2022 IEEE 5th International Conference on Electronic Information and Communication Technology

2022 ICEICT
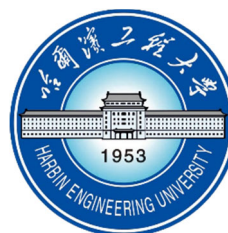
Hefei, China • August 21-23, 2022
http://www.iceict.org/

Conference Program

Organizers

Key Laboratory of Electromagnetic Environmental Sensing of Anhui Higher Education Institutes

Co-sponsor

中国电子科技集团公司
数据链技术重点实验室

Contents

Online Platform

ICEICT 2022 is fully virtual conference.

August 22, 2022	Opening Ceremony Keynote Speeches
Zoom Meeting	**Conference ID: 830 9987 4793** **https://us02web.zoom.us/j/83099874793**
ZOOM 中国数据中心可以下载各系统客户端 **www.zoomcns.com/download** **国内作者无需登录 zoom，直接加入会议**	

August 23, 2022	Invited Talks Oral Sessions & Special Sessions
Tencent Meeting	**https://meeting.tencent.com/**
Voov Meeting	**https://voovmeeting.com/**

Program at a Glance

Opening Ceremony and Keynote Speeches *Morning of August 22, 2022*		
Zoom Meeting Conference ID: 830 9987 4793 **https://us02web.zoom.us/j/83099874793**		
08:30-08:50	Opening Ceremony Hosted by Zhixiang Huang	Welcoming message from organizer
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09:30-10:10	Keynote Speaker II: Atef Z. Elsherbeni (Hosted by Zhixiang Huang)	
10:10-10:30	**Break**	
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Keynote Speeches *Afternoon of August 22, 2022*	
Zoom Meeting Conference ID: 830 9987 4793 **https://us02web.zoom.us/j/83099874793**	
13:30-14:10	Keynote Speaker V: Wei Sha (Hosted by Yingsong Li)
14:10-14:50	Keynote Speaker VI: Giuliano Manara (Hosted by Yingsong Li)
14:50-15:30	Keynote Speaker VII: Pavel Aleksandrovich Belov (Hosted by Yingsong Li)
15:30-16:00	**Break**
16:00-16:40	Keynote Speaker VIII: Sheng Sun (Hosted by Wei Sha)
16:40-18:00	Poster Session http://www.iceict.org/ICEICT2022/ShowArticle.asp?ArticleID=846 (Hosted by Kuang Zhang, Xingang Ren)

Invited Talks *Morning of August 23, 2022*		Invited Talks *Afternoon of August 23, 2022*	
Tencent Meeting Conference ID: 336 3873 0036			
Chair: Yingsong Li, Kuang Zhang		*Chair: Zai Yang, Xiaolong Chen*	
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08:50-09:10	*Invited Talk 2*	13:50-14:10	*Invited Talk 12*
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09:50-10:10	*Invited Talk 5*	14:50-15:10	*Invited Talk 15*
10:10-10:20	**Break**	15:10-15:20	**Break**
Chair: Xiaoming Chen, Fei Gao		*Chair: Mei Li, Ming Fang*	
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Please indicate Paper ID or Session Chair when joining virtual meeting.

Oral Sessions & Special Sessions *Morning of August 23, 2022 (Tencent Meeting)*		
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	Oral Session (*Topic II*) & Special session 1	Conference ID: 456 3878 3674
	Oral Session (*Topic III*) & Special session 3	Conference ID: 644 2526 9351
	Special session 24	Conference ID: 728 1837 6406
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13:30-15:00	Special session 11 & Special session 15	Conference ID: 155 804 851
	Special session 17 & Special session 18 & Special session 26	Conference ID: 724 9253 6520
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	Special session 21	Conference ID: 375 916 517
	Special session 29 & Special session 31	Conference ID: 547 2712 5183
	Special session 33	Conference ID: 476 606 890
	Special session 20 & Special session 22	Conference ID: 924 7583 2233

Organizing Committee

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Conference Treasure	
Tao Jiang	Harbin Engineering University, China

Special Session

Special session 1: Adaptive signal processing - algorithms and applications

Yi Yu (Southwest University of Science and Technology)

Lu Lu (Sichuan University)

Special session 2: Innovative Multiple Antenna Techniques and Solutions for 5G and B5G

Luyu Zhao (Xidian University)

Guan-Long Huang (Foshan University)

Wei Lin (University of Technology Sydney)

Special session 3: Wireless body area network- antenna design and numerical method

Hongxing Zheng (Hebei University of Technology)

Yuxian Zhang (Anhui University)

Special session 4: Dual-band Dual Circular Polarization Antenna Techniques

Kuikui Fan (Hangzhou Dianzi University)

Jianxing Li (Xi'an Jiaotong University)

Special session 5: Emerging Wireless Technologies in the Era of 5G and Beyond

Ke Guan (Beijing Jiaotong University)

Zhengrong Lai (Guangdong Communications & Networks Institute)

Lei Zhang (Donghua University)

Special session 6: Low-Profile Antennas and Arrays for 5G Communications

Sen Yan (Xi'an Jiaotong University)

Neng-Wu Liu (Xidian University)

Special session 7: Testing Methodology for Antennas and Wireless Devices

Xiaoming Chen (Xi'an Jiaotong University)

Yuxin Ren (China Academy of Information and Communications Technology)

Special session 8: Multi-functional metasurfaces theory, design and applications

Hongyu Shi (Xi'an Jiaotong University)

HuanHuan Yang (Air Force Engineering University)

Special session 9: Reconfigurable Intelligent Surface (RIS) Techniques for B5G and 6G

Yongjun Xu (Chongqing University of Posts and Telecommunications)

Chongwen Huang (Zhejiang University)

Kuang Zhang (Harbin institute of technology)

Special session 10: Statistical signal processing – detection, estimation, and filtering

Jingen Ni (Soochow University)

Zhe Li (Soochow University)

Special session 11: Advanced Array Signal Processing and Antenna Technology for 5G and Beyond

Naixing Feng (Anhui University)

Liangtian Wan (Dalian University of Technology)

Fangqing Wen (China Three Gorges University)

Special session 12: Electric energy conversion and intelligent control

Tian Gao (Northwestern Polytechnical University)

Jing Hou (Northwestern Polytechnical University)

Qi Wang (Xi'an Technological University)

Special session 13: Advanced Technologies and Emerging Applications in Radar Signal and Image Processing

Mingliang Tao (Northwestern Polytechnical University)

Yifei Fan (Northwestern Polytechnical University)

Special session 14: Recent advances in radar detection and recognition

Xiaolong Chen (Naval Aviation University)

Ying Luo (Air Force Engineering University)

Jibin Zheng (Xidian University)

Special session 15: Advanced Array Theory and Synthesis Techniques

Foxiang Liu (Nanchang University)

Jun Xiao (Jimei University)

Special session 16: Electromagnetic Models and Optimization in MIMO Communications

Wei Sha (Zhejiang University)

Xiaoming Chen (Xi'an Jiaotong University)

Zi He (Nanjing University of Science and Technology)

Special session 17: Information theoretical learning criteria based signal processing and machine learning: methods, and applications

Badong Chen (Xi'an Jiaotong University)

Wentao Ma (Xi'an University of Technology)

Special session 18: Recent Advances on Machine Learning in Computational Electromagnetics: Theory and Application

Yuanguo Zhou (Xi'an University of Science and Technology)

Qiang Ren (Beihang University)

Special session 19: Generation and application of metasurface based electromagnetic vortex

Baiyang Liu (Southern University of Science and Technology)

Qingfeng Zhang (Southern University of Science and Technology)

Special session 20: Advanced mathematic theory applied in array radar and communication system

Xianpeng Wang (Hainan University)

Han Wang (Yichun University)

Shi Junpeng (National University of Defense Technology)

Special session 21: Simulation in Dynamic Complex EM Environment

Yunlong MAO (Jiangsu University of Science and Technology)

Tao Jiang (Harbin Enginering University)

Special session 22: ECM and Intelligent decision-making

Fang Ye (Harbin Engineering University)

Dandan Liu (Heilongjiang University of Science & Technology)

Special session 23: Low-dimensional multifunctional electromagnetic devices and antennas

Bian Wu (Xidian University)

Junming Zhao (Nanjing University)

Special session 24: Wearable Textile and Clothing Antennas

Kwok L. Chung (Huizhou University)

Botao Feng (Shenzhen University)

Special session 25: Intelligent Reflective Surfaces for B5G/6G Communications

Li Deng (Beijing University of Posts and Telecommunications)

Kwok L. Chung (Huizhou University)

Special session 26: Education in Electronic, Information and Wireless Communications

Yunqi Li (Harbin Engineering University)

Tao Jiang (Harbin Engineering University)

Special session 27: Microwave/millimeter passive device design, optimization and tuning

Yongxing Du (Inner Mongolia University of Science and Technology)

Xiaolong Wang (Jilin University)

Yongliang Zhang (Inner Mongolia University)

Special session 28: Microwave and millimeter wave antennas and circuits for modern wireless communication systems

Liying Nie (Hefei University of Technology)

Daotong Li (Chongqing University)

Fei Cheng (Sichuan University)

Special session 29: Vehicle EMI and EMC

Chonghua Fang (China ship development & design center)

Xinyang Shi (Wuhan Maritime Communication Research Institute)

Special session 30: Underwater Acoustic Communication and Networking

Youwen Zhang (Jiangsu University of Science and Technology)

Biao Wang (Jiangsu University of Science and Technology)

Special session 31: Antennas and numerical techniques for 5G wireless communications

Han Chongzhi (Jimei University)

Chen Peng (Jimei University)

Special session 32: Signal processing techniques for wireless communication and cyber systems

Yuantao Gu (Tsinghua University)

Special session 33: 5G/6G communications and community

Botao Feng (Shenzhen University)

Welcoming Message from General Co-Chairs

On behalf of the ICEICT 2022 Organizing Committee, I would like to welcome you all to the 5th IEEE International Conference on Electronic Information and Communication Technology, which is organized by Anhui University and Information Materials and Intelligent Sensing Laboratory of Anhui Province, Key Laboratory of Intelligent Computing & Signal Processing, Ministry of Education, Key Laboratory of Electromagnetic Environmental Sensing of Anhui Higher Education Institutes, jointly co-organized by Key Laboratory of Data Link, CETC, and Harbin Engineering University, and is technically co-sponsored by IEEE Harbin Section, IEEE Harbin MTT/AP/EMC Joint Chapters.

The ICEICT is intended to provide an international forum for exchanging new ideas, thoughts, and achievements on Microwave Systems, Radar, RF, Antennas, Propagation, and Scattering, Signal Processing (SP) and Information Technology, and Communications and Network, and the related fields. We are confident that the ICEICT is a conference of international level which provide a connection between the RF, microwave and antenna to the wireless communication networks, and even to signal processing.

The conference has now become an important event in the calendar of the electronic and information areas in the world, as judged by the number of papers we received for this year. We are sure that there will be decisive deliberations during the days of the conference. The city of Hefei has strong development potential in the electronic and information, even in the Artificial Intelligence era. Hefei has blooming in auto industry, chips and information, and it has connected with Europe, Korea, Japan and other Asian countries. Many cultures and products have been exported to the world, and the famous Huangshan and Jiuhua Mountains lie in Anhui Province. I hope you all to enjoy your interest in Hefei as well as your professional activity.

The conference of ICEICT 2022 is hosted online because of COVID-19, while all the virtual conference rooms are open to all audiences under the effort of Local Chairs. Prof. Zhixiang Huang and Prof. Lixia Yang. The members of the Organizing Committee and the Technical Program Committee have strived hard for many months to make this conference a reality. I wish to thank them all on behalf of the ICEICT 2022. Finally, we would like to express my sincere thanks to all participants, delegates and guests and wish them all a very pleasant and memorable days during the conference.

Prof. Zhixiang Huang
Prof. Lixia Yang
General Co-Chairs of ICEICT 2022
August 21-23, 2022

Keynote Speakers

Keynote Speaker I: Rodrigo C. de Lamare

Speaker's bio:
Rodrigo C. de Lamare was born in Rio de Janeiro, Brazil, in 1975. He received his Diploma in electronic engineering from the Federal University of Rio de Janeiro in 1998 and the MSc and PhD degrees in electrical engineering from the Pontifical Catholic University of Rio de Janeiro (PUC-Rio) in 2001 and 2004, respectively. Since January 2006, he has been with the Communications Research Group, Department of Electronic Engineering, University of York, United Kingdom, where he is a Professor. Since April 2013, he has also been a Professor at PUC-RIO. Dr de Lamare is a senior member of the IEEE and an elected member of the IEEE Signal Processing for Communications and Networking Committee. He has served as editor for IEEE Wireless Communications Letters and IEEE Transactions on Communications. His research interests lie in communications and signal processing, areas in which he has published over 450 papers in international journals and conferences.

Title: Energy-efficient distributed learning: diffusion and federated algorithms with applications to IoT networks

Abstract:
In this presentation, we will present an energy-efficient distributed learning framework using coarsely quantized signals for Internet of Things (IoT) networks. In particular, we develop distributed quantization-aware least-mean, recursive least-squares and federated learning algorithms that can learn parameters in an energy-efficient fashion using signals quantized with few bits while requiring a low computational cost. Moreover, we develop a bias compensation strategy to further improve the performance of the proposed learning algorithms. We carry out a statistical analysis of the proposed algorithms and derive analytical expressions for predicting the mean-square deviation. A computational complexity evaluation and a study of the power consumption of the proposed and existing techniques are then presented. Numerical results assess the proposed learning algorithms against existing techniques for parameter estimation tasks in IoT networks.

Keynote Speaker II: Atef Z. Elsherbeni

Atef Z. Elsherbeni
Electrical Engineering Department
Colorado School of Mines
aelsherb@mines.edu

Speaker's bio: Atef Z. Elsherbeni received an honor B.Sc. degree in Electronics and Communications, an honor B.Sc. degree in Applied Physics, and a M.Eng. degree in Electrical Engineering, all from Cairo University, Cairo, Egypt, in 1976, 1979, and 1982, respectively, and a Ph.D. degree in Electrical Engineering from Manitoba University, Winnipeg, Manitoba, Canada, in 1987. He started his engineering career as a part time Software and System Design Engineer from March 1980 to December 1982 at the Automated Data System Center, Cairo, Egypt. From January to August 1987, he was a Post-Doctoral Fellow at Manitoba University. Dr. Elsherbeni joined the faculty at the University of Mississippi in August 1987 as an Assistant Professor of Electrical Engineering. He advanced to the rank of Associate Professor in July 1991, and to the rank of Professor in July 1997. He was the Associate Dean of the college of Engineering for Research and Graduate Programs from July 2009 to July 2013 at the University of Mississippi. He then joined the Electrical Engineering and Computer Science (EECS) Department at Colorado School of Mines in August 2013 as the Dobelman Distinguished Chair Professor. He was appointed the Interim Department Head for (EECS) from 2015 to 2016 and from 2016 to 2018 he was the Electrical Engineering Department Head. He spent a sabbatical term in 1996 at the Electrical Engineering Department, University of California at Los Angeles (UCLA) and was a visiting Professor at Magdeburg University during the summer of 2005 and at Tampere University of Technology in Finland during the summer of 2007. In 2009 he was selected as Finland Distinguished Professor by the Academy of Finland and TEKES.

