

**2021 IEEE MTT-S International Microwave Workshop Series on
Advanced Materials and Processes for RF and THz Applications
(IEEE MTT-S IMWS-AMP 2021)**

Final Technical Program

November 15-17, 2021

Organizer



新加坡国立大学重庆研究院
NUS (Chongqing) Research Institute

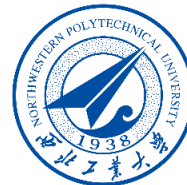
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IEEE IMWS-AMP 2021 Program at A Glance

Nov 15, 2021 (Mon)			
8:40-9:00	Opening Ceremony		
9:00-9:45	Keynote 1: Recent Advances on Information Metasurfaces (Prof. Tie Jun Cui)		
9:45-10:30	Keynote 2: Substrate Integration Technology: A Journey From Printed Circuit Board Microfabrication To Integrated Semiconductor Nano-processing (Prof. Ke Wu)		
10:30-10:40	Break		
	ROOM1	ROOM2	ROOM3
10:40-12:10	MA1A: Wireless Power Transfer and Harvest with Metamaterials	MA2A: Theory and Applications of Characteristic Modes	MA3A: Advanced Wireless Devices Based on Metamaterials and Metasurfaces
12:10-13:30	Lunch Break		
13:30-14:15	Keynote 3: Extraordinary Directive Emission and Scanning from an Array of Radiation Sources with Hyperuniform Disorder (Prof. Yang Hao)		
14:15-14:20	Break		
14:20-15:50	MP1A: Microwave, Millimeter and Terahertz Systems and Applications	MP2A: Advanced Metamaterial and Metasurface for Manipulating Scattering and Radiation	MP3A: Multi-Mode Antennas/Circuits in Modern Communications
15:50-16:00	Break		
16:00-18:00	MP1B: Substrate Integrated Circuits and Systems	MP2B: Miniaturized Multifunctional Antenna and Passive Circuit	MP3B: Antennas, Devices, and Metamaterials Based on Advanced Materials and Processes
Nov 16, 2021 (Tue)			
8:30-10:15	TA1A: Millimeter Wave & Terahertz Solid-State Circuit and System	TA2A: Heterogeneous Integration and Packaging Techniques	TA3A: Advanced Material Based Power Electronics
10:15-10:25	Break		
10:25-12:10	TA1B: Efficient Optimization Approaches for Microwave Devices	TA2B: Modeling of Electromagnetic Interference and Antenna Decoupling	TA3B: High Performance Active Devices in Transceivers
12:10-13:30	Lunch Break		
13:30-15:30	TP1A: Intelligent Metasurfaces for Wireless Sensing and Communications	TP2A: New Progress in 2D Material and Metasurface for RF and Antenna Applications	TP3A: Emerging Materials for Microwave Applications
15:30-15:40	Break		
15:40-17:40	TP1B: Advanced Materials and Emerging Applications of WPT	TP2B: Novel Antenna Designs for 5G/6G Mobile Terminals	TP3B: Microwave Chemistry
Nov 17, 2021 (Wed)			
8:30-10:00	WA1A: Microwave Devices and Sensors Based on Integrated Passive Device Technology	WA2A: Multifunctional Antenna and Smart-Surface for B5G Application	WA3A: Recent Advances on Electromagnetics Simulation Techniques
10:00-10:30	Award & Closing Ceremony		
10:30-10:40	Break		
10:40-12:10	WA1B: Phased Array Antennas for Future Wireless Communications	WA2B: Recent Development in Antennas	WA3B: Novel Applications of Metasurfaces
12:10-13:30	Lunch Break		
13:30-15:30	WP1A: Novel Shielding Materials for Advanced Applications	WP2A: Novel Functional Sensors and Antenna Arrays	WP3A: Progress in Emerging Antennas
15:30-15:40	Break		
15:40-17:40	WP1B: Novel Processing and Characterization Methods	WP2B: Circuit and System	WP3B: Novel Absorber and FSS

Zoom Link Information

Date	Room Name	Period	Link	Meeting ID	Passcode
Nov 14 (Sun)	Test Room (Nov 14)	8:00 - 20:00	https://us02web.zoom.us/j/89960888065?pwd=bmhNMytMdFZQdjh5aWt1V3k4aUxrdz09	899 6088 8065	888888
Nov 15 (Wed)	Room 0 (Nov 15)	8:00 - 15:00	https://us02web.zoom.us/j/83878352685?pwd=U1c2ZlItY2RlcUE2bEVrd0YrbXNIQT09	838 7835 2685	888888
	Room 1 (Nov 15)	10:00 - 19:00	https://us02web.zoom.us/j/89662280028?pwd=U3F3MVVyNUdzWTVmLORCS0JNM1lVdz09	896 6228 0028	888888
	Room 2 (Nov 15)	10:00 - 19:00	https://us02web.zoom.us/j/84090709894?pwd=VHV3ZnRQbURmVXFxMHkvZFRGdXZjUT09	840 9070 9894	888888
	Room 3 (Nov 15)	10:00 - 19:00	https://us02web.zoom.us/j/85133308489?pwd=ekk2WUhgWHZEUDhpc2laY1pGdGFDQT09	851 3330 8489	888888
	Test Room (Nov 15)	8:00 - 20:00	https://us02web.zoom.us/j/87079382336?pwd=SUVsb1lrU0lxVVhydXhFNzlkNGZ2Zz09	870 7938 2336	888888
Nov 16 (Thu)	Room 1 (Nov 16)	8:00 - 19:00	https://us02web.zoom.us/j/82325749816?pwd=d0JvYk95MllsQnpEVVl0VtdZVFZMdz09	823 2574 9816	888888
	Room 2 (Nov 16)	8:00 - 19:00	https://us02web.zoom.us/j/83342086842?pwd=Zlc2a2xFeWxzUzcyaGV2TVRlMVlZz09	833 4208 6842	888888
	Room 3 (Nov 16)	8:00 - 19:00	https://us02web.zoom.us/j/82549166570?pwd=ZfZsYmduSWNVVfHkKzVFMIJGcGtrZz09	825 4916 6570	888888
	Student Contest (Nov 16)	8:00 - 13:00	https://us02web.zoom.us/j/85102304702?pwd=NW0wTlAzZGxvK0hxMlhxS0U0NVgzZz09	851 0230 4702	888888
	Test Room (Nov 16)	8:00 - 20:00	https://us02web.zoom.us/j/81477412533?pwd=VytpRWwhwcEx5R1VuaHI3eHBMT2lVUT09	814 7741 2533	888888
Nov 17 (Wed)	Room 0 (Nov 17)	9:00 - 11:00	https://us02web.zoom.us/j/82980240268?pwd=UWxMUE9sWlZlRQWdScZGFLSk1EN3F4Zz09	829 8024 0268	888888
	Room 1 (Nov 17)	8:00 - 19:00	https://us02web.zoom.us/j/88271873423?pwd=YmpHa0lKZzJ2TVplL0pQNGFHakt6QT09	882 7187 3423	888888
	Room 2 (Nov 17)	8:00 - 19:00	https://us02web.zoom.us/j/89073768319?pwd=ZFFGaVFmK0l0bks1d1lmcVU3K0wzQT09	890 7376 8319	888888
	Room 3 (Nov 17)	8:00 - 19:00	https://us02web.zoom.us/j/85367786486?pwd=ZkFGakNJeUM5N3B2SFIPd2NxOTRuZz09	853 6778 6486	888888
	Test Room (Nov 17)	8:00 - 20:00	https://us02web.zoom.us/j/87945841533?pwd=cUMzRWZ4S2h3c1YzNmowb0M2czhZUT09	879 4584 1533	888888

