun Hu, *University of Electronic Science and Technology of China*
Edmund Y. Lam, *University of Hong Kong*
Erping Li, *Zhejiang University*
Kwai-Man Luk, *City University of Hong Kong*
Raj Mittra, *University of Central Florida*
Tapan Sarkar, *Syracuse University*
Xin-Qing Sheng, *Beijing Institute of Technology*
Jiming Song, *Iowa State University*
Sheng Sun, *University of Electronic Science and Technology of China*
Leung Tsang, *University of Michigan*
Ke-Li Wu, *Chinese University of Hong Kong*
Ming-Yao Xia, *Peking University*
Wen-Yan Yin, *Zhejiang University*



Program Overview

<u>Monday</u> 24 August 2020	<u>Tuesday</u> 25 August 2020	<u>Wednesday</u> 26 August 2020
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Monday, 24 August 2020				
M-AM1				
08.40am	Opening Ceremony			
09.10am – 09.50am	Keynote 1: Computational Electromagnetics after Quantum Computer <i>Prof. Weng Cho Chew</i>			
09.50am – 10.30am	Keynote 2: Mars Call Earth: A Novel Array Antenna Design for Future Planetary Missions <i>Prof. Yahya Rahmat-Samii</i>			
10.30am – 10.50am	Tea Break			
M-AM2				
10.50am – 11.30am	Keynote 3: Information Metasurface – Bridging the Digital World and Physical World <i>Prof. Tie Jun Cui</i>			
11.30am – 12.10pm	DL Talk: Design and Simulation of Aperture Arrays for Radio Astronomy: the SKA-LOW Telescope <i>Prof. David Davidson</i>			
01.30pm	Lunch Break			
M-PM1				
01.30pm – 03.30pm	Session: M-PM1-R1 Frequency Domain Methods	Session: M-PM1-R2 [Special Session] THz Device and System I	Session: M-PM1-R3 [Special Session] Building the Bridge between CEM and Multiphysics with High Performance	Poster Session <i>Posters can be viewed online from Monday to Wednesday</i> (23 Interactive Presentations)
03.30pm – 03.50pm	Tea Break			
M-PM2				
03:50pm – 05:50pm	Session: M-PM2-R1 Multiphysics Modeling	Session: M-PM2-R2 [Special Session] THz Device and System II	Session: M-PM2-R3 [Special Session] Advanced Techniques in EM Centric Multiphysics Simulation and Application	
Welcome Reception				



Tuesday, 25 August 2020			
T-AM1			
08.40am – 10.20am	Session: T-AM1-R1 Advanced CEM Methods	Session: T-AM1-R2 EM and Circuit Modeling	Session: T-AM1-R3 [Special Session] Complex Inverse Problems I
10.20am – 10.40am	Tea Break		
T-AM2			
10.40am – 12.30pm	Session: T-AM2-R1 [Special Session] Advances in FDTD and FEM	Session: T-AM2-R2 [Special Session] Modern Microwave Imaging Techniques and Applications	Session: T-AM2-R3 [Special Session] Complex Inverse Problems II
12.30pm – 01.30pm	Lunch Break		
T-PM1			
01.30pm – 03.30pm	Session: T-PM1-R1 [Special Session] Machine Learning and Uncertainty Quantification Techniques in EM	Session: T-PM1-R2 [Special Session] Advances in EM Simulation and its Applications	Session: T-PM1-R3 [Special Session] Efficient CEM Methods and Their Applications for Health Care
03.30pm – 03.50pm	Tea Break		
T-PM2			
03.30pm – 05.50pm		Session: T-PM2-R2 [Special Session] Radio Propagation Modeling, Simulation and Statistical Analysis over Sea Surface	Session: T-PM2-R3 High Performance FDTD for Industrial EM Problems
Banquet			

Wednesday, 26 August 2020			
W-AM1			
08.40am – 10.20am	Session: W-AM1-R1 [Special Session] Multiple Scattering in Periodic Structures and Random Media	Session: W-AM1-R2 [Special Session] Modeling and Design of Complex Radiations I	Session: W-AM1-R3 [Special Session] Advanced Techniques for Efficient EM Simulation of Large and Complex Problems
10.20am – 10.40am	Tea Break		



W-AM2			
10.40am – 12.30pm	Session: W-AM2-R1 [Special Session] Effective CEM and Their Applications in Geophysical and Remote Sensing	Session: W-AM2-R2 [Special Session] Modeling and Design of Complex Radiations II	Session: W-AM2-R3 Antennas and Arrays I
12.30pm – 01.30pm	Lunch Break		
W-PM1			
01.30pm – 03.30pm	Session: W-PM1-R1 [Special Session] Time Domain CEM and its Applications	Session: W-PM1-R2 Metamaterials and Metasurface I	Session: W-PM1-R3 Antennas and Arrays II
03.30pm – 03.50pm	Tea Break		
W-PM2			
03.50pm – 05.50pm		Session: W-PM2-R2 Metamaterials and Metasurface II	Session: W-PM2-R3 Applications of CEM
End			



Technical Programme

Session	M-PM1-R1: Frequency Domain Methods	
Venue	Room 1 (Tamarind)	
Date/Time	1.30pm – 3.30pm, 24 August 2020 (Monday)	
Chair(s)	Jun Hu , <i>University of Electronic Science and Technology of China, China</i> Jihong Gu , <i>National University of Singapore, Singapore</i>	
1.30 PM	M-PM1-R1.1	[#1570615367] (Invited Talk) Singular Hierarchical Bases: Why Do We Need Them and What Are the Implementation Issues? <i>Roberto D. Graglia</i>
1.50 PM	M-PM1-R1.2	[#1570596602] (Invited Talk) Weighted DDM Enhanced by Fast Algorithm for Scattering from Large Metallic Targets <i>Lifeng Wu, Zhipeng Zhang, Hongling Mao, Jun Hu and Yanwen Zhao</i>
2.10 PM	M-PM1-R1.3	[#1570604389] Novel Single-Source SIE for Scattering Problems by Complex Multilayer Embedded Objects <i>Xiaochao Zhou, Zekun Zhu and Shunchuan Yang</i>
2.25 PM	M-PM1-R1.4	[#1570598977] (Invited Talk) On the Efficient Evaluation of Sommerfeld Integrals Over an Impedance Plane: Exact and Asymptotic Expressions <i>Bi-Yi Wu and Xin-Qing Sheng</i>
2.45 PM	M-PM1-R1.5	[#1570604311] (Invited Talk) SBR for Near-Field Scattering of PEC Objects Under Far-Field Antenna Radiation <i>Lixin Guo, Guangbin Guo, Rui Wang and Wei Liu</i>
3.05 PM	M-PM1-R1.6	[#1570604900] Terahertz Wave Scattering by Rough Surfaces including Higher Moments: Ray-Tracing Developments <i>Mai Alissa, Fawad Sheikh, Nidal Zarifeh, Theo Kreul and Thomas Kaiser</i>
3.20 PM	M-PM1-R1.7	[#1570604196] Considerations Regarding Simulator Design for Electromagnetic Measurement Systems <i>Orell Garten, Jan Barowski and Ilona Rolfes</i>



Session	M-PM1-R2: [Special Session] — THz Device and System I	
Venue	Room 2 (Turmeric)	
Date/Time	1.30pm – 3.30pm, 24 August 2020 (Monday)	
Chair(s)	Hang Wong , <i>City University of Hong Kong, China</i> Chi Hou Chan , <i>City University of Hong Kong, China</i>	
1.30pm	M-PM1-R2.1	[#1570600051] (Invited Talk) 3-D Printed Circularly Polarized Terahertz Lens for Bessel Beam Generation <i>Yat Long Yeung, Jon Cheah, Geng-Bo Wu, Ka Fai Chan and Chi Hou Chan</i>
1.50pm	M-PM1-R2.2	[#1570598535] An Ultra-Wideband Single-Polarization-Single-Mode Terahertz Photonic Crystal Fiber <i>Tianyu Yang, Can Ding, Richard W. Ziolkowski and Y.Jay Guo</i>
2.05pm	M-PM1-R2.3	[#1570596570] Plasmonic-Enhanced Terahertz Tomography System <i>Bo-Yi Wu, Yi-Chun Hung and Shang-Hua Yang</i>
2.20am	M-PM1-R2.4	[#1570597230] Dispersion in broadband terahertz photonic crystal waveguides employing Bragg-mirror suppression <i>Daniel Headland, Withawat Withayachumnankul, Wendy Suk Ling Lee, Masayuki Fujita and Tadao Nagatsuma</i>
2.35am	M-PM1-R2.5	[#1570604785] A Wideband and Compact Terahertz ITO-SPP Planar Termination <i>Qing Le Zhang, Bao Jie Chen, Kam Man Shum and Chi Hou Chan</i>
2.50am	M-PM1-R2.6	[#1570593433] (Invited Talk) Low Profile Terahertz Antennas Using the Folded Reflectarray <i>Zhang-Cheng Hao, Zhuo-Wei Miao and Wei Hong</i>