Over the years, Dr. Elsherbeni participated in acquiring millions of dollars to support his research group activities dealing with scattering and diffraction of EM waves by dielectric and metal objects, finite difference time domain analysis of antennas and microwave devices, field visualization and software development for EM education, interactions of electromagnetic waves with human body, RFID and sensor Integrated FRID systems, reflector and printed antennas and antenna arrays for radars, UAV, and personal communication systems, antennas for wideband applications, and measurements of antenna characteristics and material properties. Dr. Elsherbeni is IEEE life fellow and ACES fellow. He is the Editor-in-Chief for ACES Journal, and a past Associate Editor to the Radio Science Journal. He was the Chair of the Engineering and Physics Division of the Mississippi Academy of Science, the Chair of the Educational Activity Committee for IEEE Region 3 Section, and the general Chair for the 2014 APS-URSI Symposium and the president of ACES Society from 2013 to 2015. Dr. Elsherbeni is selected as Distinguished Lecturer for IEEE Antennas and Propagation Society for 2020-2023.

Title: Direct Time Domain Simulation of Nonlinear Microwave Devices Characterized by Their X-Parameters

Abstract: The finite-difference time-domain (FDTD) simulation technique is a versatile and extensible approach to simulation of RF, communications and microwave devices. The development of high-quality absorbing-boundary formulations, as well as the increasing availability of high-performance computing hardware including graphics processing units (GPUs) have further increased the FDTD technique's applicability to a wide variety of problems. In particular, simulations involving very complex 3D geometries, inhomogeneous media such as tissue or soil, or wide signal bandwidths are readily addressed using the FDTD technique.

The FDTD technique is further extended by a number of formulations which allow passive and active electronic circuit components to be simulated in situ, within the FDTD domain. Current sources, resistors, capacitors, and inductors may be simulated using their constitutive current-voltage (I-V) properties. Semiconductor devices may also be simulated, using formulations based upon either empirical or circuit-theory models.

A major advance in semiconductor characterization and simulation has been the advent of polyharmonic distortion models, such as the X-Parameters. Whereas arbitrary linear loads may be simulated within the FDTD by means of their S-Parameters, there does not exist a comparable method for direct FDTD simulation of a device defined by its X-Parameters. We present here a technique for extracting X-Parameter information from FDTD simulation results, as well as a method for simulating a device within FDTD when its X-Parameters are known.

For FDTD simulation of nonlinear devices, our method has the following advantages. First, it is of lower computational complexity than some FDTD semiconductor models, which require iterative numeric solution of nonlinear equations. Second, it provides direct compatibility between FDTD and the X-Parameters, without the intermediary step of estimating a device's circuit-theory-model parameters. Finally, simulation is carried out in one domain, without the iterative conversions between time and frequency domain which are required by harmonic-balance-based approaches.

Keynote Speaker III: Bo Ai

Speaker's bio:
Prof. Bo Ai (IEEE Fellow, IET Fellow) is the professor and doctoral supervisor of Beijing Jiaotong University. He is also the deputy director of the State Key Laboratory of Rail Traffic Control and Safety.

Prof. Bo Ai has published 6 Chinese academic books, 3 English books, over 150 IEEE journal articles. He has obtained 13 international paper awards include IEEE VTS Neil Shepherd Memorial Best Propagation Award and IEEE GLOBECOM 2018 Best Paper Award, 32cinvention patents; 23 proposals adopted by the ITU, 3GPP, etc., and 9 provincial and ministerial-level science and technology awards. His research results have been involved in 5 national standards. He is mainly engaged in the research and application of the theory and core technology of broadband mobile communication and rail transit dedicated mobile communication systems (GSM-R, LTE-R, 5G-R, LTE-M).

Prof. Bo Ai is the Fellow of Chinese Institute of Electronics, Fellow of China Institute of Communications, Chair of IEEE BTS Xi'an Branch, Vice Chair of IEEE VTS Beijing Branch, IEEE VTS distinguished lecturer, expert of the 5G Industry Expert Group of the China Mobile Group Technical Advisory Committee，and expert of the 6G Group in China.

Title: Feeder Communications for Future Integrated Networks

Abstract:
The integrated communication system has received increasing attention to establish a fully-connected world in the eras of beyond the fifth-generation wireless communication (B5G) and the sixth-generation wireless communication (6G) systems, where a wide range of services with distinct requirements needs to be accommodated, covering distinct scenarios such as terrestrial, ocean, outer space and underwater. In this talk, we first present the idea of feeder communication, which aims to provide truly seamless and ubiquitous on-demand coverage for any human activity. Compared with the traditional integrated networks, the feeder communication focuses on the reliable data transmission over multiple propagation mediums such as outer space, stratosphere, troposphere, and underwater. Due to the significant differences of radio propagation characteristics in different mediums, feeder communication requires a large number of feeder nodes for inter-medium transmissions, a well-designed network structure, and intelligent wireless transmission and control schemes. The basic concepts, features, application scenarios, network architecture, and the corresponding wireless transmission technologies of feeder communication are presented with details. Finally, challenges and future directions are pointed out.

Keynote Speaker IV: Yue Gao

Speaker's bio:

Yue Gao is a Professor at School of Computer Science, and Director of Intelligent Networking and Computing Research Centre at Fudan University. He received the Ph.D. degree from the Queen Mary University of London (QMUL) U.K., in 2007. He has then worked as a Lecturer, Senior Lecturer, Reader and Chair Professor at QMUL and University of Surrey, respectively. His research interests include smart antennas, sparse signal processing and cognitive networks for mobile and satellite systems. He has published over 200 peer-reviewed journal and conference papers and over 5800 citations. He was a co-recipient of the EU Horizon Prize Award on Collaborative Spectrum Sharing in 2016 and elected as an Engineering and Physical Sciences Research Council Fellow in 2017. He is a member of the Board of Governors and Distinguished Lecturer of the IEEE Vehicular Technology Society (VTS), Vice-Chair of the IEEE ComSoc Wireless Communication Technical Committee, past Chair of the IEEE ComSoc Technical Committee on Cognitive Networks. He has been an Editor of several IEEE Transactions and Journals, and Symposia Chair, Track Chair, and other roles in the organising committee of several IEEE ComSoC, VTS and other conferences.

Title: Space-Air-Ground Integrated Network for 6G

Abstract:
The space-air-ground integrated network (SAGIN) aims to provide seamless wide area connections, high throughput and strong resilience for B5G and 6G communications. Acting as a crucial link segment of the SAGIN, unmanned aerial vehicle (UAV)-satellite communication has drawn much attention. However, it is a key challenge to track dynamic channel information due to the low earth orbit (LEO) satellite orbiting and three-dimensional (3D) UAV trajectory. This presentation will outline the current development and key challenges of SAGIN including GSO, MEO, LEO satellite, Starlink and 5G NR 3GPP non-terrestrial network (NTN). Some key technologies such as 3D channel tracking between UAV and satellite, and between UAV and ground terminals, beamforming, beam tracking and learning as well as wideband compressive sensing and learning will be briefly introduced.

Keynote Speaker V: Wei Sha

Speaker's bio:

Wei E.I. Sha received the B.S. and Ph.D. degrees in Electronic Engineering at Anhui University, Hefei, China, in 2003 and 2008, respectively. From Jul. 2008 to Jul. 2017, he was a Postdoctoral Research Fellow and then a Research Assistant Professor in the Department of Electrical and Electronic Engineering at the University of Hong Kong, Hong Kong. From Mar. 2018 to Mar. 2019, he worked at University College London as a Marie-Curie Individual Fellow. From Oct. 2017, he joined the College of Information Science & Electronic Engineering at Zhejiang University, Hangzhou, China, where he is currently a tenure-tracked Research Professor.

His research interests include theoretical and computational research in electromagnetics and optics, focusing on the multiphysics and interdisciplinary research. His research involves fundamental and applied aspects in computational and applied electromagnetics, nonlinear and quantum electromagnetics, micro- and nano-optics, optoelectronic device simulation, and multiphysics modeling.

Dr. Sha has authored or coauthored 175 refereed journal papers, 145 conference publications (including 3 keynote talks, 1 short course and 36 invited talks), eight book chapters, and two books. His Google Scholar citation is 7500 with h-index of 45. He is a senior member of IEEE and CIE. He served as Reviewers for 60 technical journals and Technical Program Committee Members of 10 IEEE conferences. He also served as Associate Editors of IEEE Journal on Multiscale and Multiphysics Computational Techniques, IEEE Open Journal of Antennas and Propagation, and IEEE Access.

In 2015, he was awarded Second Prize of Science and Technology from Anhui Province Government, China. Dr. Sha received Young Scientist Award of PIERS 2021 and 6 Best Student Paper Prizes with his students.

Title: Electromagnetic Information Theory for MIMO Antenna Design

Abstract:
This talk will introduce the electromagnetic (EM) information theory for MIMO antenna design. Firstly, I will overview the urgent requirement of future 5.5/6G. Secondly, I will show how EM theory governs the capacity limit of a MIMO communication system. Thirdly, I will connect the degree of freedom (DoF) in communication theory to the directivity in antenna theory. Finally, I will revisit the active element pattern and embedded efficiency of an antenna array and discuss their roles in affecting the capacity of the MIMO system. I will argue that the fundamental limits or physical bounds in antenna theory are essential to future MIMO communications including ultra-massive MIMO, holographic MIMO, etc.

Keynote Speaker VI: Giuliano Manara

Speaker's bio:

Giuliano Manara received the Laurea (Doctor) degree in electronic engineering (summa cum laude) from the University of Florence, Italy, in 1979. He was first with the School of Engineering of the University of Florence, Italy. Then, in 1987 he moved to the University of Pisa, Italy, where he is presently a Professor of Electromagnetics and Microwave Techniques at the Department of Information Engineering of the School of Engineering. Since 1980, he has been collaborating with the Department of Electrical Engineering of the Ohio State University, Columbus, Ohio, where, in the summer and fall of 1987, he was involved in research at the ElectroScience Laboratory. His research interests have centered mainly on the asymptotic solution of radiation and scattering problems to improve and extend the uniform geometrical theory of diffraction (UTD). In this framework, he has analyzed electromagnetic wave scattering from material bodies, with emphasis on the scattering from both isotropic and anisotropic impedance wedges. He has also been engaged in research on numerical, analytical and hybrid techniques (in both frequency and time domain), scattering from rough surfaces, frequency selective surfaces (FSS), and electromagnetic compatibility. His research has also been focused on microwave antennas with application to broadband wireless networks and on the development and testing of new microwave materials (metamaterials) for electronic systems. More recently, he has conducted research on electromagnetic issues enabling the development of the Internet of Things (IoT), with specific attention to antennas for near-field applications and the analysis (theoretical and experimental) of Radio Frequency Identification (RFID) systems.

Prof. Manara has authored more than 160 papers on qualified technical journals with referees, and more than 250 papers presented at international conferences. He was elected an IEEE Fellow in 2004 for "contributions to the uniform geometrical theory of diffraction and its applications." From August 2011 to August 2014, he served as the International Chair of URSI (International Union of Radio Science) Commission B – Fields and Waves. In this context, he was the General Chair of the URSI Commission B International Electromagnetic Theory Symposium (EMTS), held in Hiroshima, Japan, during May 2013. In 2017, he was elected an URSI Fellow. Since August 2021, he has been serving as an URSI Vice-President.

Title: Chipless RFID Technology

Abstract:

Radio Frequency Identification (RFID) presents itself as a low-cost wireless technology which opens the way to the connection of an incredibly large number of intelligent objects to the Internet, enabling to engage, identify, locate, transact and authenticate products. RFID market has proved to be a growing market of enormous potential over the past few years. It is worth observing that most of RFID applications in logistics and other areas can be usefully considered in the market only if the cost of RFID tags drops to a very low price. Standard RFID tags do contain chipsets which need to get the power required for their activation from the reader, through an energy harvesting procedure.

In this context, chipless RFIDs represent an emerging technology aimed at the identification of objects, authentication and sensing. The basic idea is to simplify further the tag by removing any active circuit from it. Indeed, even if the cost of chipped RFID tags is already low (about 10 eurocents when distributed in large quantities), the removal of the integrated circuit could make radio frequency labels available at a sub-cent cost. In this respect, it is important to consider that chipless tag

fabrication is fully compatible with printed electronics low-cost manufacturing methods such as, for instance, screen printing, gravure, offset lithography, and inkjet printing. Another important advantage connected with the absence of the integrated circuit on tags is the application of radio frequency labels in extreme environments, when electronics might be damaged. Some application examples of chipless RFID technology will be shown at the conference to the end of demonstrating its potentialities.

Keynote Speaker VII: Pavel Aleksandrovich Belov

Pavel Aleksandrovich Belov

Russian physicist, head of The International Research Centre for Nanophotonics and Metamaterials (St. Petersburg, Russia).

Speaker's bio:
Education

After finishing Saint Petersburg Lyceum 30, Pavel Belov graduated with honors from the ITMO University in 2000. He defended his PhD thesis twice: from ITMO University in Russia in 2003 with the thesis "Analytical modeling of electromagnetic crystals", and then in Finland in 2006 at the Helsinki University of Technology with the thesis "Analytical modeling of metamaterials and new principle of sub-wavelength imaging".[1] In November 2010 he received doctor of science degree for his thesis "Analytical modeling of electromagnetic crystals and left-handed materials".

Career

Dr. Belov has extensive experience of working abroad (Finland, South Korea, United Kingdom) with such industrial giants as Nokia, Samsung Electronics and Bosch. He is a member of the Council of young scientists and specialists of the ITMO University. He is also a member of IEEE, AP-S, ED-S, MTT-S, LEO-S (Laser and Electro-Optics Society, www.i-leos.org); URSI, SPIE scientific societies. Since October 2015, Dr Belov has been on the Board of Scientific Advisors at Metamaterial Technologies Inc., an international optical nano-composites company (www.metamaterial.com)

Awards

Dr. Pavel Belov is a laureate of the Russian Federation President's Prize in Science and Innovation for Young Scientists in 2009 (Presidential Decree No.139 of 4.02.2010). The prize is awarded for outstanding contributions to the physics of metamaterials and the development of devices for transmission and processing of superresolution images. He is the winner of grants for State Support of Young Russian Ph.D Scientists in 2005 and 2009. His other prizes include:

- IET Achievement Medal (IET, UK, 2006)

- International Dennis Gabor Award (NOVOFER Foundation, Hungary, 2003)

- URSI Young Scientist Award (Belgium, 2002)

Publications

Pavel Belov is the author of more than 260 scientific articles in refereed journals, 300 conference proceedings and 18 book chapters. His h-index is 61 (according WoS). His work has generated over 19 000 citations.