2021 IEEE MTT-S International Microwave Workshop Series on Advanced Materials and Processes for RF and THz Applications

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National University of Singapore Chongqing Research Institute

Co-Organizers

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University of Electronic Science and Technology of China

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Welcome Message from the General Chairs



On behalf of the organizing committee, and with great pleasure, we warmly welcome you to the 2021 IEEE MTT-S International Microwave Workshop Series on Advanced Materials and Processes for RF and THz Applications (IMWS-AMP 2021) to be held from November 15 to 17, 2021. The IEEE MTT-S IMWS-AMP 2021 was planned to be held in Chongqing and is currently delivered as a virtual event due to the Covid-19 pandemic. The organizing committee has put together a comprehensive technical program to facilitate the exchange of information on the progress and advancements of Advanced Materials and Processes for RF and THz applications.

IEEE MTT-S IMWS-AMP 2021 is organized by National University of Singapore (NUS) Chongqing Research Institute, co-organized by Chongqing University, University of Electronic Science and Technology of China, Northwestern Polytechnical University, Science and Technology on Monolithic Integrated Circuits and Modules Laboratory, Xidian University Key Laboratory of High-Speed Circuit Design and EMC of Ministry of Education, NUS Suzhou Research Institute, and IEEEAP/MTT Joint Societies Chongqing Chapter. This workshop is financially sponsored by IEEE MTT Society. It is technically co-sponsored by the IEEE MTT Society and the IEEE. The purpose of this workshop platform is to boost and promote MTT-S technical and educational activities as well as MTT-S international exchanges and collaborations. The IEEE MTT-S IMWS-AMP 2021 brings in a unique mix of high-quality keynote, invited and contributed papers. In particular, we urge you not to miss our keynote talks, featuring innovative and enabling technologies on Advanced Materials and Processes for RF and THz applications, by world-class speakers.

We look forward to welcoming you all to participate in this exciting virtual conference!

Yongxin Guo (General Chair), National University of Singapore, Singapore

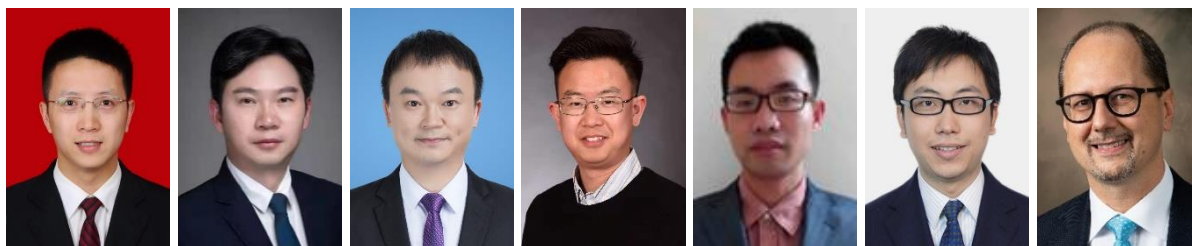
Yuanan Liu (General Co-Chair), Beijing Posts and Telecommunications, China

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Kama Huang (General Co-Chair), Sichuan University, China

Deyun Zhou (General Co-Chair), Northwestern Polytechnical University, China

Welcome Message from the TPC Chairs



On behalf of the Technical Program Committee (TPC), we cordially welcome you to the 2021 IEEE MTT-S International Microwave Workshop Series on Advanced Materials and Processes for RF and THz Applications (IMWS-AMP 2021) to be held as a virtual event on November 15-17, 2021. The IMWS-AMP 2021 received a total submission of 233 papers, including invited papers and regular papers from 15 countries/regions. Each paper was reviewed by at least two expert reviewers and the final decisions were made at the TPC on-line meeting held in September 2021. Among all the submissions, 25 invited papers and 173 regular papers were accepted. The TPC is very pleased with the quality of the submissions and we trust that you will find many papers interesting and informative.

Benefitted from the convenience of virtual conferences, all the accepted papers have been arranged into 33 oral technical sessions, including 22 special sessions and 11 regular sessions. The technical sessions will be split into three parallel tracks spanning over three days. Authors can choose either live presentation or playing pre-recorded presentation videos for the presentation mode. In addition, we are honored to have three renowned experts as Keynote Speakers. Another highlight is the Best Student Paper Awards for recognizing outstanding student papers. They were nominated by the TPC after considering the review reports and further carefully evaluated by the Award Committee.