Session	M-PM1-R3: [Special Session] — Building the Bridge between CEM and Multiphysics with High Performance	
Venue	Room 3 (Cinnamon)	
Date/Time	1.30pm – 3.30pm, 24 August 2020 (Monday)	
Chair(s)	Wen-Yan Yin , <i>Zhejiang University, China</i> Jian Wang , <i>University of Ningbo, China</i>	
1.30pm	M-PM1-R3.1	[#1570604242] GPU Accelerated Level Set Inverse Algorithm for Real-Time 3D Joint Complex Contrast and Shape Recovery in Microwave Imaging <i>Yuan Fang, John Stang and Mahta Moghaddam</i>
1.45pm	M-PM1-R3.2	[#1570604159] (Invited Talk) Building the Bridge between Computational Electromagnetics (CEM) and Multiphysics (MP) Methods with High Performance <i>Wen-Yan Yin</i>
2.05pm	M-PM1-R3.3	[#1570604687] EMI Prediction of Multi-Scale Transmission Line Networks Using a Hybrid FDTD Method <i>Lu Yao, Jian Wang and Wen-Yan Yin</i>
2.20pm	M-PM1-R3.4	[#1570604175] A Stabilized Time-Domain Analysis Electromagnetic Scattering From Dielectric Objects using Associated Laguerre Functions <i>Ming-Da Zhu, Yu Zhang, Xun-Wang Zhao and Wen-Yan Yin</i>
2.35pm	M-PM1-R3.5	[#1570604161] Electrothermal Modeling and Simulation of Resistive Random Access Memory (RRAM) with Different Resistive Switching Oxides <i>Tan-Yi Li, Da-Wei Wang, Sichao Du, Wenchao Chen and Wen-Yan Yin</i>
2.50pm	M-PM1-R3.6	[#1570604289] Massively Parallel Electrothermal Co-Simulation of Large-Scale Antenna Arrays <i>Hao-Xuan Zhang, Li Huang, Liang Zhou, Z.G Zhao and Wen-Yan Yin</i>
3.05pm	M-PM1-R3.7	[#1570604583] Second-Order Control Volume Finite Element Method for Self-Heating Effects Simulation of Semiconductor Devices <i>Da-Miao Yu, Xiao-Min Pan and Xin-Qing Sheng</i>



Session	M-PM2-R1: Multiphysics Modeling	
Venue	Room 1 (Tamarind)	
Date/Time	3.50pm – 5.50pm, 24 August 2020 (Monday)	
Chair(s)	Er-Ping Li, Zhejiang University, China Lixia Yang, Anhui University, China	
3.50PM	M-PM2-R1.1	 [#1570598863] (Invited Talk) Computation of Electrical-Thermal Characteristics for TSVs in 3D IC with Temperature Dependence of MOS Effects <i>Er-Ping Li, Min Qiu, Wenchao Chen and Jian-Ming Jin</i>
4.10PM	M-PM2-R1.2	 [#1570604403] Analysis of Finite Periodic Structures of Graphene with Dielectric Substrate Using EFIE-PMCHW-SED Method <i>Wu Yang, Yaohui Ding, Weijun Wu, Yangyang Li and Weibing Lu</i>
4.25PM	M-PM2-R1.3	 [#1570595020] Simulation and Design of Three-Dimensional Film Bulk Acoustic Resonator Based on AlN Piezoelectric Material <i>S. T. Chen, Q. P. Yin, Q. C. Shen and Z. X. Huang</i>
4.40PM	M-PM2-R1.4	 [#1570604301] Predicting Electromagnetic Response of Graphene Reconfigurable Patch Antenna Using SVR <i>Li Ping Shi, Qing He Zhang, Shi Hui Zhang, Guang Xu Liu and Chao Yi</i>
4.55PM	M-PM2-R1.5	 [#1570601493] Electric Field Characteristics of a Low-impedance EMP Simulator Based on Circuit Model <i>Liuhong Huang, Cui Meng, Jiuliang Xiong and Yuebo Li</i>
5.10PM	M-PM2-R1.6	 [#1570608976] Study on the Electromagnetic Scattering Characteristics in Weakly Ionized Dusty Plasma <i>Wei Chen, Lixia Yang and Zhixiang Huang</i>



Session	M-PM2-R2: [Special Session] — THz Device and System II	
Venue	Room 2 (Turmeric)	
Date/Time	3.50pm – 5.50pm, 24 August 2020 (Monday)	
Chair(s)	Hang Wong , <i>City University of Hong Kong, China</i> Chi Hou Chan , <i>City University of Hong Kong, China</i>	
3.50PM	M-PM2-R2.1	 [#1570602000] (Invited Talk) Microfabrication Technology developed for High Gain THz Resonant Antenna with Spherical Fabry-Perot Cavity <i>Shuyan Zhu, Yuanlong Li, Kwai M. Luk and Stella W. Pang</i>
4.10PM	M-PM2-R2.2	 [#1570596540] 3-D Printed Circularly Polarized Flat Lens Antennas for Terahertz Applications <i>Peng-Yu Feng, Shi-Wei Qu and Chi Hou Chan</i>
4.25PM	M-PM2-R2.3	 [#1570599996] Design of Multi Band RF Frontend Integration <i>Wen-Cheng Lai</i>
4.40PM	M-PM2-R2.4	 [#1570602388] A Low-Cost Terahertz Frequency Selective Structure <i>Amir Khurram Rashid and Qingfeng Zhang</i>
4.55PM	M-PM2-R2.5	 [#1570604329] Active VO 2 Integrated Polarizer for THz Frequency <i>Kai Xu Wang, Hang Wong, Laure Huitema and Aurelian Crunteanu</i>



Session	M-PM2-R3: [Special Session] — Advanced Techniques in EM Centric Multiphysics Simulation and Application	
Venue	Room 3 (Cinnamon)	
Date/Time	3.50pm – 5.50pm, 24 August 2020 (Monday)	
Chair(s)	Huan Huan Zhang , <i>Xidian University, China</i> Peng Liu , <i>Fudan University, China</i>	
3.50PM	M-PM2-R3.1	[#1570605435] Characteristic Mode Analysis of a Conformal Patch Mounted on the Stratified Cylinder <i>Jihong Gu and Chao-Fu Wang</i>
4.05PM	M-PM2-R3.2	[#1570597327] SAR Image Simulation of Ship Turbulent Wake Using Semi-Empirical Energy Spectrum <i>Peng Liu, Wei-Jun Ren and Ya-Qiu Jin</i>
4.20PM	M-PM2-R3.3	[#1570604318] UTD Ray Analysis of Compact Range Gigabit Wireless Access System <i>Panuwat Janpugdee, Takashi Tomura and Jiro Hirokawa</i>
4.35PM	M-PM2-R3.4	[#1570604223] Analysis on Near-field Electromagnetic Scattering of a Ship on Sea Surface based on High-frequency Technique <i>Wei Yang, Chengjin Liao and Haoquan Hu</i>
4.50PM	M-PM2-R3.5	[#1570601194] Transient Electromagnetic-Thermal Co-Simulation Based on Parallel DGTD and FETD Method <i>Huan Huan Zhang, Xing Bin Han, Wei E.I. Sha and Ying Liu</i>
5.05PM	M-PM2-R3.6	[#1570601711] A Novel Technique for Analyzing the Metasurface of Varying Element Sizes or Rotate Angles <i>Huihui Li, G. S. Cheng, Bo Wu and Z. X. Huang</i>
5.20PM	M-PM2-R3.7	[#1570602520] An Effective Rotational Symmetry Approach for Synthesizing Wideband Sparse Planar Array <i>P. F. Gu, Z. H. Fan and R. S. Chen</i>
5.35PM	M-PM2-R3.8	[#1570605227] Physical-Based Automatic Target Recognition Using Angular-Diversity Electromagnetic Scattering Data <i>Zi-Liang Liu and Chao-Fu Wang</i>