Title: Metamaterial-inspired and ceramic-based structures for clinical MRI applications

Abstract:
The impact of magnetic resonance imaging (MRI) in the medical world continues steadily to grow. The non-invasiveness, absence of ionizing radiation, and a broad range of functional information that can be gathered in vivo constantly open new horizons for the application of magnetic resonance (MR) in clinics. As a result, human MR examinations become highly specialized with a well-defined and often relatively small target in the body. The latter, while being very valuable for boosting the MRI specificity, often implies an intensive usage of the high peak radiofrequency (RF) powers since

existing clinical MR equipment was initially designed to be universal that compromises its efficiency for a small target. Thus, advanced and valuable MR methods often cannot be (or only with a suboptimal performance) routinely applied in clinical MR studies.

This talk aims to overview the results in the field of using novel materials such as high permittivity ceramics, metamaterials, metasurfaces and artificial dielectrics for various MRI applications. The structures based on such novel concepts can be placed around the body for in vivo imaging, be integrated into a conventional RF coil, or be the resonator itself. Thus, it is possible to improve the quality of MRI scans. In particular, wireless coils based on metamaterial inspired structures electromagnetically couple to the body birdcage coil and can redistribute an electromagnetic field, focusing it in the region of interest. It improves locally transmit efficiency and receive sensitivity of the body coil, making it comparable with local receive arrays. The main advantages of such resonators are simplicity of the design (hence, robustness and ease of maintenance), absence of RF cables, and as a consequence, low cost. Moreover, these devices can be directly integrated and applied within any clinical MR scanner with no modifications to the scanner hardware.

Keynote Speaker VIII: Sheng Sun

Sheng Sun
University of Electronic Science and Technology of China, Chengdu

Speaker's bio:
Dr. Sheng Sun is a Full Professor with the University of Electronic Science and Technology of China, Chengdu, China. He received the B.Eng. degree in information engineering from Xi'an Jiaotong University, Xi'an, China, in 2001, and the Ph.D. degree in electrical and electronic engineering from Nanyang Technological University, Singapore, in 2006. He has authored or co-authored 1 book and 2 book chapters, and over 200 journal and conference publications. His current research interests include computational electromagnetics, microwave circuits, and antennas.

Dr. Sun currently serves as Associate Editor for IEEE MICROWAVE AND WIRELESS COMPONENTS LETTERS, IET ELECTRONICS LETTERS, and INTERNATIONAL JOURNAL OF RF AND MICROWAVE COMPUTER AIDED ENGINEERING. From 2010 to 2014, he was as an Associate Editor of IEICE Transactions on Electronics, and served as Guest Associate Editor for the Applied Computational Electromagnetics Society Journal in 2017 and the IEEE Journal on Multiscale and Multiphysics Computational Techniques in 2018. He was a recipient of the ISAP Young Scientist Travel Grant, Japan, in 2004, the Hildegard Maier Research Fellowship of the Alexander Von Humboldt Foundation, Germany, in 2008, the Outstanding Reviewer Award of IEEE MICROWAVE AND WIRELESS COMPONENTS LETTERS in 2010, as well as the General Assembly Young Scientists Award from the International Union of Radio Science in 2014.

Title: Microwave Multimode Circuits and Antennas for Wireless Communication System

Abstract:
The concept of multimode resonator has been widely employed for the design of microwave circuits and antennas during past several decades. There are an infinite number of modes existing in a single cavity. The theoretical analysis for the microwave filters was firstly presented by Prof. Wei-Guan Lin in 1951. There are many advantages such as saving space, weight, and cost, if more than one mode can be coupled and utilized together in a single cavity. This concept was then extended to many research areas including planar microstrip resonators for the design of different passive circuits and antennas, for example, multimode filters, power dividers, baluns, multimode patch antennas, and high-order leaky-wave antennas. Up to now, the challenging problems are still how to determine the number of possible useful modes in a single resonator and how to control more modes simultaneously. The interaction between each mode and how to control the coupling coefficient become more important and interesting research topics. In this talk, the history and design concept for the various mode properties, coupling, and small perturbation theory will be briefly reviewed. The latest research progress for the design of multimode circuits and antennas will be introduced, and the current research issues and future potential applications will also be discussed.

Invited Talks

Invited Talk 1: Feng Xu

Short Bio:
Feng Xu
Professor, Vice Dean
Key Lab for Information Science of Electromagnetic Waves (MoE)
School of Information Science and Technology
Fudan University
Shanghai, China

Prof. Xu received the B.E. with honor in Information Engineering from Southeast University, Nanjing, China and the Ph.D. with honor in Electronic Engineering from Fudan University, Shanghai, China, in 2003 and 2008, respectively. From 2008 to 2010, he was a postdoctoral fellow with the NOAA Center for Satellite Application and Research (STAR), Camp Springs, MD. From 2010 to 2013, he was with at Intelligent Automation Inc. Rockville MD, while partly working for NASA Goddard Space Flight Center, Greenbelt, MD as a research scientist. In 2012, he was selected into China's Global Experts Recruitment Program, and subsequently returned to Fudan University in June 2013, where he currently is a professor in the school of information science and technology and the vice director of the MoE Key Lab for Information Science of Electromagnetic Waves. He has published more than 60 papers in peer-reviewed journals and co-authored 3 books, among many conference papers. Among other honors, he was awarded the second-class National Nature Science Award of China in 2011. He was the 2014 recipient of the Early Career Award of IEEE Geoscience and Remote Sensing Society and the 2007 recipient of the SUMMA graduate fellowship in the advanced electromagnetics area. He currently serves as the associate editor for IEEE Geoscience and Remote Sensing Letters. He is the founding chair of IEEE GRSS Shanghai Chapter and member of IEEE GRSS AdCom. His research interests include electromagnetic scattering modeling, SAR information retrieval and radar system development.

Title: Deep Learning Methods and Applications in SAR Image Interpretation

Abstract: In the big data era of earth observation, deep learning and other data mining technologies become critical to successful end applications. Deep learning technology has revolutionized the computer vision areas, and is gradually being applied in radar remote sensing. Over the past several years, there has been exponentially increasing interests related to deep learning techniques applied to synthetic aperture radar (SAR) imagery. However, there are issues that are specific to SAR image interpretation such as limited training samples, sensitivity to observation configuration, or weak generalization ability. There are some techniques that can be used to mitigate these issues such as fusing electromagnetic physics laws with deep neural networks, using prior constraints of physical laws to realize few-shot learning capability, etc. This talk reports the recent progresses of the author and collaborators in this area.

Invited Talk 2: Zhi Hao Jiang
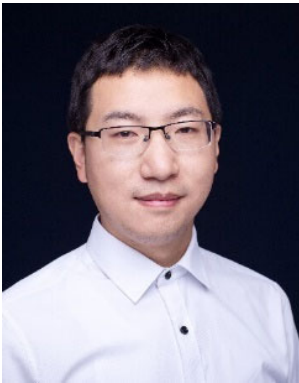
Short Bio:
Zhi Hao Jiang was born in Nanjing, China, in 1986. He received the B.S. degree in radio engineering from Southeast University, Nanjing, in 2008, and the Ph.D. degree in electrical engineering from The Pennsylvania State University, University Park, USA, in 2013. From 2013 to 2016, he was a Post-Doctoral Fellow with the Computational Electromagnetics and Antennas Research Laboratory, Department of Electrical Engineering, The Pennsylvania State University. He is currently a Professor with the State Key Laboratory of Millimeter Waves, School of Information Science and Engineering, Southeast University. His current research interests include microwave/millimeter-wave antennas and circuits, metasurfaces, and analytical methods.

Title: Modal-Expansion Analysis and Design of Metasurface-Loaded Body-of-Revolution Antennas

Abstract: In this talk, we present our recent works on the modal expansion analysis of various types of metasurface-loaded antennas, including wire, patch, and cavity radiators. The modeling approximation, field expression derivation, and numerical results will be illustrated. Such methods can yield accurate results yet with greatly reduced computional time and consumed memory. Furthermore, novel antennas designed and optimized by the proposed semi-analytical method have been fabricated and experimentally verified, which confirms the validity of the proposed analysis method and shows the advantage of properly incorporating AISs in conventional antenna structures.

Invited Talk 3: Yue Li

Short Bio:
Yue Li is currently an Associate Professor in the Department of Electronic Engineering at Tsinghua University. His current research interests include metamaterials, plasmonics, electromagnetics, nanocircuits, mobile and handset antennas, MIMO and diversity antennas, and millimeter-wave antennas and arrays. He has authored and coauthored over 170 journal papers and 50 international conference papers, and holds 25 granted Chinese patents. He is serving as the Associate Editor of IEEE Transactions on Antennas and Propagation, IEEE Antennas and Wireless Propagation Letters, and Microwave and Optical Technology Letters.

Title: Epsilon-near-zero Metamaterials

Abstract:
Metamaterials, or artificially structured composites, have triggered exciting opportunities to control electromagnetic waves. The epsilon-near-zero (ENZ) metamaterials, whose effective permittivity are close to zero, have drawn intensive interests over the past two decades. Here, we demonstrate the concept and exotic properties of ENZ metamaterials, and reveal their unique applications in wave engineering. Quite different from the conventional metamaterials consisting of periodically arranged meta-atoms, ENZ metamaterials can be constructed following a non-periodic paradigm, via the architectures of waveguides near the cut-off frequencies. The non-periodic essence of ENZ metamaterials can provide new degrees of freedom in many application scenarios. We envision the ENZ metamaterials can enrich the theory framework of artificially structured media and affect the applications in a wide range of fields, such as microwave, optics, material science, etc.

Invited Talk 4: Fei GAO

Short Bio:
Fei GAO, is a 100-Young Professor in Zhejiang University. He received Ph.D degree from Nanyang Technological University, Singapore, in 2016. His research interests include: metamaterials, plasmonics, and topological electromagnetics etc. Dr. Gao has authored over 50 scientific papers published in high-impact peer-reviewed journals, including Nature Materials, Nature Physics, Nature Communications, Physical Review Letters, Advanced Materials, IEEE TMTT, IEEE TAP etc.

He serves as session chairs for several important international conferences, and reviewers for many high-impact journals. He also serves as associate editor for Progress in Electromagnetism Research, and Frontiers in Materials, as well as topical Editor for Frontiers in Materials.

Title: Spoof-SPP enabled novel electromagnetic devices

Abstract: Spoof surface plasmon polaritons (SSPP) is an important surface electromagnetic mode, which promises in enabling miniaturized devices. In this talk, we will introduce two types of SSPP-enabled novel devices, i.e. enhanced terahertz photoconductive antenna, and robust topological waveguides. The former one shows increased directivity than its conventional counterparts, which is an ultrabroadband THz source. The latter one, an emerging device, exhibits immunities against disorders or sharp bends.

Invited Talk 5: Wen-Qin Wang
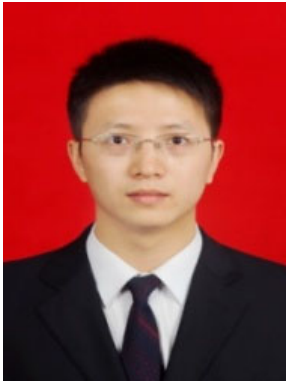
Short Bio:

Wen-Qin Wang received the B.E. degree in electrical engineering from Shandong University, Shandong, China, in 2002, and the M.E. and Ph.D. degrees in information and communication engineering from the University of Electronic Science and Technology of China (UESTC), Cheng- du, China, in 2005 and 2010, respectively. From March 2005 to 2007, he was with the National Key Laboratory of Microwave Imaging Technology, Chinese Academy of Sciences, Beijing, China. Since September 2007, he has been with the School of Information and Communication Engineering, UESTC, where he is currently a Professor. From June 2011 to May 2012, he was a Visiting Scholar with Stevens Institute of Technology, Hoboken, NJ, USA. From December 2012 to December 2013, he was a Hong Kong Scholar with the City University of Hong Kong, Hong Kong. From January 2014 to January 2016, he was a Marie Curie Fellow with the Imperial College London, U.K. His research interests span the area of array signal processing and circuit systems for radar, communications, and microwave remote sensing, whereas four books and over 300 papers have been published.

Title: Intelligent Flexible Conformal Array: Concepts and Applications

Abstract:
Intelligent flexible conformal array allows flexible and structure-adaptive array geometry to provide many promising applications. However, the array deformation may cause irregular, sparse, and coupling effects among complex array elements, which will lead to array manifold distortion, time variation and space variation problems. This talk will introduce the basic principles of intelligent flexible conformal array and discuss the potential applications in radar and communications. Several technical challenges will be pointed out to call for more future investigations.

Invited Talk 6: Ming-Chun Tang

Short Bio:

Ming-Chun Tang received the Ph. D. degree in radio physics from the University of Electronic Science and Technology of China (UESTC), in 2013. From August 2011 to August 2012, he was also with the Department of Electrical and Computer Engineering, The University of Arizona, Tucson, AZ, USA, as a Visiting Scholar. He is currently a full Professor in the School of Microelectronics and Communication Engineering, Chongqing University, China. His research interests include electrically small antennas, RF circuits, metamaterial designs and their applications.

Prof. Tang is the Senior Member of the Chinese Institute of Electronics. He was a recipient of the National Science Fund for Excellent Young Scholars in 2019. He is the founding Chair of the IEEE AP-S / MTT-S Joint Chongqing Chapter. He serves on the Editorial Boards of several journals, including Electronics Letters and IET Microwaves, Antennas & Propagation. He has also served on the review boards of various technical journals, and many international conferences as a General Chair, TPC Member, Session Organizer, and the Session Chair.

Title: Electrically Small Huygens Antennas and Arrays

Abstract:

With the development 5G/5G+ communications, a massive of portable mobile devices have received prosperous attentions so as to meet the coming Internet of Thing (IoT), which has quite strict requirements for the antennas in the aspect of miniaturization and radiation performance. For instance, in order to obtain the adaptability in different application environments, the antennas are desired to be miniaturized, directional, and multi-functional. Yagi/quasi-Yagi antennas are widely utilized in engineering as directional paradigms but their electrically sizes are generally deemed large.