The TPC has worked hard to produce a diverse and well-organized technical program, which covers nearly all topics on the recent advances in materials and processes for RF and THz applications. On behalf of the TPC, we would like to express our sincere thanks to all the authors for their contributions to the workshop. We would like to express our sincere appreciation to all the TPC members, special session organizers, reviewers, session chairs, and those have been involved in finalizing this technical program. In particular, we would like to thank the IEEE MTT-S for its strong support to this workshop.

We wish that we have brought you a pleasant and fruitful IMWS-AMP 2021!

Mingchun Tang (TPC Chair), Chongqing University, China

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Sheng Xin Zhang

Yan Zhang

Yiming Zhang

Zhan Zhang

Liwei Zhao

Shaoyong Zheng

Dai Zhijiang

Di Zhou

Lin Zhou

Shigang Zhou

Weiren Zhu

Session Information

Preparing Your Presentation

Each oral presentation is limited to 15 minutes for **Regular Papers** and 30 minutes for **Invited Papers**. The duration includes questions and answers (Q&As).

You are required to log in the respective Zoom meeting at least 10 minutes prior to your session. The links of Zoom meetings are included in the Program Book.

Presentation Mode

You can choose to do live presentation or play your pre-recorded presentation video. For the latter one, you can also upload a copy of your pre-recorded video via EDAS, which will be played by us during the presentation as a backup. This step is optional. In this case, however, you are still required to be present and attend the Q&A.

All papers must be presented at the conference in order to be included in the proceedings published in IEEE Xplore[®].

Instructions for Session Chairs

Please keep in mind the time frame of each presentation and remind the presenter when appropriate.

Time Zone

All the times in the technical program are based on Beijing Time (GMT +8).

Test Sessions for Participants

Speakers and Session Chairs are encouraged to test the Zoom using the following links if you have not used this tool previously. The time is from 8:00 to 20:00 for the following dates. Our technical supports will be there to assist you.

Date	Zoom Link	Meeting ID	Passcode
Nov 14	https://us02web.zoom.us/j/89960888065?pwd=bmhNMytMdFZQdjh5aWt1V3k4aUxrdz09	899 6088 8065	888888
Nov 15	https://us02web.zoom.us/j/87079382336?pwd=SUVsb1lrU0lxVVhydXhFNzlkNGZ2Zz09	870 7938 2336	888888
Nov 16	https://us02web.zoom.us/j/81477412533?pwd=VytpRWhtwEx5R1VuaHI3eHBMT2lVUT09	814 7741 2533	888888
Nov 17	https://us02web.zoom.us/j/87945841533?pwd=cUMzRWZ4S2h3c1YzNmowb0M2czhZUT09	879 4584 1533	888888

Best Student Paper Contest

Based on the reviewers' scores and comments, as well as the relevance to the conference theme, 23 student papers are shortlisted. All contestants are to give an additional online presentation up to **6 minutes (4-minute presentation and 2-minute Q&A)** at 9 am to 12 pm on 16 November.

Shortlisted Student Papers

1. ***Design of 1-Bit Reconfigurable Reflectarray Based on Miniaturized Reconfigurable Unit***
Puchu Li, Tian Yang, Jian Ren and Ying Zeng Yin (Xidian University, China)
2. ***Wideband Self-Decoupled Antenna for 5G Plastic Mobile Phone***
Fangzhou Zhou, Guomin Yang and Yan Wang (Fudan University, China); Chengfei Zhao and Zhongwei Ji (ZTE Corporation, China)
3. ***Microwave MIM Capacitors Enabled by an iCVD N-Type Parylene Dielectric for Flexible MMIC***
Wenhao Zheng, Yan Wang, Yu Lan and Yuehang Xu (University of Electronic Science and Technology of China, China)
4. ***Waveguide Coupler in Designer Surface Plasmon Using Topological Edge States***
Bolin Li, Hongyu Shi, Juan Chen and Anxue Zhang and Zhuo Xu (Xi'an Jiaotong University, China)
5. ***A Dual-Band Metasurface-Based Antenna With Shorting Pins***
Wenzhang Zhang, Jiafeng Zhou and Yi Huang (University of Liverpool, United Kingdom); Mobayode O. Akinsolu (Wrexham Glyndŵr University, United Kingdom); Bo Liu and Mingwei He (University of Glasgow, United Kingdom)
6. ***Common-Aperture Design of Sub-6 GHz and Millimeter-Wave Antennas for 5G Metal-Rimmed Smartphone***
Zi-Yue Liang and Yong-Ling Ban (University of Electronic Science and Technology of China, China)
7. ***Design of Miniaturized Ultra-Wide-Angle Scan Dual-Polarization Array Antenna***
Lianwei Zhu and Shigang Zhou (Northwestern Polytechnical University, China)
8. ***A 140 GHz Gain-Boosting Power Amplifier With Sub-Harmonic Mixer in 40 nm CMOS***
Chuyou Hu, Jiacheng Guo and Sanming Hu (Southeast University, China)
9. ***Substrate Integrated Components for Passive Millimeterwave-Frequency Beamforming Networks***
Laura Van Messem, Arno Moerman, Olivier Caytan, Sam Lemey, Hendrik Rogier and Igor Lima de Paula (Ghent University, Belgium)
10. ***A Resonance Point Optimization Method for Axial Size Reduction of the Log-Periodic Dipole Array***
Junlin Pu and Bing Zhang (Sichuan University, China)
11. ***Thin-Film Integrated Passive Device Technology Based Ultraminiaturized Bandpass Filter for 5G Communication Application***
Xiao Tan, Cong Wang, Yuchen Wei and Alok Kumar (Harbin Institute of Technology, China)