Session	T-AM1-R1: Advanced CEM Methods	
Venue	Room 1 (Tamarind)	
Date/Time	8.40am – 10.20am, 25 August 2020 (Tuesday)	
Chair(s)	Tapan Sarkar , <i>Syracuse University, USA</i> Si-Ping Gao , <i>National University of Singapore, Singapore</i> Shaode Huang , <i>University of Science and Technology of China, China</i>	
8.40AM	T-AM1-R1.1	#[1570610543] (Invited Talk) Use of the Fractional Fourier Transform for Radar Target Identification Using the Singularity Expansion Method <i>Tapan K Sarkar</i>
9.00AM	T-AM1-R1.2	#[1570604232] Radargram Filter Using Singularity Expansion Method (SEM) <i>Eder Fabian Ruiz, Daniel Chaparro-Arce, John J. Pantoja, Felix Vega, Chaouki Kasmı and Fahad AlYafei</i>
9.15AM	T-AM1-R1.3	#[1570596319] Fourth Order and Energy Stable FDTD Method for Maxwell's Equations in Metamaterials <i>C. Carvalho, P. Sakkaplangkul and V. Bokil</i>
9.30AM	T-AM1-R1.4	#[1570596812] Robust Dip Azimuth Angle Computation from Deep Directional Resistivity <i>Xiaoyan Zhong</i>
9.45AM	T-AM1-R1.5	#[1570599708] Method for Modeling of Cavity-Backed Conformal Array Antenna <i>Qingchao Zhu, Jia Fang, Mouping Jin and Xiaolin Zhang</i>
10.00AM	T-AM1-R1.6	#[1570610841] Improved Surface Integral Equation-Based Formulation for Characteristic Modes of Composite Metallic-Dielectric Objects <i>Shaode Huang, Jin Pan, Deqiang Yang and Chao-Fu Wang</i>



Session	T-AM1-R2: EM and Circuit Modeling	
Venue	Room 2 (Turmeric)	
Date/Time	8.40am – 10.20am, 25 August 2020 (Tuesday)	
Chair(s)	Ke-Li Wu , <i>The Chinese University of Hong Kong, China</i> Biyao Zhao , <i>Missouri S&T, USA</i>	
8.40AM	T-AM1-R2.2	[#1570597738] (Invited Talk) PEEC Modeling in 3D IC/Packaging Applications Based on Layered Green's Functions <i>Biyao Zhao, Brice Achkir, Albert Ruehli, James Drewniak and Jun Fan</i>
9.00AM	T-AM1-R2.2	[#1570604393] Quantum Finite-Difference Time-Domain Scheme <i>Dong-Yeop Na and Weng Cho Chew</i>
9.15AM	T-AM1-R2.2	[#1570604231] Parametric Macromodeling of the Coupling Between Two Nearby Parabolic Antennas Using the Cauchy Method <i>John Rangel, Felix Vega and Francisco Roman</i>
9.30AM	T-AM1-R2.2	[#1570604409] Cable Harness Modeling Using MTL Parameters Derived from Integral Equations <i>Muqi Ouyang, Xu Wang, Nevin Altunyurt, Varittha Sanphuang, Nitin Parsa and Jun Fan</i>
9.45AM	T-AM1-R2.2	[#1570604259] Hybrid Method for the Estimation of Complex Natural Resonances Using Cauchy and Vector Fitting <i>Andrés Gallego, Felix Vega and Alejandro Rangel</i>
10.00AM	T-AM1-R2.2	[#1570612790] (Invited Talk) PEEC Model for Finite Dielectric EM Problems <i>Yang Jiang and Ke-Li Wu</i>



Session	T-AM1-R3: [Special Session] — Complex Inverse Problems I	
Venue	Room 3 (Cinnamon)	
Date/Time	8.40am – 10.20am, 25 August 2020 (Tuesday)	
Chair(s)	Xudong Chen , <i>National University of Singapore, Singapore</i> Mert Hidayetoglu , <i>University of Illinois at Urbana-Champaign, USA</i>	
8.40AM	T-AM1-R3.1	 [#1570620524] High-Performance Inverse Multiple-Scattering Imaging <i>Mert Hidayetoglu, Wen-mei Hwu and Weng Cho Chew</i>
8.55AM	T-AM1-R3.2	 [#1570602072] Computer Algorithms for Recording and Processing URE Signatures <i>Joseph Friedel, Arnold Burr, David Oyediran and David Rohde</i>
9.10AM	T-AM1-R3.3	 [#1570610286] Efficient and Accurate Scattering Inversion Methods Based on High-order Born Approximation <i>Teng-Fei Wei and Xiao-Hua Wang</i>
9.25AM	T-AM1-R3.4	 [#1570610328] (Invited Talk) Computational Imaging in Digital Holographic Reconstruction with Machine Learning <i>Edmund Y. Lam and Tianjiao Zeng</i>
9.45AM	T-AM1-R3.5	 [#1570610298] A Hierarchical Bayesian Inversion Method for Electromagnetic Imaging of Inhomogeneous Objects <i>Fang-fang Wang and Qing Huo Liu</i>
10.00AM	T-AM1-R3.6	 [#1570612413] Solving Electrical Impedance Tomography via Convolution Neural Network <i>Xudong Chen and Zhun Wei</i>



Session	T-AM2-R1: [Special Session] — Advances in FDTD and FEM	
Venue	Room 1 (Tamarind)	
Date/Time	10.40am – 12.30pm, 25 August 2020 (Tuesday)	
Chair(s)	Hongxing Zheng , <i>Hebei University of Technology, China</i> Yuan-Guo Zhou , <i>Xi'an University of Science and Technology, China</i>	
10.40AM	T-AM2-R1.1	 [#1570603200] (Invited Talk) High Order Interpolation Error Analysis Based on Triangular Interpolations <i>Wen Luo, Jinbo Liu, Zengrui Li and Jiming Song</i>
11.00AM	T-AM2-R1.2	 [#1570593388] Spectral-Element Method with Domain Decomposition for Low-frequency Applications <i>Yuanguo Zhou, Jie Liu, Na Liu and Qing Huo Liu</i>
11.15AM	T-AM2-R1.3	 [#1570604560] Design of Offset Surface for Electromagnetic Shield Using Conformal ADI-FDTD Method <i>Hongxing Zheng, Lu Wang, Ruipeng Liu, Kanglong Zhang, Mengjun Wang and Erping Li</i>
11.30AM	T-AM2-R1.4	 [#1570604565] An Improvement of ADI-CPML for FDTD Method <i>Lu Wang, Hongxing Zheng, Mengjun Wang and Erping Li</i>
11.45AM	T-AM2-R1.5	 [#1570605272] Spherical Strategy for PMLs in Cartesian System <i>Lu Wang, Hongxing Zheng, Ruipeng Liu and Erping Li</i>
12.00PM	T-AM2-R1.6	 [#1570604326] FVTD large time-step method using Radon Transform <i>Atharva Sathe, Nikitabehen Makwana, Avijit Chatterjee and Harish Pillai</i>