To satisfy the application requirements of a certain space-limited environments, a series of electrically small Huygens antennas and arrays with high directivity, wide beamwidth, low profile, and multi functions, are developed and will be introduced in this talk. These developed electrically small Huygens antennas has no ground and are quite light in weight. These design paradigms of electrically small Huygens antennas and arrays are hoped to provide a certain new and reliable design principles and methods for antennas designs with high directivity, wide bandwidth and multi-functions.

Invited Talk 7: Xiaoming Chen

Short Bio:

Xiaoming Chen received the B.Sc. degree in electrical engineering from Northwestern Polytechnical University, Xi'an, China, in 2006, and M.Sc. and Ph.D. degrees in electrical engineering from Chalmers University of Technology, Gothenburg, Sweden, in 2007 and 2012, respectively. From 2013 to 2014, he was a postdoctoral researcher at the same University. From 2014 to 2017, he was with Qamcom Research & Technology AB, Gothenburg, Sweden. Since 2017, he has been a professor at Xi'an Jiaotong University, Xi'an, China. His research areas include MIMO antennas, over-the-air testing, reverberation chambers. He has published more than 150 journal articles on these topics. Prof. Chen currently serves as a Senior Associate Editor for IEEE Antennas and Wireless Propagation Letters. He was the general chair of the IEEE International Conference on Electronic Information and Communication Technology (ICEICT) in 2021. He won the first prize of universities' scientific research results in Shaanxi province, China, 2022. He received the IEEE outstanding Associate Editor awards 2018, 2019, 2020, 2021, and 2022, and URSI (International Union of Radio Science) Young Scientist Award 2017 and 2018.

Title: Simultaneous Decoupling and Decorrelation for MIMO Performance Enhancement in Realistic Multipath Environment for Access Point Applications

Abstract:
The MIMO system is a crucial technology to cope with the high capacity demand of the fourth-generation (4G) and fifth-generation (5G) communication. To avoid grating lobes, the inter-element spacing of the MIMO array is usually no larger than half-wavelength, resulting in high mutual couplings and high correlations. Various decoupling techniques have been proposed. It is common believed that low coupling ensured low correlation, however, this is incomplete and this misconcept will be discussed in this talk. In realistic multipath scenarios with limited angular spread (AS), two antennas separated by half-wavelength can still be highly correlated. This is especially true for MIMO arrays at base stations (BS) or access points (AP), where the angular spread is usually much smaller than that at the user equipment. By placing several phase correcting elements (PCE) at different heights over the array, the near-field phase distribution is modified to resemble that of an array with larger inter-element separation, as shown in Fig. 1. To reduce the multi-layer complexity, an improved decorrelation method is proposed, where the equivalent phase centers of the array elements is stretched by placing a single-layer scatterer array consisting of PCEs in front of the MIMO array, leading to reduced correlations (cf. Fig. 2). The latter method can be tuned to be compatible for some existing decoupling technique. As a result, a joint decoupling and decorrelation method will be proposed in this talk. The MIMO arrays are designed, fabricated, tested. The results show a significant improvement of the MIMO performances in realistic multipath scenarios for BS/AP applications.

Invited Talk 8: He-Xiu Xu
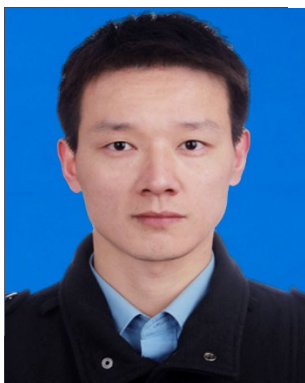
Short Bio:

He-Xiu Xu (S'11, M'14, SM' 17) was born in China in 1985. Dr. Xu was promoted to a full Professor in 2020 in Air Force Engineering University. He has published more than 130 peer-reviewed first-author and co-author journal papers in Research, Nature Materials, Nature Photonics, Light: Sci. Appl., Materials Today, Proceedings of IEEE, Advanced materials, Laser Photonics Rev., ACS Photonics, Advanced Optical materials, Advanced Material Technologies, Photonics Research, IEEE Transaction on Antennas and Propagations. He has also published 3 Chinese books, 1 English book and 2 English book chapters. He served as an editor of AEU Int. J. Electron. Commun since 2014, a guest editor for Special Issue "Metamaterial Circuits and Antennas" of 'International Journal of RF and Microwave Computer-Aided Engineering' in 2018, an associate editor for IEEE Photonics Journal since 2021. His research interests include passive/active metamaterials/metasurfaces, and their applications to novel microwave functional devices and antennas.

Dr. Xu received the 8th China Youth Science and Technology Innovation Award in 2013. He won the best Excellent Doctoral Dissertation Award at Air Force Engineering University in 2014 and later received the Excellent Doctoral Dissertation Award from Military, Shaanxi Province, and Chinese Institute of Electronics (CIE). He receives the URSI GASS Young Scientist Award, URSI AP-RASC Young Scientist Award, and URSI EMTS Young Scientist Award and ACES Young Scientist Award in 2019, URSI URSI-GASS Young Scientist Award in 2020 and Progress In Electromagnetics Research Symposium Young Scientist Award for SC2 and SC4 in 2019 and 2021, respectively. He was also granted several Scientific and Technological Progress Awards like Gold Award of National technological invention, Special Prize of Scientific and Technological Progress Award by Education Department of Shaanxi Provincial Government and Second Prize of Scientific and Technological Progress Award by CIE. He was awarded outstanding scientific and technological worker of CIE in 2018, Technical Star Award by the Government of Xi'An, Outstanding Young Talent Award in Universities by the Education Department of Shaanxi Provincial Government and Young top talents of Shaanxi special talents supported by the Government of Shaanxi Province in 2019, and Cheung Kong Scholar in 2020. He received Outstanding Paper Awards from Light Science & Applications in 2019 and from Research in 2022, The 14th Excellent Scientific Paper Award from Shaanxi Government in 2019, Annual Excellent Research Paper Awards from CIE in conformal metasurface in 2020 and multiplexing metasurface in 2022. Dr. Xu is now also a Fellow of IET, a Senior Member of CIE, and a committee member of antenna branch of CIE.

Title: Kirigami-Inspired Transformable Metamaterials Enables Adaptable Invisibility Management

Abstract: Many real-world applications, including adaptive radar scanning and smart stealth, require reconfigurable multifunctional devices to simultaneously manipulate multiple degrees of freedom of electromagnetic (EM) waves in an on-demand manner. Recently, kirigami technique, affording versatile and unconventional structural transformation, has been introduced to endow metamaterials with the capability of controlling EM waves in a reconfigurable manner. Here, we report for the first time a kirigami-inspired sparse meta-architecture, with structural density of 1.5% in terms of the occupation space, for adaptive invisibility based on independent operations of frequency, bandwidth and amplitude. Based on the general principle of dipolar management via structural reconstruction of kirigami-inspired meta-architectures, we demonstrate reconfigurable invisibility management with abundant EM functions and a wide tuning range using three enantiomers (A, B and C) of different geometries characterized by the folding angle β. Our strategy circumvents issues of limited abilities, narrow tuning range, extreme condition and high cost raised by available reconfigurable metamaterials, providing a new avenue toward multifunctional smart devices.

Invited Talk 9: Yanhui Liu

Short Bio:

Yanhui Liu (Senior Member, IEEE) received the B.S. and Ph.D. degrees both in electrical engineering from the University of Electronic Science and Technology of China (UESTC) in 2004 and 2009, respectively. From September 2007 to June 2009, he was a Visiting Scholar in the Department of Electrical and Computer Engineering at Duke University, Durham, NC. In July 2011, he joined in the Department of Electronic Science, Xiamen University, China, where he was 5 years later promoted as a Full Professor. From September to December in 2017, he was a Visiting Professor at State Key Laboratory of Millimeter Waves in City University of Hong Kong. From December 2017 to December 2019, he had been with Global Big Data Technologies Centre, University of Technology Sydney (UTS) as a Visiting Professor/Research Principal. From November 2019, he has been a Professor at UESTC. He was a recipient of the UESTC Outstanding Graduate Award in 2004, the Outstanding Doctoral Dissertation Award of Sichuan Province of China in 2011, the Sichuan Province Distinguished Expert in 2021, the Young Scientist Awards of PIERS in 2022. He has authored and co-authored over 120 peer-reviewed journal articles and 50 international conference papers. He holds 21 Chinese invention patents in antennas and applied electromagnetics. His research interests include antenna array design, reconfigurable antennas, and electromagnetic scattering and imaging.

Title: Efficient Synthesis of Antenna arrays with Wideband Frequency Invariant Beam Patterns

Abstract:
Antenna Arrays with wideband frequency-invariant (FI) patterns have received increased attention due to the advantage of receiving wideband signals without wave form distortion. The FI array usually consists of antenna elements, each connected to a finite-impulse-response (FIR) filter where a set of filter coefficients are used to produce a frequency-dependent excitation required for a desired FI pattern. A typical FI pattern synthesis method is applying convex optimization to obtain appropriate FIR coefficients such that the obtained pattern has the required FI property while meeting a given sidelobe bound. However, this method costs a huge CPU time since it is involved with optimization of a large number of FIR coefficients (the total number of FIR coefficients is equal to the element number multiplied with the filter length) under a number of wideband pattern constraints. In this talk, we develop two new and efficient FI beam pattern synthesis methods: one method is called the iterative spatiotemporal Fourier transform (ISTFT) for FI pattern synthesis of uniformly spaced arrays, and the other method is a generalized alternating projection approach (GAPA) which can deal with FI pattern synthesis for nonuniformly spaced antenna arrays. Several example for synthesizing different FI patterns including FI focused and shaped patterns are conducted to validate the effectiveness of the proposed techniques. The comparison with the existing techniques are also provided to verify the advantage. FI pattern synthesis for a real antenna array structure considering mutual coupling is also provided in the examples.

Invited Talk 10: Kuang ZHANG

Short Bio:
Prof. Kuang ZHANG received his B.Sc. in Electronics and information Engineering, M. Eng. In electrical engineering, and Ph.D. in Electrical and Computer Engineering, all at Harbin Institute of Technology (HIT), Harbin, China in 2005,2007, and 2011, respectively. He worked as a Visiting Professor at University of Wisconsin-Madison in U.S., from 2015 to 2016, as a Guest Professor at Université Paris Nanterre in France during 2018. Since 2010, he has been with the Dept. of Microwave Engineering, School of Electronics and Information Engineering at HIT, China, where he is currently a full professor.

As the first author / corresponding author, Prof. ZHANG has published 37 papers in international peer-reviewed journals, including Nature Communications, Advanced Materials, IEEE Transactions on Antennas and Propagation, etc. All these papers have been cited for more than 2500 times in Google Scholar, and his H-index is 27. Among these papers, 6 papers have been indexed as ESI highly cited paper, 1 paper has been indexed as ESI Hot paper. He has been serving as an editorial board member for Scientific Reports (Nature Publishing Group) since 2014. His recent research interests are mainly in metamaterals and metasurface, novel antennas and manipulations of electromagnetic waves. He is also a member of IEEE and the secretary of IEEE Harbin EMC/AP/MTT joint society chapter. He worked as a TPC member for international conferences for several times. He is also invited to give invited talks in many conferences, including META 15, IMWS-AMP 2016, META 17, etc.

Title: At will energy distribution among diffraction patterns with nonlinear phase gradient metasurfaces

Abstract:
It has been a long-standing goal to achieve the excitation of arbitrary beams. In early research, the symmetrical splitting of beams was realized by Damman gratings and continuous gratings in optical region. With the in-depth study of metasurface, the diffraction beams are gradually excited by discrete elements, such as phase gradient metasurfaces (PGMs) or metagratings (MGs). However, most studies only focus on symmetrical diffraction orders. Though MGs can excite different propagating diffraction orders with equally energy, it is still difficult to excite beams with different energy. To address the challenges, the concept of nonliear phase gradient is introduced to control diffraction patterns, which can provide the sufficient degree of freedom and ensure the metasuface lossless. A variety of diffraction situations are taken into consideration. The simulated and measured far-field patterns are in good agreement with theoretical predictions. The proposed method paves the way for wireless communication applications and can be extend to other frequency region.

Invited Talk 11: Zai Yang

Short Bio:

Zai Yang is a Professor of the School of Mathematics and Statistics, Xi'an Jiaotong University, China. He received the B.Sc. degree in mathematics and M.Sc. degree in applied mathematics from Sun Yat-sen (Zhongshan) University, China, in 2007 and 2009 respectively, and the Ph.D degree in electrical and electronic engineering from Nanyang Technological University (NTU), Singapore, in 2014. He is an IEEE Senior Member and serving on the editorial board of Signal Processing (Elsevier). His research interests include compressed sensing and optimization theory and their applications in signal and information processing, big data analytics, and machine learning. He was awarded the NSFC Excellent Youth Science Foundation Grant in 2019.

Title: Low-rank optimization methods for spectral compressed sensing

Abstract:
Spectral compressed sensing refers to the recovery of a spectrally sparse signal from compressive measurements and has wide applications in radar and wireless communications. It is linked to low-rank matrix recovery by applying Kronecker and Carathéodory-Fejér theorems for Hankel and Toeplitz matrices, based on which convex and nonconvex optimization algorithms have been proposed. In this talk, we will introduce previous low-rank matrix recovery formulations and point out their limitations. After that, we present two new low-rank optimization models to resolve these limitations and demonstrate their effectiveness with convex and nonconvex algorithms.

Invited Talk 12: Yongli Zhao

Short Bio:
Yongli Zhao is a full professor at BUPT. During Jan. 2016 to Jan. 2017, he was a visiting scholar at UC Davis. Now, he is a Fellow member of IET, senior member of IEEE and OSA. His current research focuses on optical fiber networks, satellite optical communication networks, and quantum key distribution networks. Up to now, he has published more than 400 international journal and conference papers. He has granted more than 100 patents. He also participated in many international standards works, and he has submitted 90 drafts to ITU-T and IETF.

Title: Key Technologies in Dynamic Optical Satellite Networks

Abstract:
Satellite communication network is becoming an important information infrastructure for 5G and 6G. Space optical communications will be an inevitable choice for satellite communication networks, especially for inter-satellite communications, due to the capability of high speed and long distance transmission. However, because the satellites are always moving around the earth, the satellite communication networks topology is changing all the time including the inter-satellite link (ISL) distance and ground-satellite link (GSL) connection, which brings many challenges for the satellite communication networks. This talk covers topics of control architecture, routing algorithm, signaling protocol, and survivability mechanism of satellite optical communication networks.