12. ***A Compact Self-Decoupled Filtering Microstrip Patch Antenna***
Sijie Tian, Mei Li, Ming-Chun Tang (Chongqing University, China); Lei Zhu (University of Macau, China)
13. ***A Ka-Band Watt-Level High-Efficiency Integrated Doherty Power Amplifier in GaAs Technology***
Heng Xie, Yu Jian Cheng, Yong Fan (University of Electronic Science and Technology of China, China)
14. ***Tunable Non-Diffraction Spoof Surface Plasmon Polaritons With Liquid Crystal Terahertz Metasurface***
Shaojie Wang, Ke Chen, Junming Zhao and Yijun Feng (Nanjing University, China)
15. ***Radar Absorbing Material Applied to Precise RCS Regulation of Complex Scatterer Structure***
Chengxiang Xu, Jianxun Su and Zengrui Li (Communication University of China, China)
16. ***High Power and Wide Input Power Range Rectifying Metasurface With GaN Diode***
Mingyang Chang, Hao Xue, Xiaonan Wu, Song Zhang, Fangjie Cheng and Long Li (Xidian University, China)
17. ***Slab Air-Filled Substrate Integrated Waveguide (SAFSIW) Cruciform Coupler***
Nhu-Huan Nguyen (University of Grenoble Alpes & Polytechnique Montréal, France); Anthony Ghiotto (University of Bordeaux, France); Anne Vilcot and Tan-Phu Vuong (Grenoble INP, France); Ke Wu (Polytechnique Montréal, Canada)
18. ***Rapid Diplexer Design for High Isolation of Fundamental and 2nd-Harmonic Spectrums***
Yu-Xuan Deng, Rong-Yao Wang and Hao Zhang (Northwestern Polytechnical University, China); Si-Ping Gao (National University of Singapore, Singapore)
19. ***A Millimeter-Wave Dual-Band Wideband Metasurface Antenna Based on Printed Ridge Gap Waveguide Feeding***
Zefang Yu, Yongle Wu, Weimin Wang, Yuhao Yang and Yuanan Liu (Beijing University of Posts and Telecommunications, China)
20. ***A New Wideband Filtering Power Divider Based on Rectangle Patch Resonator With Compact Size***
Zhengkang Liu, Qiyun Zhang, Jifeng Liu, Qian Sun, Gang Zhang and Wanchun Tang (Nanjing Normal University, China)
21. ***Miniaturized Dual-Band Filtering Switch Based on Multi-Mode Dielectric Resonator***
Di-Si Wu, Yuan Chun Li, Xin Fang, Quan Xue and Bin-jie Hu (South China University of Technology, China)
22. ***A Millimeter-Wave Multi-Beam Series-Fed Antenna Array Without Extra Beamforming Network***
Chaojun Ma and Shaoyong Zheng (Sun Yat-Sen University, China); Yongmei Pan (South China University of Technology, China)
23. ***Frequency Decoupled Coding Meta-Mirror by Combining Propagation Phase With Geometric Phase***
Zhenfei Li and Weiren Zhu (Shanghai Jiao Tong University, China)

Keynote Speech

MA-1 (Monday, 09:00-09:45)

Recent Advances on Information Metasurfaces



Professor Tiejun Cui

Southeast University, China

Academician of the Chinese Academy of Sciences

Fellow of IEEE

Professor Tiejun Cui is the academician of Chinese Academy of Sciences and the Chief Professor of Southeast University, Nanjing, China. He authored or co-authored two books and published over 500 peer-review journal papers, which have been cited by more than 36500 times (H-index 95, Google Scholar). He proposed the concepts of digital coding metamaterials, programmable metamaterials, and information metamaterials, and realized their first demonstrations. Dr. Cui received the National Natural Science Awards of China in 2014 and 2018, respectively. Based on Clarivate Analytics, he was a Highly Cited Researcher (Web of Science) in 2019 and 2020, and his researches have been widely reported by Nature News, Science, MIT Technology Review, Scientific American, New Scientists, etc. Dr. Cui is an IEEE Fellow.

Abstract: In this presentation, I will introduce the recent progress on information metasurfaces conducted in the latest two years, including the electromagnetic information theory based on the information metasurface, design methods to control the harmonics, beams, and waveforms of electromagnetic waves using space-time-coding digital metasurfaces, the intelligent imaging and automatic recognition, as well as new-architecture wireless communications with information metasurfaces.

Keynote Speech

MA-2 (Monday, 09:45-10:30)

Substrate Integration Technology: A Journey From Printed Circuit Board Microfabrication to Integrated Semiconductor Nano-processing



Professor Ke Wu
University of Montreal, Canada
Fellow of the Canadian Academy of Engineering
Fellow of the Royal Society of Canada
Fellow of IEEE

Dr Ke Wu is Industrial Research Chair in Future Wireless Technologies and the Director of the Poly-Grames Research Center. He was the Canada Research Chair in RF and millimeter-wave engineering and the Founding Director of the Center for Radiofrequency Electronics Research of Quebec. He has authored/co-authored over 1400 referred papers, and a number of books and book chapters and filed more than 50 patents. Dr. Wu was the general chair of the 2012 IEEE MTT-S International Microwave Symposium, and the 2016 President of the IEEE Microwave Theory and Techniques Society (MTT-S). He also served as the inaugural North American representative in the General Assembly of the European Microwave Association. He was the recipient of many awards and prizes. He was an IEEE MTT-S Distinguished Microwave Lecturer. Dr. Ke Wu is a Fellow of the IEEE, Canadian Academy of Engineering and Royal Society of Canada.

Abstract: Our proposed integration technology of planar and non-planar structures as well as related progress indicate that the substrate integrated waveguide (SIW) technologies can provide unprecedented advantages for developing low-cost GHz/THz components, antennas, circuits and systems as well as wireless photonic applications. This talk will begin with the presentation of a roadmap of guided-wave waveguides and transmission line structures for microwave circuits, antennas and systems. The state-of-the-art and underlying features of substrate integration technologies are examined for integrated passives, RF/millimeter-wave/THz ICs and systems. In particular, the SIW technological evolution enabled by various processing technologies from printed circuit board (PCB) microfabrication to integrated semiconductor nano-processing will be discussed. In this connection, an outlook for exploring ICs-oriented substrate integration technologies will be highlighted, which will eventually bridge the gap of technologies between electronics and photonics.