Session	T-AM2-R2: [Special Session] — Modern Microwave Imaging Techniques and Applications	
Venue	Room 2 (Turmeric)	
Date/Time	10.40am – 12.30pm, 25 August 2020 (Tuesday)	
Chair(s)	Xiong Wang , <i>Shanghai Tech University, China</i> Xiuzhu Ye , <i>Beihang University, China</i>	
10.40AM	T-AM2-R2.1	[#1570608313] Fusion of POLSAR and Multispectral Satellite Images: A New Insight for Image Fusion <i>Jian Wang, Jiaqi Chen and Qingwei Wang</i>
10.55AM	T-AM2-R2.2	[#1570596161] An Improved Simultaneous Stage-wise Weak Orthogonal Matching Pursuit Algorithm for Microwave Brain Stroke Imaging <i>Yahui Ding, Yifan Chen, Wending Mai and Jun Hu</i>
11.10AM	T-AM2-R2.3	[#1570604443] Study on Focused Microwave Breast Hyperthermia Integrated with Thermoacoustic Imaging <i>Jianian Li, Baosheng Wang and Xiong Wang</i>
11.25AM	T-AM2-R2.4	[#1570603335] Research on Imaging Resolution Based on Electromagnetic Inverse Scattering Algorithm <i>Shuai Mu, Xiuzhu Ye and Chengran Fang</i>
11.40AM	T-AM2-R2.5	[#1570604419] Computational Feasibility Study on Compressive Microwave-induced Thermoacoustic Imaging for Breast Calcification Detection <i>Yifei Sun, Baosheng Wang and Xiong Wang</i>
11.55AM	T-AM2-R2.6	[#1570604442] Fast Thermoacoustic Imaging Based on Compressive Sensing Applying an Effective Algorithm <i>Baosheng Wang, Zhicheng Wang and Xiong Wang</i>



Session	T-AM2-R3: [Special Session] — Complex Inverse Problems II	
Venue	Room 3 (Cinnamon)	
Date/Time	10.40am – 12.30pm, 25 August 2020 (Tuesday)	
Chair(s)	Maokun Li, <i>Tsinghua University, China</i> Mert Hidayetoglu, <i>University of Illinois at Urbana-Champaign, USA</i>	
10.40AM	T-AM2-R3.1	[#1570594949] Land-cover Classification Based on SAR Data Using Superpixel and Cosine Similarity <i>Xueyue Mao, Yilong Lu and Xiao Xiao</i>
10.55AM	T-AM2-R3.2	[#1570611007] Application of Supervised Descent Method to Inverse Problems <i>Rui Guo, Zekui Jia, Ke Zhang, Zhichao Lin, Xiaoqian Song, Maokun Li, Fan Yang, Shenheng Xu and Aria Abubakar</i>
11.10AM	T-AM2-R3.3	[#1570610819] Data-driven learnable Intelligent Electromagnetic Sensing with integrated Data Acquisition and Processing <i>Hao-Yang Li, Tie Jun Cui and Lianlin Li</i>
11.25AM	T-AM2-R3.4	[#1570609955] A Deep Learning Based Through Wall Imaging Method <i>Yukai Bai and Xiuzhu Ye</i>
11.40AM	T-AM2-R3.5	[#1570611110] A Machine Learning Assisted Compressive Sensing Approach for Sparse Electromagnetic Imaging <i>Ali Imran Sandhu, Salman Ali Shaukat, Abdulla Desmal and Hakan Bagci</i>
11.55AM	T-AM2-R3.6	[#1570610633] Non-Linear Inverse Scattering by Means of a New Rewriting of the Scattering Equations <i>Martina T. Bevacqua and Tommaso Isernia</i>
12.10PM	T-AM2-R3.7	[#1570610745] On Radiating Currents and Invisible Objects in Inverse Scattering Problem <i>Martina T. Bevacqua, Roberta Palmeri and Tommaso Isernia</i>



Session	T-PM1-R1: [Special Session] — Machine Learning and Uncertainty Quantification Techniques in EM	
Venue	Room 1 (Tamarind)	
Date/Time	1.30pm – 3.30pm, 25 August 2020 (Tuesday)	
Chair(s)	Xudong Chen , <i>National University of Singapore, Singapore</i> Abdulkadir C Yucel , <i>Nanyang Technological University, Singapore</i>	
1.30PM	T-PM1-R1.1	 [#1570603980] (Invited Talk) New Input Layer for CNN in Solving Inverse Scattering Problems <i>Tiantian Yin and Xudong Chen</i>
1.50PM	T-PM1-R1.2	 [#1570596845] (Invited Talk) Towards Demand-Driven Optimization Algorithms in Electromagnetic Engineering <i>Maria Kovaleva, David Bulger and Karu P. Esselle</i>
2.10PM	T-PM1-R1.3	 [#1570597904] Using Complex-Valued ANN to Solve Electromagnetic Inverse Scattering Problems <i>Si-Zhuo Gu, Bo-Yue Song, Xiao-Min Pan and Xin-Qing Sheng</i>
2.25PM	T-PM1-R1.4	 [#1570604270] Application of Stochastic Gradient Descent Technique for Method of Moments <i>Liangshuai Guo, Maokun Li, Shenheng Xu and Fan Yang</i>
2.40PM	T-PM1-R1.5	 [#1570603963] Approximation of Two-dimensional Numerical Green's Function Using Neural Network <i>Wenqu Hao, Yongpin Chen, Yahui Ding, Peiyao Chen, Ming Jiang and Jun Hu</i>
2.55PM	T-PM1-R1.6	 [#1570609884] Artificial Neural Network based Received Power Prediction for Wireless Communication Network <i>Lina Wu, Danping He, Ke Guan and Bo Ai</i>
3.10PM	T-PM1-R1.7	 [#1570604203] (Invited Talk) Effective Modeling of Frequency Selective Surfaces by Equivalent Dielectric Substrates Using Genetic Algorithm for Electromagnetic Scattering Analysis <i>Hsi-Tseng Chou, Jake W. Liu, Kun-Ying Lin and Siddhartha Panigrahi</i>



Session	T-PM1-R2: [Special Session] — Advances in EM Simulation and its Applications	
Venue	Room 2 (Turmeric)	
Date/Time	1.30pm – 3.30pm, 25 August 2020 (Tuesday)	
Chair(s)	Xianchang Yue, <i>Wuhan University, China</i> Siyuan He, <i>Wuhan University, China</i>	
1.30PM	T-PM1-R2.1	[#1570604022] Research on the Forward Parametric Scattering Center Modeling Method for the Ship on the Rough Surface Model <i>K. Huang, S. Y. He, Y.H. Zhang, G. Q. Zhu and Q. Z. Yu</i>
1.45PM	T-PM1-R2.2	[#1570599318] Using Local Optimization Method to Reconstruct Far-Field Pattern Above PEC plane <i>Zhi-Xiang Xie, Yun-Hua Zhang and Guo-Qiang Zhu</i>
2.00PM	T-PM1-R2.3	[#1570603030] A Dual Frequencies and Bidirectional Functional Metasurface for Dual Polarization Beam Convergence <i>Zhenyu Yu, Jianing Yin, Yunhua Zhang, Siyuan He, Guoqiang Zhu and Huotao Gao</i>
2.15PM	T-PM1-R2.4	[#1570599740] A Study of a Novel High Frequency Radar Network for Ocean Dynamics Surveillance <i>Bin Wan, Xiongbin Wu, Lan Zhang, Xianchang Yue, Li Wang and Xianzhou Yi</i>
2.30PM	T-PM1-R2.5	[#1570599205] Direction-of-Arrival Estimation for High-Frequency Radar on a Floating Platform <i>Xianzhou Yi, Xiongbin Wu, Xianchang Yue, Lan Zhang and Zhangyou Chen</i>
2.45PM	T-PM1-R2.6	[#1570604302] Joint DoA and BW Estimation of Time-Modulated Linear Array Based on MT-BCS <i>Shi Hui Zhang, Qing He Zhang, Li Ping Shi, Chao Yi, Guang Xu Liu and Shi Qi Yu</i>
3.00PM	T-PM1-R2.7	[#1570602060] Research on Maritime Target Tracking for High Frequency Over-the-horizon Radar <i>Fuqi Mo, Xiongbin Wu, Xianchang Yue and Lan Zhang</i>
3.15PM	T-PM1-R2.8	[#1570597860] Characteristics of First Order Sea Clutter for High Frequency Hybrid Sky Surface Wave Radar <i>Qing Zhou, Hong Zheng, Miao Li and Lan Zhang</i>