Invited Talk 13: Xiaolong Chen

Short Bio:
Xiaolong Chen (SM'21) (M'12–SM'21) was born in Yantai, Shandong, China, in 1985. He received the bachelor's and master's degrees in signal and information processing and the Ph.D. degree in radar signal processing from Naval Aviation University (NAU), Yantai, in 2008, 2010, and 2014, respectively. He is currently an Associate Professor with the Marine Target Detection Research Group in NAU. He has published more than 100 academic articles, 3 books, and holds 42 national invention patents. His research interests include radar signal processing, especially for marine target detection and recognition.

In 2016, Dr. Chen was selected in the Young Talents Program of China Association for Science and Technology (CAST), and received the Excellent Doctor Dissertation of CIE. In 2017, he received the Chinese Patent Award. In 2019, he won the Civil-military Integration Award of China Industry-University-Research Institute Collaboration Association (CIUR). He was selected for the Young Scientist Award both at 2019 URSI Asia-Pacific Radio Science Conference and 2019 International Applied Computational Electromagnetics Society Symposium, China (ACES). He is the senior member of IEEE and CIE and has served as the Committee Member of CIE Youth Commission, and Vice Executive Secretary of Radar and Information System Committee of CIE Young Scientist Club since 2018. He has been in the Editorial Board of Journal of Radars since 2019, Journal of Signal Processing since 2020, and served as an Associate Editor of IEEE Access since 2018. In 2022, he was supported by the National Science Fund for Excellent Young Scholars. He is the reviewer for IEEE TAES, IEEE TSP, IEEE SPL, IEEE TGRS, IEEE GRSL, IEEE JSTARS, IET RSN, IET SP, IET EL, DSP, and many international conferences.

Title: Long-time integration and applications for drone target radar detection

Abstract: With the gradual opening of low-altitude airspace, "low, slow and small" aircraft represented by UAVs have developed rapidly. Ordinary rotary-wing drones are low cost, easy to operate, few restrictions on liftoff. Illegally flying drones pose a huge threat to flight and public safety, and have become a common challenge and threats faced by the world. The detection and identification of "low, slow and small" drones by radar have been an international problem. In recent years, with the development and application of digital array radar, ubiquitous radar, and MIMO radar, new methods have been provided for drone detection. Compared with traditional radar, in addition to measurement information of distance and azimuth, they can also obtain high-resolution Doppler information of the target via long-time integration to achieve high resolution estimation and excellent target detection performance. This talk will introduce the application of the long-time coherent integration technology for drone target detection, and show the experiment with the digital array ubiquitous radar.

Invited Talk 14: Fu-Chang Chen

Short Bio:

Fu-Chang Chen received the Ph.D. degrees in electromagnetic field and microwave technology from South China University of Technology (SCUT), Guangzhou, China, in 2010. He is currently a Professor of the School of Electronic and Information Engineering, SCUT. He was a recipient of the National Science Foundation for Outstanding Young Scholars of China, the Top-notch Young Talent of Guangdong Province and the Scientific and Technological Award of Guangdong Province. He serves as vice director of Guangdong Provincial Key Laboratory of Short-Range Wireless Detection and Communication. He has authored or coauthored more than 100 internationally referred journal papers including 35 IEEE TRANSACTIONS papers. His primary research interests include synthesis theory and design of microwave filters and antennas.

Title: Compact and High Selectivity Waveguide Filters Using Resonant Coupling Structures

Abstract: Two novel resonant coupling structures for designing waveguide bandpass filter will be introduced in this presentation. The utilization of the proposed structures can not only reduce the size of the waveguide filter, but also realize different topologies to achieve multiple transmission zeros distribution. Two third-order waveguide filters and one fifth-order waveguide filter have been designed for verifying the proposed method, demonstrating that the proposed resonant structures can be potentially attractive for miniaturization applications.

Invited Talk 15: Bian Wu

Short Bio:

Bian Wu was born in Xianning, Hubei Province, in 1981. He received the B.S. and Ph.D. degrees in electromagnetic fields and microwave technology from Xidian University, Xi'an, China, in 2004 and 2008, respectively. Since 2008, he worked with the National Key Laboratory of Antennas and Microwave Technology at Xidian University. From March 2013 to February 2014, he was a postdoctoral visitor in Queen Mary, University of London, U.K. Now he is a professor and Ph.D supervisor at Xidian University, and the director of the Xi'an Key Laboratory of Millimeter wave and Terahertz Technology. His research interests include microwave and millimeter wave components and systems, lowdimensional material electromagnetic devices and antennas, millimeter wave and terahertz systems. He has authored or coauthored more than 100 journal publications, and has been authorized more than 30 Chinese national invention patents. He has served as the technical committee member and session chairman of many international conferences, has served as the reviewer of IEEE TMTT, IEEE TAP, IEEE MWCL, IEEE AWPL, IEEE TEMC and other international journals. He won the Excellent Doctor Paper Award in Shaanxi Province in 2011, the first prize of University Science and Technology in Shaanxi Province in 2013 and 2022, and the second prize of Science and Technology in Shaanxi Province in 2015.

Title: Research Advance on Multifunctional Frequency Selective Surface

Abstract:

With the increasing complexity of the space electromagnetic environment and the diverse needs of practical engineering applications, the research on multifunctional frequency selective surfaces (FSS) has very important practical significance. In this report, we will introduce the concept of FSS, FSA & FSR, and then present the equivalent circuit analysis and structure design of several kinds of multifunctional frequency selective surfaces (FSSs), such as flexible FSS, Miniaturized FSA, Miniaturized FSR as well as low-loss FSR.

Invited Talk 16: Lei Zhang

Short Bio:

Lei Zhang received the B.S. degree in communication engineering from Anhui University, Hefei, China, in 2009, and the M.S. and Ph.D. (Premio Extraordinario de Doctorado) degrees in telecommunications from the Universidad Politécnica de Madrid (UPM), Madrid, Spain, in 2013 and 2016, respectively. In 2016, he was a Visiting Scholar with the University of South Carolina, Columbia, SC, USA. From 2016 to 2017, he was a Research Assistant Professor with the Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Science, Shanghai, China. Since 2019, he has been an Associate Professor with the College of Information Science and Technology, Donghua University, Shanghai. His research interests include wireless channel modeling and wearable computing.

Title: A Task Offloading Strategy for Compute-Intensive Scenarios in UAV-Assisted IoV

Abstract:
With the development of the low-altitude digital economy and the further improvement of the Internet of Vehicles (IoV), the IoV assisted by Unmanned Aerial Vehicle (UAV) has been promoted in many fields. Under task intensive scenarios, UAV-assisted Mobile Edge Computing (MEC) has been extensively studied due to its flexibility and efficiency. However, with random distribution of computing data, the deployment of UAV and offloading strategy are important issues to be solved. In this context, this paper proposes a UAV-assisted offloading strategy, considering fixed and mobile edge nodes respectively, to meet the requirements of low latency and high reliability of vehicle users. It has been experimentally verified that our system reduces the delay by 30%.

Invited Talk 17: Mei Li
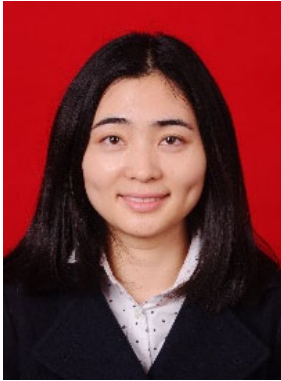
Short Bio:
Mei Li received Ph.D. degree from University of Electronic Science and Technology of China (UESTC) in 2016. From 2014 to 2016, she was working with the Applied Electromagnetics Research Group, University of California, San Diego (UCSD) as a visiting PhD student. From 2020 to 2022, she was working with University of Macao (UM) under UM Macao Talent Program as a Postdoc Research Fellow. She is currently working as an Associate Professor at Chongqing University. She was the recipient of the Young Scientist Award Scheme of the 2019 International Applied Computational Electromagnetics Society (ACES) Symposium in China. She has published over 80 journal publications and conference proceedings. Her research interests include metasurface-based electromagnetic devices, antennas and arrays.

Title: Control the antenna beam behavior by customized metasurfaces

Abstract:
With modern wireless communications systems developing toward 5G and beyond, there is an increasing demand on the control of the antenna beam behavior, such as, high-gain pencil-beam radiation to expand the communication distance, and specific tilted-beam radiation to cover the required local service area. The conventional method to accomplish this task is to utilize antenna arrays in the types of parallel- or series-fed arrays. Nevertheless, since extra feeding network would inevitably increase the antenna design complicity, overall dimensions, and insertion losses. It is therefore highly desired to developed new antenna types and design methods to fulfill this task without relying on any complex feeding networks. In this talk, we will introduce several design methods to conveniently and efficiently control the beam behavior by customized metasurfaces.

Invited Talk 18: Danping He

Short Bio:
Danping He received B.E. degree from Huazhong University of Science and Technology in 2008, M.Sc. degree from the Universite Catholique de Louvain (UCL) and Politecnico di Torino (PdT) in 2010, and Ph.D. degree from Universidad Politecnica de Madrid in 2014. In 2012, she was a visiting scholar in Institut national de recherche en informatique et en automatique, France. She worked in Huawei Technologies from 2014 to 2015 as a research engineer. From 2016 to 2018, she was postdoctoral researcher in the State Key Laboratory of Rail Traffic Control and Safety, Beijing Jiaotong University. She is now working in Beijing Jiaotong University as an Associate Professor. She has authored/co-authored more than 40 papers and received 2019 Applied Computational Electromagnetics Society (ACES)-China Young Scientist Award. Her current research interests include radio propagation and channel modeling, ray-tracing technologies and wireless communication algorithm design.

Title: Ray-tracing based 5G Coverage Analysis Capacity Evaluation in an Indoor Hotspot Scenario

Abstract:
As an important scenario in the vision of "smart buildings", office buildings are a typical indoor hotspot environment and therefore, require seamless connectivity and massive data transfer with Gbps throughput. In China, the band of 3.3-3.4 GHz has been allocated for the indoor deployment of fifth-generation mobile communication system (5G). Compared to lower frequencies, the 3.3-3.4 GHz band suffers a larger propagation loss. Moreover, modern office buildings are composed of various scenarios such as open/closed offices, open spaces, corridors, and so on which have distinguished physical and geometrical features that complicate wave propagation. As a result, it is challenging to deploy a high-quality 5G network in such a complex indoor environment. In this paper, we conduct extensive ray-tracing (RT) simulations in a typical office building at the 3.3-3.4 GHz band. Based on the findings through analyzing the coverage in every separate scenario, a solution of optimal deployment of transmitters (TXs) is presented to meet the requirement of the synchronization signal reference signal received power (SS-RSRP). The channel capacity is evaluated through system-level simulations, implying that with the proposed solution in this paper, the peak throughput can reach 1.5 Gbps in certain areas while future efforts should be made to improve the throughput in the areas suffering strong interference caused by omni-directional Tx antennas. These results provide valuable insights into the system design and evaluation for 5G communication-empowered smart buildings.

Invited Talk 19: Xingang Ren

Short Bio:
Xingang Ren received the Ph.D. degree in the Department of Electrical and Electronic Engineering at the University of Hong Kong (HKU) in 2016. From Nov. 2016 to Nov. 2018, he worked as a Research Associate at HKU. He is currently an Associate Professor in the Information Materials and Intelligent Sensing Laboratory of Anhui Province and School of Electronic and Information Engineering, Anhui University, China. His research interests include theoretical and computational research in electromagnetics and optics, focusing on multiphysics and interdisciplinary research.

Dr. Ren is the Senior Member of the Chinese Institute of Electronics, and member of IEEE and OSA. He was a recipient of the hundred talents of Anhui Province and Young Wanjiang Scholar of Anhui Province. He severs as the guest editor of Frontiers in Materials, Nanomaterials etc., he has also served on the review boards of various technical journals, and many international conferences as a TPC Member, Session Organizer, and the Session Chair.

Title: Dual Quasi-Bound States in the Continuum Modes for Optical Activity Manipulation

Abstract: The Bound states in the continuum (BIC) mode reside inside the continuous spectrum of the extended radiating state, which is a perfectly confined mode in space with a theoretically infinite lifetime. The quasi-bound states in the continuum (quasi-BIC) are a particular resonant state, which can be regulated by the degree of symmetry breaking in nanostructures. Here, we propose a fourfold rotationally symmetric (C_{4v}) metasurface supporting the dual quasi-BIC modes. The Fano characteristics have observed in the near-infrared region. The resonant peaks of the dual quasi-BIC modes can be adjusted flexibly and independently with a simple breaking of the structural symmetry. Importantly, the dual quasi-BIC modes demonstrate the extraordinary capability in controlling the optical activity and reveal the polarization selectivity. The topological charges and multipole analysis have adopted to understand the underlying physics. This work will offer us more freedom for controlling the resonance and optical activity by the quasi-BIC modes, which is promising to engineer the optical device in displaying and optics communications.

Invited Talk 20: Ming Fang

Short Bio:
Ming Fang received the B.S. degree in Electronic Information Engineering from Anhui University in 2011, M.S. and Ph.D. in Electromagnetic Field and Microwave Technology from Anhui University in 2014 and 2018. From March to September 2015, he was a Research Assistant in the Department of Electrical and Electronic Engineering at the University of Hong Kong. From January 2016 to January 2018, he was a joint Ph.D. student in Ames Laboratory at Iowa State University. From May 2021 to May 2022, he was a Visiting Associate Professor in the Department of Physics at the University of Hong Kong. He is currently an associate Professor in the Department of Electronic Information Engineering, Anhui University, China. His research interests include computational electromagnetics, multiscale/multiphysics EM modeling, and nonlinear metamaterials. He has published over 40 research papers, including Physical Review Letters, Nano Letters, IEEE Transactions on Antennas and Propagation, and Computer Physics Communications.

Title: Multiphysics Electromagnetic Modeling in Nonlinear Metasurfaces

Abstract: The nonlinear optical effects originating from the light-matter interaction under intense light excitations have enabled numerous novel applications, such as frequency conversion, all-optical modulation, and ultrafast optical switching. Recent years, the development of metamaterials, photonic crystals, and topological optics allow unconventional enhanced nonlinear effects that may potentially exceed traditional nonlinear materials. In this talk, advanced multiphysics electromagnetic modeling of nonlinear optical effects in nanoscale metasurface will be discussed. Several exotic nonlinear optical applications, including broadband terahertz source based on plasmonic metasurfaces, nonlinear Fano resonances, and nonlinear interaction of topological graphene plasmons will be presented.