Keynote Speech

MP-1 (Monday, 13:30-14:15)

Extraordinary Directive Emission and Scanning from an Array of Radiation Sources with Hyperuniform Disorder



Professor Yang Hao
Queen Mary University of London, United Kingdom
Fellow of the Royal Academy of Engineering
Fellow of IEEE
Fellow of IET

Dr. Yang Hao is a Professor of Antennas and Electromagnetics at Queen Mary University of London. He is active in a number of areas, including computational electromagnetics, microwave metamaterials and transformation optics, antennas and radio propagation for body centric wireless networks, active antennas for millimeter/sub-millimeter applications and photonic integrated antennas. He published two books on Antennas and Radio Propagation for Body-Centric Wireless Communications, and FDTD modelling of Metamaterials: Theory and Applications, respectively. He has co-authored more than 200 journal papers and is a frequent keynote speaker for many international conferences. Prof. Hao was an Editor-in-Chief for the IEEE ANTENNAS AND WIRELESS PROPAGATION LETTERS. He received IET AF Harvey Research Prize, BAE Chairman's Silver Award and the Royal Society Wolfson Research Merit Award. Prof. Hao was elected as a Fellow of the Royal Academy of Engineering in 2020, a Fellow of the IET in 2010 and a Fellow of the IEEE in 2013.

Abstract: The main challenge in the antenna or laser array design is to find the element distribution that best meets the optimal performance for broadband emission and large angle beam steering. In the past, the design strategy was restricted to arrays with periodic, aperiodic, and random distributions, which are characterized by several fundamental limitations related to the operating frequency, the power consumption that arises from interelement interference, and the computation time required during the random optimization process. Furthermore, the interelement spacing has a lower or upper bound due to the elements' physical dimensions and the former prohibits the use of the aforementioned element distributions for small operating wavelengths, whereas the latter induces high-order grating lobes. We prove that hyperuniform disorder is an array element distribution evolving through natural selection processes that warrants a disordered solution to the array design when this is treated as a packing problem. We theoretically and experimentally report that the array with hyperuniform disorder exhibits extraordinary directive emission and scanning features, while being scalable for extra-large arrays without any additional computational effort.

IEEE IMWS-AMP 2021 Technical Program

08:40 - 14:15*, Mon, November 15, 2021

Room: Room 0; **Zoom Meeting ID:** 838 7835 2685; **Passcode:** 888888;

Zoom Link: <https://us02web.zoom.us/j/83878352685?pwd=U1c2ZlItY2RlcUE2bEVrd0YrbXNIQT09>

08:40-09:00	Opening Ceremony
09:00-10:30	Keynote Speech I
Chairs:	Long Li, Xidian University, China Yujian Cheng, University of Electronic Science and Technology of China, China
MA-1	Recent Advances on Information Metasurfaces (Keynote)
09:00-09:45	Tiejun Cui (Southeast University, China)
MA-2	Substrate Integration Technology: A Journey From Printed Circuit Board Microfabrication To Integrated Semiconductor Nano-processing (Keynote)
09:45-10:30	Ke Wu (University of Montreal, Canada)
13:30-14:15	Keynote Speech II
Chair:	Deyun Zhou, Northwestern Polytechnical University, China Shigang Zhou, Northwestern Polytechnical University, China
MP-1	Extraordinary Directive Emission and Scanning from an Array of Radiation Sources with Hyperuniform Disorder (Keynote)
13:30-14:15	Yang Hao (Queen Mary University of London, United Kingdom)

*All the times in the technical program are based on Beijing Time (GMT +8)

10:00 - 10:30, Wed, November 17, 2021

Room: Room 0; **Zoom Meeting ID:** 829 8024 0268; **Passcode:** 888888;

Zoom Link: <https://us02web.zoom.us/j/83878352685?pwd=U1c2ZlItY2RlUE2bEVrd0YrbXNIQT09>

10:00-10:30

Award and Closing Ceremony

10:40 - 12:10, Mon, November 15, 2021

Special Session: MA1A

Wireless Power Transfer and Harvest with Metamaterials

Room: Room 1; **Zoom Meeting ID:** 896 6228 0028; **Passcode:** 888888;

Zoom Link: <https://us02web.zoom.us/j/89662280028?pwd=U3F3MVFyNUdzWTVmL0RCS0JNM1IVdz09>

Organizers: Changjun Liu, Long Li

Chairs: Changjun Liu, Long Li

MA1A-1 Polarization-Insensitive Simultaneous Wireless Power and Information Transfer Scheme for Micro-UAVs

10:40-10:55 Hao Zhang (Northwestern Polytechnical University, China)

MA1A-2 Extended-Power Rectifier Designed for Wireless Power and Information Transfer Based on Second Harmonic Backscatters

10:55-11:10 Junqi Yang (National University of Singapore Suzhou Research, China); Hao Zhang (Northwestern Polytechnical University, China); Chen Gao (National University of Singapore, Singapore)

MA1A-3 A Dual-Band Metasurface-Based Antenna With Shorting Pins

11:10-11:25 Wenzhang Zhang, Jiafeng Zhou, Yi Huang (University of Liverpool, United Kingdom); Mobayode O. Akinsolu (Wrexham Glyndŵr University, United Kingdom); Bo Liu and Mingwei He (University of Glasgow, United Kingdom)

MA1A-4 Efficient Dual-Band Rectenna With Omnidirectional Radiation Pattern for Wireless Energy Harvesting

11:25-11:40 Fei Cheng (Sichuan University, China); Chao Gu (Queen's University Belfast, United Kingdom); Kama Huang (Sichuan University, China)

MA1A-5 Generation of Airy Beams Using an Amplitude-Phase-Modulated Metasurface

11:40-11:55 Song Zhang, Hao Xue, Mingyang Chang, Xiaonan Wu, Fangjie Cheng and Long Li (Xidian University, China)

MA1A-6 Compact Rectifying Metasurface With Matching Network Elimination for Wireless Power Transfer

11:55-12:10 Jianwei Jing, Hang Lin, Shaoyue Wang and Changjun Liu (Sichuan University, China)