Session	T-PM1-R3: [Special Session] — Efficient CEM Methods and Their Applications for Health Care	
Venue	Room 3 (Cinnamon)	
Date/Time	1.30pm – 3.30pm, 25 August 2020 (Tuesday)	
Chair(s)	Shaoying Huang , <i>Singapore University of Technology and Design, Singapore</i> Yang Liu , <i>Institute of Applied Physics and Computational Mathematics, China</i>	
1.30PM	T-PM1-R3.1	 [#1570603000] (Invited Talk) A New Hybrid Scheme Of FEBI And PO For Analyzing Inhomogeneous Objects With PEC Plate <i>Yang Liu, Haijing Zhou and Sheng Sun</i>
1.50PM	T-PM1-R3.2	 [#1570604348] Numerical Simulation and Analysis of the Effect of Individual Differences on the Field Distribution in Human Brain Illuminated by Electromagnetic Pulse <i>Shan Wang, Zhongguo Song, Daocheng Wu and Yurong Pu</i>
2.05PM	T-PM1-R3.3	 [#1570617846] Aerosol Jet Printing of Conductive Patterns on Paper Substrate <i>Yi-Dan Chen, Wenshen Zhou, Wenwei Yu and Shao Ying Huang</i>
2.20PM	T-PM1-R3.4	 [#1570617849] A Viaed Double-Spiral Resonator for Broadband WPT in Human-Involved Environments <i>Wenshen Zhou and Shaoying Huang</i>
2.35PM	T-PM1-R3.5	 [#1570617483] Machine-Learning-Enhanced Stabilized Cr-Mrept For Noise-Robust And Artifact-Reduced Electrical Properties Reconstruction <i>Adan Garcia, Shao Ying Huang, Nevrez Imamoglu and Wenwei Yu</i>
2.50PM	T-PM1-R3.6	 [#1570612134] Selective Stimulation of C fibers for Chronic Pain Relief <i>Siyu He, Kornkanok Tripanpitak and Wenwei Yu</i>
3.05PM	T-PM1-R3.7	 [#1570610282] Comparison of Different Implement Schemes for Thin Dielectric Sheet Method <i>Xingyue Guo, Yang Liu, Renzun Lian and Mingyao Xia</i>



Session	T-PM2-R2: [Special Session] — Radio Propagation Modeling, Simulation and Statistical Analysis over Sea Surface	
Venue	Room 2 (Turmeric)	
Date/Time	3.50pm – 5.50pm, 25 August 2020 (Tuesday)	
Chair(s)	Tao Jiang, Harbin Engineering University, China Wanchun Tang, Nanjing Normal University, China	
3.50PM	T-PM2-R2.1	[#1570604362] A New Method of EMI Estimation among Low Altitude Aircrafts on Sea Surface <i>Yanyan Wang, Kangkang Gao, Jiangnan Xing and Tao Jiang</i>
4.05PM	T-PM2-R2.2	[#1570612849] Gridless DOA Estimation Algorithm for Strictly Noncircular Sources under Unknown Mutual Coupling <i>Liping Teng, Qing Wang, Xian Wang and Chenyu Li</i>
4.20PM	T-PM2-R2.3	[#1570604171] Propagation of AIS under Various Refractive Conditions <i>Wang Hongguang, Zhu Qinglin, Sun Fang and Zhang Lijun</i>
4.35PM	T-PM2-R2.4	[#1570605442] An Efficient 3-D MoM-PE Hybrid Model for Scattering of the Key Target in A Large-scale Complex Environment <i>Xiaochuan Deng, Cheng Liao, Dongmin Zhang, Ju Feng, Yuping Shang and Haijing Zhou</i>
4.50PM	T-PM2-R2.5	[#1570602117] Total-variation Compressive Sensing Imaging using Intensity-only Rytov Approximation <i>Junyi Yao, Yuncheng Mo, Baozhu Li, Shan Bao, Shuming Zhang and Wanchun Tang</i>
5.05PM	T-PM2-R2.6	[#1570606451] Research on Electromagnetic Pulse Prediction for Receive Port of Equipment on Sea Surface <i>Jiangnan XING, Hanyu SHAN, Yanyan Wang and Tao JIANG</i>
5.20PM	T-PM2-R2.7	[#1570603983] Analytical Solutions to the Singularity of Surface Integral Equations with RWG Basis Function <i>Shan Bao, Jianfeng Gu, Qian Cui, Wanchun Tang and Daoxiang Wang</i>



Session	T-PM2-R3: High Performance FDTD for Industrial EM Problems	
Venue	Room 3 (Cinnamon)	
Date/Time	3.50pm – 5.50pm, 25 August 2020 (Tuesday)	
Chair(s)	Nan Xia, <i>Huawei Technologies Co., Ltd., China</i> Eng Leong Tan, <i>Nanyang Technological University, Singapore</i>	
3.50PM	T-PM2-R3.1	[#1570606517] Demonstration of Electromagnetic Plane Wave Reflection and Transmission on iPad <i>Eng Leong Tan and Ding Yu Heh</i>
4.05PM	T-PM2-R3.2	[#1570601411] Accelerating FEM Electromagnetic Simulations Parametric Studies and Optimization Using Local and Global Reduced Order Models <i>Matryna Mul, Grzegorz Fotyga, Adam Lamecki, Lukasz Balewski and Michal Mrozowski</i>
4.20PM	T-PM2-R3.3	[#1570604181] Optimization of Transforming a FDTD Simulation to Acquire Field Information at Infinty <i>Chien Chao and Snow H. Tseng</i>
4.35PM	T-PM2-R3.4	[#1570604221] A Polynomial Chaos Expansion FDTD for Random Dispersive Media <i>Jiangfan Liu, Huiping Li, Yuchen Zhao, Xiaoli Xi and Daocheng Wu</i>
4.50PM	T-PM2-R3.5	[#1570613114] GPU Accelerated FDTD Method for Terahertz Imaging and Computed Tomography <i>Zaifeng Yang, Yu Zhong, Jie Chen, Hui Min Lee and En-xiao Liu</i>
5.05PM	T-PM2-R3.6	[#1570624434] Accurate and Fast FDTD/FIT Solver for Complex EM Problems with Fine Features <i>Chengyi Tian, Xin Fu, Jing Zhou and Nan Xia</i>



Session	W-AM1-R1: [Special Session] — Multiple Scattering in Periodic Structures Random Media	
Venue	Room 1 (Tamarind)	
Date/Time	8.40am – 10.20am, 26 August 2020 (Wednesday)	
Chair(s)	Shurun Tan, <i>Zhejiang University, China</i> Leung Tsang, <i>University of Michigan, Ann Arbor, USA</i>	
8.40AM	W-AM1-R1.1	[#1570604490] (Invited Talk) A Hybrid Method of Multiple Scattering of Waves by Discrete Scatterers in Vegetation at Multiple Microwave Frequencies <i>Weihui Gu, Huanting Huang, Leung Tsang, Andreas Colliander and Simon Yueh</i>
9.00AM	W-AM1-R1.2	[#1570605305] An Electromagnetic Random Field Theory of Multiple Scattering Media Using the Current Green's Function Formalism <i>Said Mikki</i>
9.15AM	W-AM1-R1.3	[#1570604265] A Fast Direct IE Solver for Characterization of Accelerator Cavities with Dumping Ports <i>Yang Liu, Tianhuan Luo and Shurun Tan</i>
9.30AM	W-AM1-R1.4	[#1570604151] Electromagnetic Simulation of Periodic Structures Using Memory Efficient DGTD Method <i>Pengfei Wen, Qiang Ren, Aixin Chen, Yan Zhang and Jiefu Chen</i>
9.45AM	W-AM1-R1.5	[#1570604415] Calculation of Band Diagram and Modal Fields of Photonic Crystals Using Hybrid Representations of the Lattice Green's Function <i>Zhaoyang Feng, Ruoxing Gao, Shurun Tan and Leung Tsang</i>
0.30AM	W-AM1-R1.6	[#1570598545] Complex Modes on Dielectric Periodic Waveguides <i>Amgad Abdrabou and Ya Yan Lu</i>