Oral Session and Special Session

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Guan-Long Huang (Foshan University)
Wei Lin (University of Technology Sydney)</td></tr>
<tr><td colspan="3" align="center">08:30-10:30 Morning of August 23, 2022
Conference ID: 400 308 940
Chair: Luyu Zhao, Guan-Long Huang, Wei Lin</td></tr>
<tr><td colspan="3" align="center">Paper Information</td></tr>
<tr><td>SS2-1
08:30-08:45</td><td>A Dual-polarized Patch Antenna Array with The Decoupling Structure with Polarization Rotation
Shuxin Zheng, Xiaoming Chen
Xi'an Jiaotong university</td><td>6702</td></tr>
<tr><td>SS2-2
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Jiang Jiayue, Zhao Ge, Liu Ting, Yang Hui, Zhao Luyu, Zhang Lu, Liang Shuo</td><td>6960</td></tr>
<tr><td>OS1-1
09:00-09:15</td><td>A Dual-layer Zero Trust Architecture for 5G Industry MEC Applications Access Control
Zebing Feng, Peng Zhou, Qi Wang, Weiqiang Qi
China Academy of Information and Communications Technology</td><td>6936</td></tr>
<tr><td>OS1-2
09:15-09:30</td><td>Blockchain based Energy IoT Data Trusted Collection and Transmission
Ruijia Fan, Liang Yin, Shengyu Gao, Weiya Zhang, Qiang Li, Feng Zhao
Beijing University of Posts and Telecommunications</td><td>6931</td></tr>
<tr><td>OS1-3
09:30-09:45</td><td>Outer Synchronization of Fractional-Order Complex-Valued Multiple Weights Networks with Coupling Delay
Ya Wang, Dawei Ding, Yongbing Hu, Zongli Yang
Anhui University</td><td>6826</td></tr>
<tr><td>OS1-4
09:45-10:00</td><td>Projective Synchronization of Fractional Order Quaternion Valued Memristive Neural Networks with Time-varying Delay
Lei Wang, Dawei Ding, YongBing Hu, ZongLi Yang
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<tr><td>OS1-5
10:00-10:15</td><td>MCMC Based Bit-wise Detection for OTFS Modulation with Complexity Reduction
Bowen Wang, Zheng Jiang, Shan Yang, Jianchi Zhu, Xiaoming She, Peng Chen
China Telecom Research Institute</td><td>6734</td></tr>
<tr><td>OS1-6
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Nanxi Li, Jianchi Zhu, Hang Yin, Xiaoming She, Peng Chen
China Telecom Research Institute</td><td>6701</td></tr>
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OS2-1 09:00-09:15	Multistable State of Six Dimensional Memristor HR Neuron Model and Its Hardware Implementation *Qingjie Sun, Yongbing Hu* Anhui University	6967
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OS3-2 09:00-09:15	Analysis of Marine Wireless Communication Channel under High Sea Conditions *Youfang Hu, Lin Xu, Jincheng Gao, Peisong Jia, Beiming Li, Yidong Xu* Harbin Engineering University	6892
OS3-3 09:15-09:30	A Four-arm Archimedean Spiral Antenna with Multi-mode Orbital Angular Momentum *Qian Sixian, Meng Lulu, Huang Zhixiang, Li Yingsong, Yang Lixia* Anhui University	6796
OS3-4 09:30-09:45	Coexistence strategy of nuclear power equipment and wireless communication technology *Mingjian Liu, Zhiguo Liu, Xinjun Ma, Xiaoya Li, Yi Zheng, Guangsong Yang, Qiubo Ye* Shandong Nuclear Power Company LTD.	6794
OS3-5 09:45-10:00	A Low-profile Anti-interference Dual-Port Pattern Reconfigurable Monopole Antenna For 5G Applications *Songjiang Zhao, Yu Luo, Ningning Yan* Tianjin Key Laboratory of Imaging and Sensing Microelectronic Technology, School of Microelectronics Tianjin University	6712
OS3-6 10:00-10:15	Design of a Single-Layer Wideband Filtering Slot Antenna *Zihan Chen, Jiawei Zang*	7006
OS3-7 10:15-10:30	Design of Ultra-Thin Metamaterial Absorber Based on Resistive Film Technology *Chengxiang Xu, Jiawei Zang*	7005

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Special session 24: Wearable Textile and Clothing Antennas Kwok L. Chung (Huizhou University) Botao Feng (Shenzhen University)		
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SS24-1 08:30-08:45	Yagi Antenna Based on Dual-Element Folded Dipole *Rongjie Ke, Botao Feng, Xiao Ding* Shenzhen University	6785
SS24-2 08:45-09:00	Design of Substrate Integrated Magneto-Electric Dipole Antenna for 5G Base Station *Dongting Huang, Botao Feng, Xiao Ding* Shenzhen University	6784
SS24-3 09:00-09:15	A Novel Design of Log-Periodic Koch Dipole Array (LPKDA) Antenna *Rihui Chen, Botao Feng, Xiao Ding* Shenzhen University	6783
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SS24-5 09:30-09:45	Design of a Dielectric Lens Antenna with the Similar Shape of Half Maxwell Fish-Eye (HMFE) *Zhengdong Zhou, Botao Feng, Xiao Ding* Shenzhen University	6781
SS24-6 09:45-10:00	Broadband Dielectric Characterization of Textile Materials for Clothing Antenna Applications *Xin Cheng, Kwok L. Chung, Hao Wang, Zhiwei Fu, Jiating Wen, Guoming Lai* Huizhou University	6708

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	Special session 4: Dual-band Dual Circular Polarization Antenna Techniques Kuikui Fan (Hangzhou Dianzi University) Jianxing Li (Xi'an Jiaotong University)	
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	Paper Information	
SS4-1 08:30-08:45	A Millimeter-Wave Dual-Polarized Filtering Patch Antenna Array Supported by High-Order SIW Cavity *Weitao Zhao, Wenlei Wang, Huayan Jin, Guo Qing Luo* Hangzhou Dianzi University	6912
SS4-2 08:45-09:00	Dual-Band Circularly-Polarized SIW Antenna Array Using High-Order Modes in Ka-Band *Xiaoyan Yu, Sifan Wu, Jianxing Li, Kai-Da Xu, Sen Yan, Juan Chen* Xi'an Jiaotong University	6871
SS4-3 09:00-09:15	Dual-Band Dual-Circularly Polarized Shared-Aperture mmWave Antenna *Sifan Wu, Jianxing Li, Junwei Shi, Yuanxi Cao, Sen Yan, Juan Chen* Xi'an Jiaotong University	6849
SS4-4 09:15-09:30	Design of A Dual-Band Circularly Polarized Phased Array Using Characteristic Mode Analysis *Wendong Liu, Sen Yan* Xi'an Jiaotong University	6848
SS4-5 09:30-09:45	A K/Ka-Band Diplex Circularly Polarized Horn Antenna with High Isolation *Ping He, Kuikui Fan, Guoqing Luo* Hangzhou Dianzi university	6751
SS4-6 09:45-10:00	Design of a Novel Dual-band Printed Dipole Antenna *Lei ZHOU, FuQiang LI, Yu WANG, ZhiYa ZHANG* 20th Institute of China Electronics Technology Group Corporation	6745

	Oral Session (Topic II) & Special session 1 Topic II. Signal Processing (SP) and Information Technology Special session 1: Adaptive signal processing - algorithms and applications Yi Yu (Southwest University of Science and Technology) Lu Lu (Sichuan University)	
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OS2-6 10:35-10:50	A Gong-Si-Shaped Heterogeneous Circular-Polarization Array for 5G Application *Zhou Wei, Qi Junwei, Li Yingsong, Huang Zhixiang, Lixia Yang* Harbin Engineering University	6770
OS2-7 10:50-11:05	Rolling Bearing Fault Research based on Multiple Denoising and PSO-MCKD *Ao Zhu, Wanying Zhang, Guoli Ma, Xiang Lu* Shandong University of Science and Technology	6765
OS2-8 11:05-11:20	Design of smart wearable Bracelet based on Android mobile phone *Yang Deng, HuiRong Li* School of Electrical Information Engineering Panzhihua University	6759
SS1-3 11:20-11:35	Low-Complexity Hermite Nonlinear Filter for Active Noise Control *Lu Lu, Yang Xiaomin* Sichuan University	6793
SS1-4 11:35-11:50	M-estimate based Proportionate Normalized Adaptive subband filter with Combined Step-size *Jianhong Ye, Yi Yu* Southwest University of Science and Technology	6752

Special session 5

Special session 5: Emerging Wireless Technologies in the Era of 5G and Beyond
Ke Guan (Beijing Jiaotong University)
Zhengrong Lai (Guangdong Communications & Networks Institute)
Lei Zhang (Donghua University)

10:20-12:05 Morning of August 23, 2022
Conference ID: 144 581 770
Chair: Ke Guan, Zhengrong Lai, Lei Zhang

Paper Information

SS5-1 10:20-10:35	Ray-tracing based 5G Coverage Analysis and Capacity Evaluation in an Indoor Hotspot Scenario *Xinghai Guo, Ke Guan, Danping He, Xiang Yun, Xiaonan Wang, Zhigang Wang, Zhangdui Zhong* State Key Laboratory of Rail Traffic Control and Safety, Beijing Jiaotong University	6943
SS5-2 10:35-10:50	Low-Complexity Proportional Resource Allocation in Joint CommRadar System *Suqin Liu, Tangyou Liu, Guanglin Zhang* Donghua University	6878
SS5-3 10:50-11:05	Research on UAV-to-Ground Communication Channel Based on NYUSIM *Jiawangnan Lu, Yuandi Zhang, Lei Zhang* Donghua University	6839
SS5-4 11:05-11:20	A Task Offloading Strategy for Compute-Intensive Scenarios in UAV-Assisted IoV *Yufei Zou, Li Lin, Lei Zhang* Donghua University	6838
SS5-5 11:20-11:35	Measurement-based Tapped Delay Line Channel Modeling for Inter-UAV Communications with Typical UAV Attitudes *Qiheng Huang, Hao An, Ke Guan, Yimei Li, Dan Fei, Fusheng Zhu, He Wang* State Key Laboratory of Rail Traffic Control and Safety, Beijing Jiaotong University	6731
SS5-6 11:35-11:50	Measurement and Ray-tracing for UAV Air-to-air Channel Modeling *Hao An, Ke Guan, Wenbin Li, Jundi Zhang, Danping He, Fusheng Zhu, Lei Chen* State Key Laboratory of Rail Traffic Control and Safety, Beijing Jiaotong University	6730
SS5-7 11:50-12:05	Analysis of Measurement Uncertainty for 5G OTA Measurement Grid Above 3 GHz *Chen Xiaochen, Gao Zhanyuan, Yi Xuan, Wang Peihua, Chen Lei, Sun Si yang*	7003

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Special session 6 & Special session 7 Special session 6: Low-Profile Antennas and Arrays for 5G Communications Sen Yan (Xi'an Jiaotong University) Neng-Wu Liu (Xidian University) Special session 7: Testing Methodology for Antennas and Wireless Devices Xiaoming Chen (Xi'an Jiaotong University) Yuxin Ren (China Academy of Information and Communications Technology)		
10:20-12:05 Morning of August 23, 2022 Conference ID: 778 2435 3963 Chair: Sen Yan, Yuxin Ren		
Paper Information		
SS6-1 10:20-10:35	A Low-profile Wideband Dual-Polarized Omnidirectional Antenna for 2G/3G/LTE/Sub-6G Applications *Xiaohan Zhai, Jiahao Zhang, Sen Yan* Xian Jiaotong University	6883
SS6-2 10:35-10:50	A Quasi-Isotropic Antenna with Asymmetric Dual-Branch for Mobile Terminal Integrated Design *Luoxing Zhang, Jianxing Li, Yanyang Wang, Sen Yan* School of Information and Communications Engineering, Xi'an Jiaotong University	6880
SS7-1 10:50-11:05	Standardization Progress and Challenges for 5G MIMO OTA Performance Testing *Xiaohang Yang, Hao Sun, Feilong Wang, Shangbing Qiao, Yuxin Ren* CAICT	6832
SS7-2 11:05-11:20	Research and Verification on Physical Layer Key Parameters for LEO Non-Terrestrial Network *Yujuan Ma, Xiayu Li, Xing Xin, Shuo Liu* China Academy of Information and Communications Technology	6768
SS7-3 11:20-11:35	Four-Port Reference MIMO Antenna for OTA Application *Qingqing Zhang, Xiaoming Chen* Xian Jiaotong university	6709
SS7-4 11:35-11:50	Orthogonal-Mode Decoupling Antenna Pair Based on Asymmetric Non-Differential Feed Mode *Min Liu, Bingyi Qian, Yiran Da, Aofang Zhang, Kunpeng Wei, Xiaoming Chen* Xi'an Jiaotong University	6693
SS7-5 11:50-12:05	Restoring Phase Linearity of Uniform Linear Array With Certain Decoupling Techniques *Jiali Kang, Quanxin Ren, Xin Cheng, Simin Song, Xiaoming Chen* Xian Jiaotong University	6670

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	Special session 12: Electric energy conversion and intelligent control Tian Gao (Northwestern Polytechnical University) Jing Hou (Northwestern Polytechnical University) Qi Wang (Xi'an Technological University)	
	10:20-11:50 Morning of August 23, 2022 Conference ID: 868 7146 5109 Chair: Tian Gao, Jing Hou, Qi Wang	
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SS12-1 10:20-10:35	State of Charge Estimation of Lithium-ion Battery based on Minimum Error Entropy Square Root Cubature Kalman Filter *Jing Hou, Tiantian Jiao, Yan Yang, Tian Gao* Northwestern Polytechnical University	6941
SS12-2 10:35-10:50	Load and Mutual Sense Recognition Method for MCRWPT Systems Based on LCC-S Type Compensation *Xingcan Li, Qi Wang, Fei Yang, Chang Li* Xi'an Technological University	6918
SS12-3 10:50-11:05	Position Servo Control Method of Manipulator based on Improved Active Disturbance Rejection *Liguang Zhang, Ying Liu, Hongmin Jia, Lu Guo* Xi'an Technological University	6913
SS12-4 11:05-11:20	Research on SOC Estimation Method of Power Battery based on WOA-BP Neural Network *Jiayi Jiang, Qi Wang, Chang Li* Xi'an Technological University	6846
SS12-5 11:20-11:35	Research on Modeling of Three-Phase Dual Active-Bridge Converter Based on Second-Order GSSA *Xiyuan Zhang, Xueqin Bi, Can Wang* Xi'an Technological University	6789
SS12-6 11:35-11:50	Variable Order Modeling and Parameter Identification based on Lithium iron Phosphate Battery *Chang Li, Qi Wang, Jiayi Jiang, Xingcan Li* Xi'an Technological University	6788