10:40 - 12:10, Mon, November 15, 2021

Special Session: MA2A

Theory and Applications of Characteristic Modes

Room: Room 2; **Zoom Meeting ID:** 840 9070 9894; **Passcode:** 888888;

Zoom Link: <https://us02web.zoom.us/j/84090709894?pwd=VHV3ZnRQbURmVXFxMHkvZFRGdXZjUT09>

Organizers: Shaode Huang, Jihong Gu

Chairs: Shaode Huang, Jihong Gu

MA2A -1 SIE-Based Substructure Characteristic Mode Analysis on Stacked Dielectric Resonator Antennas (Invited)

10:40-11:10 Boyuan Ma (University of Electronic Science and Technology of China, China); Shaode Huang (Chongqing University, China); Deqiang Yang and Jin Pan (University of Electronic Science and Technology of China, China)

MA2A -2 Design of Metasurface Antennas Using Characteristic Mode Analysis and Manipulation (Invited)

11:10-11:40 Deqiang Yang, Sihao Liu, Kai Sun and Yongpin Chen (University of Electronic Science and Technology of China, China)

MA2A -3 Direct Surface Integral Equation-Based Characteristic Mode Formulation for Composite Metallic-Dielectric Structures

11:40-11:55 Shaode Huang and Ming-Chun Tang (Chongqing University, China); Chao-Fu Wang (National University of Singapore, Singapore)

MA2A -4 A Pattern Reconfigurable Antenna Applied for Automobile 5G Communication

11:55-12:10 Dongdong Geng (China Automotive Engineering Research Institute, China); Jianmei Lei (State Key Laboratory of Vehicle NVH and Safety Technology & Chongqing Engineering Research Center for Automotive EMC Development, China); Tingting Tao, Bangrui Zhu, Bolun Yu and Deqiang Yang (University of Electronic Science and Technology of China, China)

10:40 - 12:10, Mon, November 15, 2021

Special Session: MA3A

Advanced Wireless Devices Based on Metamaterials and Metasurfaces

Room: Room 3; **Zoom Meeting ID:** 851 3330 8489; **Passcode:** 888888;

Zoom Link: <https://us02web.zoom.us/j/85133308489?pwd=ekk2WUhqWHZEUDhpc2laY1pGdGFDT09>

Organizers: Mei Li, Zhangjie Luo

Chairs: Mei Li, Zhangjie Luo

MA3A-1 Multifunctional Fed Coding Metasurface (Invited)

10:40-11:10 Li Si Jia (Air Force Engineering University & Southeast University, China); Zhuo Yue Li, Bo Wen Han and Guo Shuai Huang (Air Force Engineering University, China)

MA3A-2 A Planar Wideband Wide-Angle Scanning Metasurface Phased Array (Invited)

11:10-11:40 Yan Li, Shaoqiu Xiao (Sun Yat-Sen University, China)

MA3A-3 A Compact Low-Sidelobe Circularly Polarized Microstrip Patch Array Based on Slow-Wave Transmission Line Feed Network

11:40-11:55 Lin Pu, Mei Li, Ming-Chun Tang (Chongqing University, China)

MA3A-4 A Compact Self-Decoupled Filtering Microstrip Patch Antenna

11:55-12:10 Sijie Tian, Mei Li, Ming-Chun Tang (Chongqing University, China); Lei Zhu (University of Macau, China)

14:20 - 15:50, Mon, November 15, 2021

Special Session: MP1A

Microwave, Millimeter and Terahertz Systems and Applications

Room: Room 1; **Zoom Meeting ID:** 896 6228 0028; **Passcode:** 888888;

Zoom Link: <https://us02web.zoom.us/j/89662280028?pwd=U3F3MVFyNUdzWTVmL0RCs0JNM1IVdz09>

Organizers: Buning Tian, Cheng Jin

Chairs: Buning Tian, Cheng Jin

MP1A-1 Study of Triangle Array Arrangements With Lower Sidelobe for 5G Mobile Base Station Antennas

14:20-14:35 Buning Tian (Beijing Institute of Technology, China)

MP1A-2 A 140 GHz Gain-Boosting Power Amplifier With Sub-Harmonic Mixer in 40 nm CMOS

14:35-14:50 Chuyou Hu, Jiacheng Guo and Sanming Hu (Southeast University, China)

MP1A-3 Wide Band Millimeter Wave Circular Polarization Antenna Based on Glass Wafer Substrate

14:50-15:05 Min Gao and Yan Li (Academy of Space Electronic Information Technology, China); Chunbang Wu (Xi'an Institute of Space Radio Technology, China); Buning Tian (Beijing Institute of Technology, China); Shicheng Yang (National Key Laboratory of Science and Technology on Space Microwave, China); Jianping An (Beijing Institute of Technology, China)

MP1A-4 Terahertz Communication Demonstration by Using a High-Tc Superconducting Josephson Receiver Integrated With a Miniature Cryocooler

15:05-15:20 Xiang Gao (Beijing Institute of Technology, China); Jia Du (CSIRO, Australia); Ting Zhang (University of Technology Sydney, Australia)

MP1A-5 A Novel Architecture for THz-Band Intersatellite Link Service

15:20-15:35 Buning Tian (Beijing Institute of Technology, China)

MP1A-6 Broad Beam Antenna Study for THz Band Wide Angle Scan Phased Array Antenna

15:35-15:50 Yan Li, Min Gao (Academy of Space Electronic Information Technology, China); Chunbang Wu (Xi'an Institute of Space Radio Technology, China); Shicheng Yang (National Key Laboratory of Science and Technology on Space Microwave, China); Buning Tian and Jianping An (Beijing Institute of Technology, China)

14:20 - 15:50, Mon, November 15, 2021

Special Session: MP2A

Advanced Metamaterial and Metasurface for Manipulating Scattering and Radiation

Room: Room 2; **Zoom Meeting ID:** 840 9070 9894; **Passcode:** 888888;

Zoom Link: <https://us02web.zoom.us/j/84090709894?pwd=VHV3ZnRQbURmVXFxMHkvZFRGdXZjUT09>