Session	W-AM1-R2: [Special Session] — Modeling and Design of Complex Radiations I	
Venue	Room 2 (Turmeric)	
Date/Time	8.40am – 10.20am, 26 August 2020 (Wednesday)	
Chair(s)	Da Yi, Chongqing University, China Wei-Hua Zong, Qingdao University, China	
8.40AM	W-AM1-R2.1	[#1570603975] Preliminary Study on the Near-Field Absorber <i>Da Yi, Ming-Chun Tang, Han Xiong and Xing-Chang Wei</i>
8.55AM	W-AM1-R2.2	[#1570592808] A Dual-Band Helix Antenna Operating at HBC Band <i>Wei-Hua Zong, Hong-Fei Li, Yu Han, Zhiqun Yang, Xiaoyun Qu and Shandong Li</i>
9.10AM	W-AM1-R2.3	[#1570593032] Research on Polarization Tracking of SATCOM on the move <i>Xiaoyun Qu, Zhiqun Yang, Weihua Zong and Changyong Yu</i>
9.25AM	W-AM1-R2.4	[#1570604137] Radiated Electric Field Prediction of 5G Base Station Using a Modified Source Reconstruction Method <i>Chang Liu and Huapeng Zhao</i>
9.40AM	W-AM1-R2.5	[#1570604153] EMI Receiver Model to Evaluate Conducted Emissions from Time-domain Waveforms <i>Menghan Sun, Jun Hu, Jiayi He, Chunyu Wu, Huapeng Zhao and Hongseok Kim</i>
9.55AM	W-AM1-R2.6	[#1570602076] Antenna Design of Windshield Mounted NFC Pairs Integrated with Wireless Charging for V2X Driving Data Link <i>Shaoyu Meng, Xiaozhang Zhu, Zhixing Zhu, Zhiqin Zhao and Shiwen Yang</i>



Session	W-AM1-R3: [Special Session] — Advanced Techniques for Efficient EM Simulation of Large and Complex Problems	
Venue	Room 3 (Cinnamon)	
Date/Time	8.40am –10.20am, 26 August 2020 (Wednesday)	
Chair(s)	Xinlei Chen , <i>Nanjing University of Aeronautics and Astronautics, China</i> Guangshang Cheng , <i>Anhui University, China</i>	
8.40AM	W-AM1-R3.1	 [#1570605256] (Invited Talk) An Efficient Technique for Numerical Modeling of Metasurface(MTS)- and Metamaterial (MTM)-based Antennas <i>Raj Mittra, Abdelkhalek Nasri and Asim Ghalib</i>
9.00AM	W-AM1-R3.2	 [#1570604384] Computation of Single-Photon Tunneling Time <i>Jie R Zhu, Dong-Yeop Na and Weng Cho Chew</i>
9.15AM	W-AM1-R3.3	 [#1570605623] Efficient simulation of 5G Antenna platforms and Circuits using the Characteristic Basis Function Method (CBFM) and GPU Acceleration <i>Yang Su and Raj Mittra</i>
9.30AM	W-AM1-R3.4	 [#1570607995] IEDG-Based Technique For Analyzing Partial Modification Problem <i>Xinlei Chen, Xiaojie Li, Ziang Shen and Changqing Gu</i>
9.45AM	W-AM1-R3.5	 [#1570613005] Tensor Decompositions for Memory Reduction in Integral Equation-Based Electromagnetic Simulators <i>Cheng Qian, Mingyu Wang and Abdulkadir C. Yucel</i>
10.00AM	W-AM1-R3.6	 [#1570610966] Development of Fast Periodic Characteristic Mode Analysis (PCMA) Tool <i>G. S. Cheng and Chao-Fu Wang</i>
10.15AM	W-AM1-R3.7	 [#1570604206] Re-Compressed H-Matrices for Fast Electric Field Integral Equation <i>Yoginder Kumar Negi, Venkat Prasad Padhy and N Balakrishnan</i>



Session	W-AM2-R1: [Special Session] — Effective CEM and Their Applications in Geophysical and Remote Sensing	
Venue	Room 1 (Tamarind)	
Date/Time	10.40am – 12.30pm, 26 August 2020 (Wednesday)	
Chair(s)	Naixing Feng, <i>Shenzhen University, China</i> Jinghe Li, <i>Guilin University of Technology, China</i>	
10.40AM	W-AM2-R1.1	<p>[#1570590724] An Alternative Termination of DZT-PML based on ME method for VLF geophysical problems <i>Naixing Feng, Yuxian Zhang, Xianpeng Wang, Guo Ping Wang, Wen-Yan Yin and Jinghe Li</i></p>
10.55AM	W-AM2-R1.2	<p>[#1570591229] Efficient Intelligent Denoising Method of Transformation Domain Hybrid Technique for Geophysical Data <i>Jing He Li, Nai Xing Feng and Yi Ren</i></p>
11.10AM	W-AM2-R1.3	<p>[#1570598992] An improved nodal FEM for low-frequency timeharmonic electromagnetic modeling <i>Changwei Li, Lei Gao and Jian Liu</i></p>
11.25AM	W-AM2-R1.4	<p>[#1570604397] IP response modeling for surface to borehole focusing measurement using finite element method <i>Li Zhang, Lei Zhang and Qiji Fu</i></p>
11.40AM	W-AM2-R1.5	<p>[#1570599645] Application of Normalized Full Gradient Method to Experimental Data of TDIP <i>Luo Runlin, Li Yanan and Xu Zhifeng</i></p>
11.55AM	W-AM2-R1.6	<p>[#1570603998] Off-grid DOA Estimation with Unknown Nonuniform Noise via Covariance SBL Strategy <i>Huafei Wang, Xianpeng Wang, Mengxing Huang and Liangtian Wan</i></p>
12.10PM	W-AM2-R1.7	<p>[#1570604001] DOA Estimation with Unknown Mutual Coupling for Monostatic MIMO Radar via Weighted Block Sparse Reconstruction <i>Dandan Meng, Xianpeng Wang, Chong Shen and Zhiguang Han</i></p>



Session	W-AM2-R2: [Special Session] — Modelling and Design of Complex Radiations II	
Venue	Room 2 (Turmeric)	
Date/Time	10.40am – 12.30pm, 26 August 2020 (Wednesday)	
Chair(s)	Xing-Chang Wei , <i>Zhejiang University, China</i> Huapeng Zhao , <i>University of Electronic Science and Technology of China, China</i>	
10.40AM	W-AM2-R2.1	[#1570603914] Development of Artificial Neural Network for Field Prediction of Unknown EM Source <i>Jun Wen, Yong-Liang Zhang, Yu-Fei Shu and Xing-Chang Wei</i>
10.55AM	W-AM2-R2.2	[#1570603874] A Single-Layer Transmitarray Element Using Jerusalem Cross with Vias <i>Xiu-zhu Lv, Ya-Xin Yi, Li-Na Liu and Yong-Liang Zhang</i>
11.10AM	W-AM2-R2.3	[#1570604297] An Improved Two-scale Model for EM Scattering from Electrically Large Rough Surface with Breaking Waves <i>CongHui Qi</i>
11.25AM	W-AM2-R2.4	[#1570604388] High Accuracy Positioning System Based on Multistation UWB Time-of-Flight Measurements <i>Wei Zhang, Xiaozhang Zhu, Zhiqin Zhao, Ying Liu and Shiwen Yang</i>
11.40AM	W-AM2-R2.5	[#1570602538] Dual A and H Formulations for Magnetostatic Problems with Symmetry Boundary Conditions <i>Yanpu Zhao</i>
11.55AM	W-AM2-R2.6	[#1570602450] Cylindrical Spoof Surface Plasmon Transmission Line Based on Via Technology <i>Si-Ping Gao and Yong-Xin Guo</i>