	Special session 13 & Special session 14 Special session 13: Advanced Technologies and Emerging Applications in Radar Signal and Image Processing Mingliang Tao (Northwestern Polytechnical University) Yifei Fan (Northwestern Polytechnical University) Special session 14: Recent advances in radar detection and recognition Xiaolong Chen (Naval Aviation University) Ying Luo (Air Force Engineering University) Jibin Zheng (Xidian University)	
	10:20-12:05 Morning of August 23, 2022 Conference ID: 425 4952 9746 Chair: Yifei Fan, Jibin Zheng	
	Paper Information	
SS13-1 10:20-10:35	Analysis and Mechanism of the Mutual Terrain Scattered Interference in Spaceborne SAR Images *Huanyu Sun, Yanyang Liu, Xin Yang, Mingliang Tao, Yifei Fan, Jia Su* Northwestern Polytechnical University	6928
SS13-2 10:35-10:50	Unknown Radar Signal Recognition Method Based on SER Block and Semi-Hard Triplet Loss *Zhiyu Qu, Lingjing Xu, qingbo Ji* Harbin Engineering University	6926
SS13-3 10:50-11:05	Interference Suppression for Radar Signal using 2D UNet based on Semantics Segmentation *Jiawang Li, Yanyun Gong, Mingliang Tao, Zhengyi Zhang, Jia Su, Yifei Fan* Northwestern Polytechnical University	6922
SS13-4 11:05-11:20	Stagger PRI Radar Signal Deinterleaving based on Image Semantic Segmentation *Yifei Liu, Jian Xie, Mingliang Tao, Shuting Tang, Zhihao Tang, Ling Wang* Northwestern Polytechnical University	6921
SS13-5 11:20-11:35	Target Detection Within Sea Clutter Based on Combined Time-Frequency Characteristics *Duo Chen, Yanyang Liu, Yifei Fan, Yanyun Gong, Jia Su, Xiangyang Liu* Northwestern Polytechnical University	6842
SS13-6 11:35-11:50	Long-time Integration for Drone targets Detection Based on Digital Ubiquitous Radar *Ziwen He, Xiaolong Chen, Hai Zhang, Lin Zhang, Caisheng Zhang* Naval Aviation University	6738
SS14-1 11:50-12:05	Two-dimensional Eletrostatically Actuated MEMS Micromirror *Wei Tao, Xingang Ren, Shuping He, Xianliang Wu, Xueyuan Cai, Zhixiang Huang* Anhui University	6925

Special session 11: Advanced Array Signal Processing and Antenna Technology for 5G and Beyond
Naixing Feng (Anhui University)
Liangtian Wan (Dalian University of Technology)
Fangqing Wen (China Three Gorges University)

Special session 15: Advanced Array Theory and Synthesis Techniques
Foxiang Liu (Nanchang University)
Jun Xiao (Jimei University)

13:30-15:00 Afternoon of August 23, 2022
Conference ID: 155 804 851
Chair: Naixing Feng, *Qiubo Ye*

Paper Information

SS11-1 13:30-13:45	Adaptive Subspace Classification Technique Using Fuzzy Support Vector Machine for Suspace-based TOA Estimation in a Multipath Channel *Li Ying-chun, Long Qi, Wang Chenxu, Zhou Zhiquan, Jin Tao, Oh Daegun* Harbin Institute of Technology, Weihai	6929
SS15-1 13:45-14:00	A Broadband Turnstile Orthomode Transducer *Jun Xiao, Jin Tian, Dexing Qin, Qiubo Ye* School of Ocean Information Engineering, Jimei University	6944
SS15-2 14:00-14:15	An improved NSGA-III Based Unmanned Airborne Conformal Array Beam Pattern Optimization *Chuang Han, De Chen, Yanyun Gong, Zhaolin Zhang, Yuexian Wang, Ling Wang* School of Electronics and Information，Northwestern Polytechnical University	6865
SS15-3 14:15-14:30	Anti-jamming Method of Satellite Navigation Based on Synthetic Aperture *Chuang Han, Shuozhen Li, Yanyun Gong, Zhaolin Zhang, Yuexian Wang, Ling Wang* Northwestern Polytechnical University	6863
SS15-4 14:30-14:45	Synthesis of Unequally Spaced Linear Array with Low Sidelobe and Null Control by Using State Transition Algorithm *Liu Foxiang, Liu Zhiming, Wen Pin* School of Information Engineering, Nanchang University	6831
SS15-5 14:45-15:00	A Radiation Pattern Reconfigurable Low-Profile Fabry-Perot Antenna Based on Liquid Metal *Wei Chen, Zhiming Liu, Huilin Zhou, Foxiang Liu, Yunkai Yu* Nanchang University	6815

Special session 17: Information theoretical learning criteria based signal processing and machine learning: methods, and applications
Badong Chen (Xi'an Jiaotong University)
Wentao Ma (Xi'an University of Technology)

Special session 18: Recent Advances on Machine Learning in Computational Electromagnetics: Theory and Application
Yuanguo Zhou (Xi'an University of Science and Technology)
Qiang Ren (Beihang University)

Special session 26: Education in Electronic, Information and Wireless Communications
Yunqi Li (Harbin Engineering University)
Tao Jiang (Harbin Engineering University)

13:30-15:00 Afternoon of August 23, 2022
Conference ID: 724 9253 6520
Chair: Wentao Ma, Yuanguo Zhou

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SS17-1 13:30-13:45	SOC-based Droop Control and Coordination for Hybrid Energy Storage Systems *Guangyu Song, Xinghua Liu, Wentao Ma, Jiaqiang Tian, Badong Chen, Gaoxi Xiao* Xian University of Technology	6790
SS18-1 13:45-14:00	Spatially Coupled Generalized LDPC Codes Over Burst Erasure Channels *Xing He, Yang Liu, Bin Wang, Yuzhi Zhang* Xi'an University of Science and Technology	6920
SS18-2 14:00-14:15	FRDVDnet: Towards Fast and Robust Deep Video Denoising *Hao Yang, Dong Sun, Kai Tang, Jianhang Zou, Jianming Zhuo, Yijun Cai* School of Opto-electronic and Communication Engineering, Xiamen University of Technology, Xiamen 361024, China	6761
SS18-3 14:15-14:30	Reverse Time Migration of EM Wave Based on Divided-Order Multiples *Zhang Rujing, Zhou Yuanguo, Liang Bingyang, Ren Qiang*	6950
SS18-4 14:30-14:45	A Discontinuous Galerkin Time Domain Method for Solving Drude Dispersive Models *Wang Lujie, Zhou Yuanguo, Liang Bingyang, Ren Qiang*	6951
SS26-1 14:45-15:00	Stereoscopic and Multi-dimensional Education Mode for Postgraduate in Information Subject *Yibing Li, Qian Sun, Zhi Qu, Yihan Xiao, Yun Lin* Harbin Engineering University	6748

	Special session 8 & Special session 16 & Special session 23
	Special session 8: Multi-functional metasurfaces theory, design and applications
	Hongyu Shi (Xi'an Jiaotong University)
	HuanHuan Yang (Air Force Engineering University)
	Special session 16: Electromagnetic Models and Optimization in MIMO Communications
	Wei Sha (Zhejiang University)
	Xiaoming Chen (Xi'an Jiaotong University)
	Zi He (Nanjing University of Science and Technology)
	Special session 23: Low-dimensional multifunctional electromagnetic devices and antennas
	Bian Wu (Xidian University)
	Junming Zhao (Nanjing University)

13:30-15:00 Afternoon of August 23, 2022
Conference ID: 727 2788 7931
Chair: Wei Sha, Bian Wu

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SS8-1 13:30-13:45	Dual-Polarized Band-Notched Frequency Selective Absorber based on Circuit Analog approach *Xinjie Hao, Xianqi Lin, Yihong Su* University of Electronic Science and Technology of China	6845
SS8-2 13:45-14:00	Design of a Butterfly Shaped Reflective Multifunctional Polarization Converter *Fushun Hao, Jiawei Zang*	7004
SS16-1 14:00-14:15	Electromagnetic Degree of Freedom of A MIMO Communication System *Shuai Yuan, Wei Sha* Zhejiang University	6919
SS23-1 14:15-14:30	Frequency Reconfigurable Antenna Based on Multimode Resonance *Chen Wang, Xuyao Wei, Yifan Zhang, Fangkun Zhou, Yufeng Fu, Ping Chen* Nanjing University	6968
SS23-2 14:30-14:45	Decoupling Method of MIMO Antenna Using Metal-graphene Composite Branch *Guo Kexin, Li Junfeng, Wu Bian, Su Tao* Xidian University	6756
SS23-3 14:45-15:00	Broadband Circuit Analog Absorber Based on Multilayer Graphene-loaded Metasurface *Xu Weixi, Mao Sibo, Wu Bian* Xidian University	6687

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	Topic IV. Microwave Systems, Radar, RF	
	Special session 27: Microwave/millimeter passive device design, optimization and tuning	
	Yongxing Du (Inner Mongolia University of Science and Technology)	
	Xiaolong Wang (Jilin University)	
	Yongliang Zhang (Inner Mongolia University)	
	Special session 28: Microwave and millimeter wave antennas and circuits for modern wireless communication systems	
	Liying Nie (Hefei University of Technology)	
	Daotong Li (Chongqing University)	
	Fei Cheng (Sichuan University)	
	13:30-15:45 Afternoon of August 23, 2022 Conference ID: 826 5787 7275 Chair: Yongliang Zhang, Yidong Xu	
	Paper Information	
SS27-1 13:30-13:45	Accurate Antenna Design by Deep Auto-encoder Surrogate Model Assisted Particle Swarm Optimization *Guangfei Qi, Shuai Bao, Yongfeng Wei, Yongliang Zhang* Inner Mongolia University	6825
SS27-2 13:45-14:00	A Microwave CSRR Sensor for Non-Invasive Glucose-Level Detection *Zizhuo Sun, Huixin Zhang, Shaojun Zhang, Nan Zhang, Kun Li, Xiaolong Wang* Jilin University	6808
SS27-3 14:00-14:15	A Novel Wilkinson Power Divider with High Harmonic Suppression Performance *Nan Zhang, Jian Ma, Xiaolong Wang, Zhewang Ma, Chun-Ping Chen* Jilin University	6969
SS28-1 14:15-14:30	Research on Cross-Band Decoupling of Dipole Antennas Using Loading Inductors *Li Ying Nie* Hefei University of Technology	6872
SS28-2 14:30-14:45	Single-Layer Single-Polarization Rectifying Surface for Microwave Wireless Power Transfer *Fei Cheng, Peirui Xiao, Chao Gu* Sichuan University	6836
OS4-1 14:45-15:00	S2D Behavioral Model for Limiter *Xie Chengcheng, Li Yuanyuan, Yu Gang* Chengdu Technological University	6977
OS4-2 15:00-15:15	Multi-function Chip Behavioral Model Based on Power-related S-parameters *Chengcheng Xie* Chengdu Technological University	6976
OS4-3 15:15-15:30	Construction of a Compact Microwave Imager Based on a Dual-angle Anechoic Chamber *Tian Peng* Anhui University	6959
OS4-4 15:30-15:45	Dual-polarization Ultrawideband Absorber with two Independently Adjustable Notch *Yunfei Feng, Jiawei Zang*	7007

	Special session 25 Special session 25: Intelligent Reflective Surfaces for B5G/6G Communications Li Deng (Beijing University of Posts and Telecommunications) Kwok L. Chung (Huizhou University)	
	13:30-15:00 Afternoon of August 23, 2022 Conference ID: 925 8443 1949 Chair: Yingsong Li, Kwok L. Chung	
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SS25-1 13:30-13:45	A Focusing Transmitarray Antenna Using Trilayer Metasurface Unit *Yejia Zhang, Li Deng* Beijing University of Posts and Telecommunications	6829
SS25-2 13:45-14:00	Comparison of Non-Diffraction Microstrip Antennas and Traditional Microstrip Antennas *Haolin Zhao, Li Deng, Botao Feng, Liang Yin, Shufang Li* Beijing University of Posts and Telecommunications	6828
SS25-3 14:00-14:15	Design Method of Dual Frequency Metasurface based on Neural Network *Yan Li, Li Deng, Botao Feng, Liang Yin* Beijing University of Posts and Telecommunications	6827
SS25-4 14:15-14:30	A Dual-band and Dual-polarization Multiplexed Reflective Metasurface Unit Cell *Jiawei Chen, Li Deng, Botao Feng, Liang Yin* Beijing University of Posts and Telecommunications	6824
SS25-5 14:30-14:45	A Comparative Study Between Reconfigurable Intelligent Surface and Reflectarray Antenna *Xiaopeng Zou, Junhao Yao, Kwok L. Chung, Guoming Lai, Wei Zeng, Wenzhe Gu* Huizhou University	6795
SS25-6 14:45-15:00	A Single-layer Reflectarray Antenna for Sub-THz Applications *Xingxing Yang, Botao Feng, Xiao Ding* Shenzhen University	6780

	Special session 25	
	Special session 25: Intelligent Reflective Surfaces for B5G/6G Communications Li Deng (Beijing University of Posts and Telecommunications) Kwok L. Chung (Huizhou University)	
	15:20-16:50 Afternoon of August 23, 2022 Conference ID: 925 8443 1949 Chair: Yingsong Li, Kwok L. Chung	
	Paper Information	
SS25-7 15:20-15:35	Design of a Dual-Polarized Dipole Antenna Element for 5G Base Stations *Liwei Rao, Botao Feng, Xiao Ding* Shenzhen University	6779
SS25-8 15:35-15:50	A Single-layer THz Wideband Reflectarray Antenna Using Snowflake Elements *Siyuan Qi, Botao Feng, Xiao Ding* Shenzhen University	6778
SS25-9 15:50-16:05	A Ka-Band OAM Reflectarray Antenna Using Hexagonal Phoenix Elements *Siyuan Qi, Botao Feng, Xiao Ding* Shenzhen University	6777
SS25-10 16:05-16:20	A Wideband Omnidirectional MIMO Antenna for WiFi-6E Applications *Abiao Li, Botao Feng, Xiao Ding* Shenzhen University	6776
SS25-11 16:20-16:35	An Offset-fed Orbital Angular Momentum Transmitarray Antenna for Millimeter Wave Communications *Yiping Huang, Yiling Sun, Botao Feng, Xiao Ding* Shenzhen University	6772
SS25-12 16:35-16:50	Cross Deployment of Active and Passive Reconfigurable Intelligent Surfaces (RISs) for Next-Generation Communications *Luqi Chen, Kwok* *L. Chung, Guoming Lai, Junhao Yao, Zhiwei Fu, Kangtai Zheng* Huizhou University	6758