Organizers: Ting Shi and Yan Li

Chairs: Ting Shi and Yan Li

MP2A-1 A Broadband Polarization Rotation Phase Gradient Metasurface Designed by All-Dielectric High-Permittivity Ceramic Blocks

14:20-14:35 Liyang Li, Jiafu Wang and Shaobo Qu (Air Force Engineering University, China)

MP2A-2 Design of a Metasurface-Based Spherical Lens With Polarization Conversion Characteristic

14:35-14:50 Lixin Dang, Yuping Shang and Cheng Liao (Southwest Jiao Tong University, China)

MP2A-3 Low-Profile Capacitive Circuit Absorber Based on Enlarged Unit Periodicity: Light-Weight and Ultrawideband

14:50-15:05 Ting Shi (University of Electronic Science and Technology of China); Ming-Chun Tang (Chongqing University, China)

MP2A-4 A Wide-Angle Metamaterial Absorber Based on Three-Dimensional Prism Structure

15:05-15:20 Yanzhao Wang, He-Xiu Xu (Air force Engineering University, China)

MP2A-5 Frequency Decoupled Coding Meta-Mirror by Combining Propagation Phase With Geometric Phase

15:20-15:35 Zhenfei Li and Weiren Zhu (Shanghai Jiao Tong University, China)

14:20 - 15:50, Mon, November 15, 2021

Special Session: MP3A

Multi-Mode Antennas/Circuits in Modern Communications

Room: Room 3; **Zoom Meeting ID:** 851 3330 8489; **Passcode:** 888888;

Zoom Link: <https://us02web.zoom.us/j/85133308489?pwd=ekk2WUhqWHZEUDhpc2laY1pGdGFQDQT09>

Organizers: Neng-Wu Liu, Gang Zhang

Chairs: Neng-Wu Liu, Gang Zhang

MP3A-1 Low-Profile Patch Antennas With Multi-Beam, Multi-Polarization, or Harmonic Suppressing by Using Multi-Mode Concept (Invited)

14:20-14:50 Neng-Wu Liu (Xidian University, China); Lei Zhu (University of Macau, China)

MP3A-2 A Dual-Circularly Polarized Antenna With Wide- Beamwidth

14:50-15:05 Bing-Bing Huang, Neng-Wu Liu, Liang-Xin Xia and Guang Fu (Xidian University, China)

MP3A-3 Design of a Triple-Band Bandpass Filter Based on Coaxial Resonators

15:05-15:20 Zhengyu Sun, Gang Zhang, Mingyue Pan, Yuan Chen and Wanchun Tang (Nanjing Normal University, China); Jiquan Yang (Jiangsu Key Laboratory of 3D Printing Equipment and Manufacturing, China)

MP3A-4 A New Wideband Filtering Power Divider Based on Rectangle Patch Resonator With Compact Size

15:20-15:35 Zhengkang Liu, Qiyun Zhang, Jifeng Liu, Qian Sun, Gang Zhang and Wanchun Tang (Nanjing Normal University, China)

16:00 - 18:00, Mon, November 15, 2021

Special Session: MP1B

Substrate Integrated Circuits and Systems

Room: Room 1; Zoom Meeting ID: 896 6228 0028; Passcode: 888888;

Zoom Link: <https://us02web.zoom.us/j/89662280028?pwd=U3F3MVFyNUdzWTVmL0RCS0JNM1IVdz09>

Organizers: Lorenzo Silvestri, Maurizio Bozzi

Chairs: Lorenzo Silvestri, Maurizio Bozzi

MP1B-1 Novel Structures and Technologies for Microwave Sensors (Invited)

16:00-16:30 Maurizio Bozzi (University of Pavia, Italy)

MP1B-2 Slab Air-Filled Substrate Integrated Waveguide (SAFSIW) Cruciform Coupler

16:30-16:45 Nhu-Huan Nguyen (University of Grenoble Alpes & Polytechnique Montréal, France); Anthony Ghiotto (University of Bordeaux, France); Anne Vilcot and Tan-Phu Vuong (Grenoble INP, France); Ke Wu (Polytechnique Montréal, Canada)

MP1B-3 Differentially-Fed Patch Antenna With Electrically Large Property Based on TM₀₃ Mode Using SISL Technology

16:45-17:00 Xihui Teng, Yu Luo, Ningning Yan and Kaixue Ma (Tianjin University, China)

MP1B-4 Substrate Integrated Components for Passive Millimeterwave-Frequency Beamforming Networks

17:00-17:15 Laura Van Messem (Ghent University & None, Belgium); Arno Moerman, Olivier Caytan, Sam Lemey, Hendrik Rogier and Igor Lima de Paula (Ghent University, Belgium)

MP1B-5 A Test Fixture for the Measurement of 3-Port Y-Junction AFSIW Circuits

17:15-17:30 Issam Marah (IMS Research Center, France); Anthony Ghiotto (Bordeaux-INP, unknown); Aurélie Verger (COBHAM, France); Jean-Marie Pham (University of Bordeaux, France)

MP1B-6 A Compact Folded Patch Coupler Based on SISL Platform

17:30-17:45 Jia Liu, Yongqiang Wang and Kaixue Ma (Tianjin University, China)

MP1B-7 Overview of Air-Filled SIW Filter Topologies

17:45-18:00 Nicolò Delmonte and Lorenzo Silvestri (University of Pavia, Italy); Cristiano Tomassoni (University of Perugia, Italy); Luca Perregrini and Maurizio Bozzi (University of Pavia, Italy)

16:00 - 18:00, Mon, November 15, 2021

Special Session: MP2B

Miniaturized Multifunctional Antennas and Passive Circuits

Room: Room 2; **Zoom Meeting ID:** 840 9070 9894; **Passcode:** 888888;

Zoom Link: <https://us02web.zoom.us/j/84090709894?pwd=VHV3ZnRQbURmVXFxMHkvZFRGdXZjUT09>