Session	W-AM2-R3: Antennas & Arrays I	
Venue	Room 3 (Cinnamon)	
Date/Time	10.40 – 12.30, 26 August (Wednesday)	
Chair(s)	Teng Li, <i>Southeast University, China</i> Ankang Liu, <i>National University of Singapore, Singapore</i>	
10.40AM	W-AM2-R3.1	[#1570600259] Flexible Planar Solar Phased Array Antenna Error Analysis for Low Earth Orbit Space Based Sensors <i>Anne L. Lee</i>
10.55AM	W-AM2-R3.2	[#1570616691] Switchable Beam Steering Antenna for Ka-Band Airborne Applications <i>Nasimuddin and Xianming Qing</i>
11.10AM	W-AM2-R3.3	[#1570594941] A Deployable Log Periodic Dipole Antenna <i>Ankang Liu and Jian Lu</i>
11.25AM	W-AM2-R3.4	[#1570612257] A Pattern Reconfigurable Water Leaky-wave Antenna with Conical Beam <i>Zhen Ren, Shishan Qi, Wen Wu and Zhongxiang Shen</i>
11.40AM	W-AM2-R3.5	[#1570602920] Numerical Investigation of Measurement Setup of Antenna Characterization for Mono-Static Vehicular Radar Applications <i>Hsi-Tseng Chou, Teng Chang, Chih-Wei Chiu and Shih-Kai Ho</i>
11.55AM	W-AM2-R3.6	[#1570603209] A Near-Field UHF RFID Reader Antenna with Large Interrogation Zone <i>Xiangyu Qian, Chun Zhou, Ying Dong, Chenyue Xu, Xiaoxiang He and Yang Yang</i>
12.10PM	W-AM2-R3.7	[#1570588802] (Invited Talk) Ka-band Mechanically Beam Scanning Bifocal Reflectarray Antenna with Optimized Phase Distribution <i>Teng Li, Elavarasi Murugesan and Zhi Ning Chen</i>



Session	W-PM1-R1: [Special Session] — Time Domain CEM and its Applications	
Venue	Room 1 (Tamarind)	
Date/Time	01.30pm – 03.30pm, 26 August 2020 (Wednesday)	
Chair(s)	Bing Wei , <i>Xidian University, China</i> Lei Zhao , <i>China University of Mining and Technology, China</i>	
1.30PM	W-PM1-R1.1	[#1570595961] The application of DGTD in simulation of the opened cavity <i>Qian Yang, Bing Wei, Linqian Li and Yuqing Wang</i>
1.45PM	W-PM1-R1.2	[#1570602605] A Stable Mixed TDFEM Based on Filtering Spatial Unstable Modes <i>Kaihang Fan, Bing Wei, Xinbo He and Yuqing Wang</i>
2.00PM	W-PM1-R1.3	[#1570602206] Explicit Newmark-FDTD Method Based on Maxwell's Equation <i>Xinbo He, Bing Wei, Kaihang Fan and Xincheng Ren</i>
2.15PM	W-PM1-R1.4	[#1570597019] Analysis of E3 effect in two dimensional ground ionospheric waveguide <i>Li Linqian, Wei Bing, Yang Qian, He Xinbo and Ren Xincheng</i>
2.30PM	W-PM1-R1.5	[#1570605141] Calculation of the Time-Domain Transmission Coefficient of the Layered Lossy Media <i>Ning Shen and Bing Wei</i>
2.45PM	W-PM1-R1.6	[#1570605132] A Domain Decomposition-Finite Different Time Domain Method for Low Computation Cost in Solving Scattering from an Object above Rough Surface <i>Wei Tian, Bing Wei and Yuqiang Zhang</i>
3.00PM	W-PM1-R1.7	[#1570604781] Waveport Modeling for DGTD Method and Its Applications <i>Lei Zhao, Geng Chen and Jiahao Zhu</i>



Session	W-PM1-R2: Metamaterials and Metasurface I	
Venue	Room 2 (Turmeric)	
Date/Time	01.30pm – 03.30pm, 26 August 2020 (Wednesday)	
Chair(s)	Takeshi Fukusako , <i>Kumamoto University, Japan</i> Shen Shou Max Chung , <i>National Penghu University of Science and Technology, Taiwan</i>	
1.30pm	W-PM1-R2.1	[#1570613329] (Invited Talk) Effect of Metasurface Edges on Wideband Characteristics <i>Takeshi Fukusako, Ryuji Kuse, Warangkana Chaihongsa, Koichi Furuya and Chuwong Phongcharoenpanich</i>
1.50pm	W-PM1-R2.2	[#1570604353] Design of Wide-Passband Dual-Polarized Frequency Selective Surface with Elliptic Response <i>Qihao Lv, Cheng Jin, Lingwen Kong and Zhongxiang Shen</i>
2.05pm	W-PM1-R2.3	[#1570603258] Wide Band Cross Polarization Converting Metasurface Based On Circular Split Rings Resonators <i>Babar Kamal, Jingdong Chen, Yingzing Yin, Jian Ren and SadiqUllah</i>
2.20pm	W-PM1-R2.4	[#1570604255] Design of Metasurface with Low-Frequency Transmission and High-Frequency Absorption Characteristics <i>Zhong Hu, Yanrui Chen and Shiyi Xiao</i>
2.35pm	W-PM1-R2.5	[#1570604298] Liquid Crystal Controlled Metasurface Antenna Array Concept for 5G Millimeter Wave User Equipment <i>Shen Shou Max Chung and Shih-Chung Tuan</i>
2.50pm	W-PM1-R2.6	[#1570605893] Ultra-Wide Bandstop Frequency Selective Structure Using Stepped-Impedance Parallel-Plate Waveguides <i>Weiliang Yu, Yufeng Yu and Guo Qing Luo</i>
3.05pm	W-PM1-R2.7	[#1570612780] Broadband Metasurface for Polarization Conversion and Asymmetric Transmission at X-band <i>Juzheng Han and Rushan Chen</i>



Session	W-PM1-R3: Antennas And Arrays II	
Venue	Room 3 (Cinnamon)	
Date/Time	01.30pm – 03.30pm, 26 August 2020 (Wednesday)	
Chair(s)	Christophe Fumeaux , <i>The University of Adelaide, Australia</i> Yong-xin Guo , <i>National University of Singapore, Singapore</i>	
1.30pm	W-PM1-R3.1	[#1570612887] (Invited Talk) Reconfigurable Wearable Antennas <i>Christophe Fumeaux, Quoc Hung Dang and Shengjian Jammy Chen</i>
1.50pm	W-PM1-R3.2	[#1570604224] (Invited Talk) Recent Developments in Wireless Power Transfer Technology <i>Yongxin Guo, Siping Gao and Hao Zhang</i>
2.10pm	W-PM1-R3.3	[#1570609571] 24GHz Microstrip Array Antennas for Automotive Anti-Collision Applications <i>YunQi Zhang, XuPing Li and XueYan Song</i>
2.25pm	W-PM1-R3.4	[#1570599479] Design of Dual-Polarized 5-16 GHz Eleven Antenna Fed by Passive Balun <i>Wei Tang, Lin Xiao and Shi-Wei Qu</i>
2.40pm	W-PM1-R3.5	[#1570596881] Gain Enhancement of Printed Circuit Board Patch Antenna Using Electromagnetic Band Gap Structure <i>Qian Chen and Xiaolin Zhang</i>
2.55pm	W-PM1-R3.6	[#1570604007] Fractal EBG Based Two Port Isolation Improvement In Compact MIMO Antenna <i>Kanhaiya Sharma and Ganga Prasad Pandey</i>
3.10pm	W-PM1-R3.7	[#1570597093] Broadband Millimeter-Wave Microstrip Array for 5G Application <i>Wen-Man Zou, Run-Liang Xia, Quan Wang, Mouping Jin and Li Chen</i>