	Special session 21	
	Special session 21: Simulation in Dynamic Complex EM Environment Yunlong MAO (Jiangsu University of Science and Technology) Tao Jiang (Harbin Enginering University)	
	15:20-17:20 Afternoon of August 23, 2022 Conference ID: 375 916 517 Chair: Yunlong MAO, Tao Jiang	
	Paper Information	
SS21-1 15:20-15:35	Simulation of Parameters of A Microstrip Array Antenna Based on Equivalent Source *Ziying Yu, Jiajun Lu, Bin Cao, Fan Qian, Jingyi Wang* Marine Design Research Institute of China	6835
SS21-2 15:35-15:50	Research on Electromagnetic Environment of Shipborne Shortwave Antenna Based on Eastwave *Jiajun Lu, Tianying Ni, Ziying Yu, Jingyi Wang, De Qi, Bin Cao* Marine Design Research Institute of China	6834
SS21-3 15:50-16:05	Simulation of Radiation Energy of Lithium Niobate Crystal Antenna *Jiajun Lu, Xin Wang, Tao Jiang* Marine Design Research Institute of China	6797
SS21-4 16:05-16:20	5G Opportunity Signal based Pseudorange Measuring Method and Performance Analysis *Qiankun Xu, Qian Sun, Yuan Tian* College of Information and Communication Engineering Harbin Engineering University	6792
SS21-5 16:20-16:35	Research on Decoupling of a Dual-band Antenna *Jing Ruan, Ping Xu, Tao Jiang*	6791
SS21-6 16:35-16:50	Research on an Absoption-phase Cancellation Checkerboard Metasurface for RCS reduction *Hui Zhang, Linshu Gong, Tao Jiang*	6769
SS21-7 16:50-17:05	Analysis of Ship RCS Interpolation Data *Wenjing Jiang, Tao Jiang, Lu Liu*	6767
SS21-8 17:05-17:20	A Design of Flexible Materials Microstrip Antenna *Luo Jinghong, Tao Jiang*	6762

	Special session 29 & Special session 31	
	Special session 29: Vehicle EMI and EMC Chonghua Fang (China ship development & design center) Xinyang Shi (Wuhan Maritime Communication Research Institute) Special session 31: Antennas and numerical techniques for 5G wireless communications Han Chongzhi (Jimei University) Chen Peng (Jimei University)	
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	Paper Information	
SS29-1 15:20-15:35	Wideband RCS Enhancement Based on Phase Gradient Metasurface *Xianliang Zeng, Xiaoying Zhong, Yingbiao Cheng, Chonghua Fang, Weijun Wu* China Ship Development and Design Center	6830
SS31-1 15:35-15:50	A Beamwidth Reconfigurable Strategy Inspired by Poynting Streamline Properties *Lu Liu, Chunhua Zhao, Xuan Lin, Peng Chen* School of ocean information engineering, Jimei University	6740
SS31-2 15:50-16:05	Investigation of Cross-Polarization on GNSS-R Antenna *Yan Jia, Zhiyu Xiao, Wenmei Li, Jiaqi Zou, Patrizia Savi, Chong-zhi Han* Nanjing University of Posts and Telecommunications	6724
SS31-3 16:05-16:20	Indoor Channel Modeling of Millimeter Wave Signal *Shaoqing Zhang, Sifan Yang, Mengyu Wang, Chong-zhi Han, Liang Zhang, Tongyu Ding* Aviation Key Laboratory of Science and Technology on Electromagnetic Environmental Effects Shenyang Aircraft Design and Research Institute	6707
SS31-4 16:20-16:35	Research on Propagation Characteristics of 2.4 GHz Wireless Signals in a Steel Ship Cabin *Yixuan Xie, Mengyu Wang, Jian Shu, Tongyu Ding, Liang Zhang, Shaoqi ng Zhang* School of Ocean Information Engineering Jimei University	6706
SS31-5 16:35-16:50	Liquid Crystal-Based Dual-band Reconfigurable Antenna with Parasitic Elements *Peng Chen, Lihua Wang, Dan Wang* Jimei University	6689

	Special session 33	
	Special session 33: 5G/6G communications and community Botao Feng (Shenzhen University)	
	15:20-17:20 Afternoon of August 23, 2022 Conference ID: 476 606 890 Chair: Botao Feng	
	Paper Information	
SS33-1 15:20-15:35	A Patch-fed Wideband Dual-polarized Terahertz Horn Antenna Based on Quartz Process *Haozhong Liu, Xianqi Lin, Yihong Su, Yulei Yang, Xinjie Hao, Yao Yao* University of Electronic Science and Technology of China	6930
SS33-2 15:35-15:50	A 220 GHz Antenna Array Based on the Half-Mode Corrugated Substrate Integrated Waveguide *Yulei Yang, Xianqi Lin, Yihong Su, Haozhong Liu, Xinjie Hao, Yao Yao* University of Electronic Science and Technology of China	6893
SS33-3 15:50-16:05	Analysis and Design Strategy on the Older People's Use Vitality of Community Garden *Xiao Ding, Jiahua Wu, Botao Feng* Macau University of Science and Technology	6787
SS33-4 16:05-16:20	A Double-Layer Wideband Transmitarray Antenna for 5G Millimeter Wave Applications *Abiao Li, Botao Feng, Xiao Ding* Shenzhen University	6775
SS33-5 16:20-16:35	Design of Mutliband Compact Planar Inverted-F Antenna *Wende Zha, Botao Feng, Xiao Ding* Shenzhen University	6774
SS33-6 16:35-16:50	A Flat Wideband Transmitarray Antenna in D-Band *Wende Zha, Botao Feng, Xiao Ding* Shenzhen University	6773
SS33-7 16:50-17:05	A Multiple Wideband Microstrip Antenna Combiner for Indoor Distribution System *Yiping Huang, Yiling Sun, Botao Feng, Xiao Ding* Shenzhen University	6771
SS33-8 17:05-17:20	Hot Topics, Frontiers and Prospects of Closed-Loop Supply Chain Research under the Double Carbon Target *Ye Yuan, Fei Chen, Jing Wu* Chongqing University Of Posts And Telecommunications	6735

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	Special session 20: Advanced mathematic theory applied in array radar and communication system Xianpeng Wang (Hainan University) Han Wang (Yichun University) Shi Junpeng (National University of Defense Technology) Special session 22: ECM and Intelligent decision-making Fang Ye (Harbin Engineering University) Dandan Liu (Heilongjiang University of Science & Technology)	
	15:20-17:05 Afternoon of August 23, 2022 Conference ID: 924 7583 2233 Chair: Xianpeng Wang, Fang Ye	
	Paper Information	
SS20-1 15:20-15:35	The parameter Estimation of Monostatic FDA-MIMO radar based on Unitary ESPRIT algorithm under mutual coupling *Yibo Zhou, Xiang Lan, Xianpeng Wang* Hainan University	6939
SS20-2 15:35-15:50	Off-Grid Sparse Spectrum Fitting for DOA Estimation with Unknown Mutual Coupling *Ziyu Jiang, Xianpeng Wang, Jingyu Cong, Xiang Lan* Hainan University	6937
SS20-3 15:50-16:05	An Improved QMDOMP Channel Estimation Algorithm in mmWave Massive MIMO Systems *Xiaoli Jing, Xianpeng Wang, Ting Su, Xiang Lan* Hainan University	6881
SS22-1 16:05-16:20	Polyphase Orthogonal Waveform Design for MIMO Radar Based on Improved HHO Algorithm *Qian Sun, Yuying Wang, Yingsong Li, Chunrui Tang* Harbin Engineering University	6914
SS22-2 16:20-16:35	Free Space Transmission Technique for Microwave Detection of Wheat Moisture Content *Minghao He, Chunrui Tang, Yibing Li* Harbin Engineering University	6727
SS22-3 16:35-16:50	Factor Graph Localization Algorithm Based on Robust Estimation *Jing Ma, Ying Mao, Hangyu Chen, Yuan Tian* Science and Technology on Special System Simulation Laboratory	6722
SS22-4 16:50-17:05	A two -step optimization method for ship navigation decision-making with emission control area *Weihao Ma, Yueyi Han* Zhejiang University	6696

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Global Projective Synchronization of Fractional-Order Quaternion-Valued Memristor-Based Neural Networks with Delays *Hongwei Zhang, Xu Wang, Dawei Ding, Haochen Sun* School of Electronic Information Engineering, Anhui University	6957
User Information Collection System for the Electrical Power System Based on Zigbee Network *Chen Ming, Shang Li, Zhang Peng* State Grid Hebei Information Telecommunication Branch	6956
Configurable Universal QC-LDPC Encoder Architecture Design *Mingbo Hao, Guangzu Liu, Jun Zou, Tian Ban* Nanjing University of Science and Technology	6940
VBI-based Uplink Channel Estimation for Massive MIMO Systems *Guoying Zhu, Yuekun Xia, Shanliang Li* Jiangsu University	6911
GPS Signal Acquisition Based on Multichannel Frequency Modulation and Compressive Sensing *Guodong He, Tong Xiao, Ju Li, Xiaolong Zou, Shanshan Zhang, Maozhong Song* anhui normal university	6868
Improvement and Implementation of IoT Device's Program Upgrade System on Cloud Platform *Yeqin Chai, Qing Wang, Ling Yao* Anhui Xinhua University	6853
Compiled Code Study of Joint Parity and Cyclic Redundancy Check *Xiaoqing Ge, Jun Zou, Guangzu Liu, Linlin Sun* School of Electronic and Optical Engineering Nanjing University of Science and Technology	6851
Deep Learning-based AP Selection Method in Software-defined Networks *Duan Miaomiao, Zhi Hui, Yang Lixia* Anhui University	6820
AoI Optimal Trajectory Planning for Cooperative UAVs: A Multi-Agent Deep Reinforcement Learning Approach *Kai Chi, Fuqiang Li, Fan Zhang, Mengjie Wu, Chao Xu* CETC Key Laboratory of Data Link Technology	6800
Link 16 Message Processing Based on Transaction *Wanyong Tian, Chilian Chen, Fuqiang Li, Jing Song, Ligang Du* Key Laboratory of Technology on Data link; China Electronics Technology Group Corporation (CETC), 20th Institute	6757
MBSE and The Concept Model of The Internet of Things-Based Data Link System Designing Method *Peng Zhou, Fuqiang Li, Kai Zhang, Chubing Guo* Key Laboratory on Data Link, CETC	6726
Objective Measurement Method for the Confidence of Track Quality and Effectiveness Evaluation of Tactical Data Link *Liang Chen, Chilian Chen, Lulu Zhao* China Electronics Technology Group Corporation , 20th Institute	6721

Research on Road Vehicle Positioning Technology based on UWB Communication *Chunsheng Wu, Fengshan Bai, Wenjun Zheng, Haixia Wang, Haiyang Hua, Da Teng* Inner Mongolia University	6720
Research on Real-time Analysis Method for Real-time Operating System *Hui Wang, Jiang Wang, Zhe Wang, Wenbin Hu, Lin Zeng, Xiangji Xi, Xuetong Wang* Beijing Smart-chip Microelectronics Technology Co.,Ltd.Beijing100192, China	6711
Vision Data Link *Guobao HUI, Chilian CHEN, Fuqiang LI, Junfeng HU, Pengju GUO* The 20th Research Institute of CETC	6705
Extended Coprime Arrays with Sum-Difference Coarray for DOA Estimation *Wei Xin, Lin Xu, Jincheng Gao, Yingsong Li, Zhixiang Huang* Harbin Engineering University	6988
Improved 555 Multivibrator to Measure Degradable Supercapacitive Pressure Sensors *Liangpan Yang, Jizhu Fu, Qinyue Sun, Yi Xiong, Wei Zeng, Yongan Hu* Anhui University	6971
Improved Zero-Attracting LMS Algorithm for the Adaptive Identification of Sparse System *Ying Guo, Haodong Wang, Lily Li* Shenyang University of Technology	6938
Sparse Bayesian Learning with Generalized Double Pareto Prior for Bearing Fault Diagnosis *Shanliang Li, Guoying Zhu, Yuekun Xia* Jiangsu University	6910
Natural Scene Text Detection Algorithm Based on Improved DBNet *Huiyang Chen, Jing Liu, Weimin Zhou* Shanghai University	6908
Design of smart wearable Bracelet based on Android mobile phone *Yang Deng, HuiRong Li* School of Electrical Information Engineering Panzhihua University	6759
An Interaction Framework for Multi-domain Unmanned Systems Collaboration Based on Interoperability Messages *Zhigang Wang, Chilian Chen, Yongping Zhang, Kai Zhang, Chubing Guo, Yongqiong Yuan* CETC Key Laboratory of Data Link Technology	6753
Multi-Target Multi-Camera Tracking Based On Mutual Information–Temporal Weight Aggregation Person Re-Identification *Jiayue Li, Yan Piao* Changchun University of Science and Technology	6739
An Improved HWA Algorithm for Blind Recognition of Linear Block Codes *Di Mao, Fuqiang Li* China Electronics Technology Group CorporationCETC,20th Institute Key Laboratory of Technology on Datalink Xi'an,China	6714
Deep Learning Based Direction of Arrival Estimation of Multiple Targets *Saiqin Xu, Hao Lian, Baixiao Chen, Zheming Guo* Xidian University	6710
Decoupling Graph Convolutional Network with Adaptive Normalization *Haiyun Zhou, Xuezhi Xiang* Nanjing Forest Police College	6685
Sparse Andrew's Sine Norm Promoting Adaptive Algorithm under Non-Gaussian Noises *Abdul Hadi, Xinqi Huang, Burhan Ali, Yingsong Li* Harbin Engineering University	6679
Detection of Advanced Pulse Compression Noise Based on FRFT *Yi-Ming Wang, Ren-Gang Li, Heng Chai* 723 institude of China State Shipbuiding Corporation Limited	6677
An Unknown Protocol Classification Method based on Clustering Algorithm and Hyperparametric Optimization *Haiyang Liu, Linghang Meng, Yuantao Gu*	6682

Poster Session II

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A Low-Profile Broadband Circularly Polarized Metasurface Antenna Using CMA *Qi Xia, GuangShang Cheng* Anhui University	6954
Study on the Radiation Enhencement of Electrical Small Antenna in Plasma Sheath *Yong Bo, Mouping Jin, Lixia Yang* Anhui University	6953
A Filtering Dipole Antenna with Reconfigurable Frequency and Bandwidth *Dongdong Hou, Guangshang Cheng* Anhui University	6948
A Low Side-lobe Waveguide Antenna Integrated with Solar Cell Using Non-offset Slots *Jian Chen, Qian Chen, zilin Qiao, songlin Yan, juliang Lv, zhixiang Huang* Anhui University	6927
A high-gain printed antenna array with directional pattern for WiFi application *Xinlong Xu, Hongfei Chang, Guangrui Liu, Yaozong Sui, Weihua Zong* Qingdao University	6903
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