Session	W-PM2-R2: Metamaterials and Metasurface II	
Venue	Room 2 (Turmeric)	
Date/Time	03.50pm – 05.50pm, 26 August 2020 (Wednesday)	
Chair(s)	Lin Zhou , <i>Nanyang Technological University, Singapore</i> Hao Huang , <i>Nanyang Technological University, Singapore</i>	
3.50pm	W-PM2-R2.1	[#1570609710] Low-RCS Bandpass Frequency Selective Structure <i>Lin Zhou and Zhongxiang Shen</i>
4.05pm	W-PM2-R2.2	[#1570604350] Dynamic Control Of Terahertz Wavefronts With Graphene Metasurfaces <i>Qiushi Li, Shiyi Xiao and Lei Zhou</i>
4.20pm	W-PM2-R2.3	[#1570605759] Wideband Microwave Absorber Utilizing Double-Sided Parallel-Strip Lines <i>Yufeng Yu, Weiliang Yu and Guo Qing Luo</i>
4.35pm	W-PM2-R2.4	[#1570602980] Design of an Ultra Wideband Polarization Insensitive and Wide Angle Metasurface Absorber based on Resistive-Ink <i>Priyanka Tiwari, S.K.Pathak and Anitha V.P.</i>
4.50pm	W-PM2-R2.5	[#1570604163] Analysis Of A Novel Metamaterial Absorber Using Equivalent Circuit Model Operating at 3.5 GHz <i>Priyanka Garg and Priyanka Jain</i>
5.05pm	W-PM2-R2.6	[#1570609696] A Non-reflecting Metalens Based on Brewster Effect <i>Hao Huang and Zhongxiang Shen</i>



Session	W-PM2-R3: Applications of CEM	
Venue	Room 3 (Cinnamon)	
Date/Time	03.50pm – 05.50pm, 26 August 2020 (Wednesday)	
Chair(s)	Xing-Chang Wei , <i>Zhejiang University, China</i> Bin-Fang Wang , <i>Institute of High Performance Computing, Singapore</i>	
3.50PM	W-PM2-R3.1	[#1570604230] PCB DK and DF Extraction based on the Wheeler Incremental Inductance Method <i>Yuru Feng, Li Zhang and Xingchang Wei</i>
4.05PM	W-PM2-R3.2	[#1570609092] Using Broadband Signals to Enhance the Stability of Phaseless Near-Field Far-Field Transformations <i>Alexander Paulus, Josef Knapp and Thomas F. Eibert</i>
4.20PM	W-PM2-R3.3	[#1570600907] Suppression of DC Ionized Field at Ground Level by Shielding Lines Based on Flux Tracing Method <i>Zhilong Zou and Liyi Li</i>
4.35PM	W-PM2-R3.4	[#1570603021] A Tool to Analysis of GNSS Satellite Availability in Urban Environments <i>Binfang Wang, Wei-Jiang Zhao and En-Xiao Liu</i>
4.50PM	W-PM2-R3.5	[#1570608122] A Noninvasive Field-Enhanced Magnetic Stimulator Using Secondary Ferrite Core and Resonant Structure <i>Wensong Wang, Raunaq Pradhan, Shaomeng Wang and Yuanjin Zheng</i>
5.05PM	W-PM2-R3.6	[#1570621927] Circularly Polarized Turnstile Antenna for VHF Data Exchange System (VDES) on Satellite <i>Yunjia Zeng, Xianming Qing, Terenec Shie Ping See and Xiaoming Peng</i>
5.20PM	W-PM2-R3.7	[#1570604228] Matrix Pencil Method Applied To The Compression Of Audio Data In Naval Operations <i>Daniel Chaparro-Arce, Andres Gallego, Fernando Albarracin-Vargas, Carlos Gutierrez, Felix Vega and Cesar Pedraza</i>



Poster Sessions

Session	PS-1 &2: Poster Sessions
Venue	Online Display
Date/Time	24-26 August 2020 (Monday- Wednesday)
Chair(s)	Si-Ping Gao , <i>National University of Singapore, Singapore</i> Zaifeng Yang , <i>Institute of High Performance Computing, A*STAR, Singapore</i>

- PS-1.1** [#1570604169]
A multi-layer design of 3-dB 180° wideband hybrid coupler
Ba Dat Nguyen, Minh Tuan Vu and Manh Linh Nguyen
- PS-1.2** [#1570601630]
RCS Prediction of Extremely Large-Scale Planar Periodic Arrays Using SAIM and Embedded Element Current Technique
Xing Wang, Chun-Heng Liu and Shuai Zhang
- PS-1.3** [#1570593569]
Path Loss Model for Smart Meter on LoRaWAN Technology with Unidirectional Antenna in an Urban Area of Thailand
Akekapong Kongsavat and Chalakorn Karupongsiri
- PS-1.4** [#1570605771]
Electromagnetic Interference Test and Analysis of Axial Frequency Electric Field Active Compensation Device
Zhang Haipeng, Ai Xiayu, Zong Weihua and Zhang Xiangpeng
- PS-1.5** [#1570594933]
Design of Dual Band-Notched UWB Antenna with Sharp Roll-Off Characteristics
Yijun Du, Xiaopo Wu and Gang Wang
- PS-1.6** [#1570596612]
Design Dual-Band For 28 GHz Application Using Array (2x2) From Aperture coupled Micro-strip Antenna
Faiza Bohjeal and Ahmad Elbarsha
- PS-1.7** [#1570603693]
A High-Efficiency Rectifier with Widening Input Power Range Based on Microwave Power Transmission
Si Ce Wang, Min Jun Li and Mei Song Tong
- PS-1.8** [#1570603889]
A Graph-based Simulation Method for Propagation Channels with Multiple-knife-edge Diffraction
Yuan Liu, Xuefeng Yin, Juyul Lee and Meisong Tong
- PS-1.9** [#1570604200]
A Wireless Propagation Model Based on Artificial Intelligence Technology
Yu Lu Yang, Guo Chun Wan and Mei Song Tong



- PS-1.10 [#1570604211]
On the Excitation Phase of Planar Array of Magneto-Electric Dipole Antenna
Ge Zhao, Ying Liu and Mei Song Tong
- PS-1.11 [#1570604313]
Asymmetric Single Split Resonator for Metamaterial Applications
Anila P V, Shameena V A, Anju Pradeep and P Mohanan
- PS-1.12 [#1570604398]
An Arrow-Shaped Crossed-Dipole Antenna with Double Polarizations
Yun Jie Mao, Xu Shi, Huan Qian Xiong and Mei Song Tong
- PS-2.1 [#1570604454]
A Support Vector Machine Algorithm for PIR Special Processor
Cao Ling Yu, Zhi Gang Han, Wei Hua Xiao and Mei Song Tong
- PS-2.2 [#1570604457]
A New Design for Low Drop-Out Regulator With Broadband High Power Supply Rejection
Di Hu, Gang Zhang and Mei Song Tong
- PS-2.3 [#1570604462]
A Wide Input Range Subsampling Phase Detector in Subsampling Phase Locked Loop
Yi Ma, Gang Zhang and Mei Song Tong
- PS-2.4 [#1570604686]
A Compact Spherical Dual-Polarized Antenna Array for 5G Wireless Communication
Huan Qian Xiong, Yun Jie Mao and Mei Song Tong
- PS-2.5 [#1570609804]
A Buck Converter Based on Hybrid System Model
Jiao Shen, Zhi Gang Han and Mei Song Tong
- PS-2.6 [#1570615224]
3D-Printed 140 GHz Beam-Scanning Antenna Using Partially Reflecting Surface
Rui Xu, Steven Gao, Benito Sanz Izquierdo, Chao Gu, Patrick Reynaert, Alexander Standaert, Gregory J. Gibbons, Wolfgang Bösch and Michael Ernst Gadringer
- PS-2.7 [#1570618932]
Wide-Band Metasurface with Diffusion-Reflection-Diffusion Response
Xiaochun Liu, Qihao Lv, Xiaoyu Pang, Jinshan Deng and Cheng Jin
- PS-2.8 [#1570618939]
Design of Frequency-Scanned Multi-Polarization Antennas
Shining Sun, Qihao Lv, Wenwu Zhang, Xinrui Fang and Cheng Jin
- PS-2.9 [#1570599081]
Based on the Application of AI Technology in Resume Analysis and Job Recommendation
Yi-Chi Chou and Han-Yen Yu
- PS-2.10 [#1570610005]
A Circularly Polarized Patch Antenna Array
Jun Xiao, Zhiyin Chen, Tongyu Ding, Yusheng Hu and Qiubo Ye
- PS-2.11 [#1570611197]
A Lattice Boltzmann Method for Electromagnetic Wave Propagation in Medium
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