Organizers: Liying Nie, Yihong Su

Chairs: Liying Nie, Yihong Su

**MP2B-1 A Metamaterial-Based Tri-Port Antenna Using Structure Reused Technique
(Invited)**

16:00-16:30 Liying Nie (Hefei University of Technology, China)

MP2B-2 Broadband Vertical Transition Based on LCP Multilayer Substrate

16:30-16:45 Wei Hong Liu, Qian Huang and Yuan Chen (Xi'an University of Posts &
Telecommunications, China)

**MP2B-3 A Dual-Band Multibeam Antenna Based on the Mode Composite Ridged
Waveguide for 5G Millimeter Wave Applications**

16:45-17:00 Zheng Liu, XianQi Lin and YiHong Su (University of Electronic Science and
Technology of China, China)

**MP2B-4 Improved Joint Feeding Network for Mode Composite Coplanar Wave-
Guide With Single Layer Structure**

17:00-17:15 YiHong Su, Zheng Liu and XianQi Lin (University of Electronic Science and
Technology of China, China)

MP2B-5 A Spoof Surface Plasmon Polariton Antenna Feeding With Horn

17:15-17:30 Yang Zheng, Zhixin Wang, Zhiwei Li, Yongxin Sha, Fangzheng Ji and Zhaoneng
Jiang (Hefei University of Technology, China)

16:00 - 18:00, Mon, November 15, 2021

Special Session: MP3B

Antennas, Devices, and Metamaterials Based on Advanced Materials and Processes

Room: Room 3; **Zoom Meeting ID:** 851 3330 8489; **Passcode:** 888888;

Zoom Link: <https://us02web.zoom.us/j/85133308489?pwd=ekk2WUhqWHZEUDhpc2laY1pGdGFDT09>

Organizers: Di Zhou, Jianjia Yi, Cheng Guo, Hongyu Shi

Chairs: Di Zhou, Hongyu Shi

MP3B-1 Waveguide Coupler in Designer Surface Plasmon Using Topological Edge States

16:00-16:15 Bolin Li, Hongyu Shi, Juan Chen and Anxue Zhang (Xi'an Jiaotong University, China); Zhuo Xu (Electronic Materials Research Laboratory, Xi'an Jiaotong University, China)

MP3B-2 A WR-3 Band Waveguide Filter Based on Copper Additive Manufacturing

16:15-16:30 Xiaozhu Wen (Xi'an Jiaotong University, China); Yang Yu (University of Birmingham, United Kingdom); Cheng Guo (Xi'an Jiaotong University, China); Guanghua Shi and Zhen Wang (Hebei Semiconductor Research Institute, China); Anxue Zhang (Xi'an Jiaotong University, China)

MP3B-3 Polarization-Insensitive Tunable Frequency Selective Surface Based on Liquid Crystal at Ku-Band

16:30-16:45 Jifei Zou, Ruiming Li, Jing Tian, Di Jiang (University of Electronic Science and Technology of China, China). Jie Gao and Kainan Qi (Science and Technology on Electromagnetic Scattering Laboratory Beijing, China)

MP3B-4 Ku-Band Tunable Frequency Selective Surface Based on Liquid Crystal With Second-Order Response

16:45-17:00 Chen Haiqun, Ruiming Li, Jing Tian and Di Jiang (University of Electronic Science and Technology of China, China); Jie Gao and Kainan Qi (Science and Technology on Electromagnetic Scattering Laboratory Beijing, China)

MP3B-5 Multi-Functional Water Antenna Structure

17:00-17:15 James Shen and Lin Zhou (Nanyang Technological University, Singapore)

MP3B-6 Design of a Ku-Band Highly-Integrated Dual-Polarized Dipole Antenna Array

17:15-17:30 Shao Jianxing (Air Force Engineering University, China)

MP3B-7 Dielectric Resonator Antenna With Y3Al5O12 Transparent Dielectric Ceramics for 5G Millimeter-Wave Applications

17:30-17:45 Chao Du and Di Zhou (Xi'an Jiaotong University, China)

08:30 - 10:15, Tue, November 16, 2021

Special Session: TA1A

Millimeter Wave & Terahertz Solid-State Circuit and System

Room: Room 1; **Zoom Meeting ID:** 823 2574 9816; **Passcode:** 888888;

Zoom Link: <https://us02web.zoom.us/j/82325749816?pwd=d0JvYk95MllsQnpEVVI0VTdZVFZMdz09>

Organizers: Zhongqian Niu, Daotong Li

Chairs: Zhongqian Niu, Daotong Li

TA1A-1 The Design of a 220GHz Phased Array Receiver Front End Based on Solid-State Circuits (Invited)

08:30-09:00 Zhongqian Niu, Bo Zhang and Yong Fan (University of Electronic Science and Technology of China, China)

TA1A-2 Recent Progress of Millimeter-Wave Circuits Using Groove Gap Waveguide Technology (Invited)

09:00-09:30 Wenjie Feng (Nanjing University of Science and Technology, China)

TA1A-3 Low-Pass Filter Based on a Novel Compact Microstrip Resonant Cell (CMRC) in Terahertz Band

09:30-09:45 Miao Ma, Bo Zhang and Yong Fan (University of Electronic Science and Technology of China, China)

TA1A-4 A D-Band H-Plane Waveguide Power Divider

09:45-10:00 Ming Guan and Bo Zhang (University of Electronic Science and Technology of China, China)

TA1A-5 An Accurate Wideband Radiometer Model Including Both Noise Factor Fluctuation and Effective Bandwidth Characteristics

10:00-10:15 Daotong Li (Chongqing University, China)

08:30 - 10:15, Tue, November 16, 2021

Session: TA2A

Heterogeneous Integration and Packaging Techniques

Room: Room 2; Zoom Meeting ID: 833 4208 6842; Passcode: 888888;

Zoom Link: <https://us02web.zoom.us/j/83342086842?pwd=Zlc2a2xFeWxzUzcyYGV2TVRlMVlZZz09>

Chairs: Lin-Sheng Wu, Zihao Chen

TA2A-1 A W-Band, Wideband, Low-Loss and Three-Dimensionally Coupled Transition Using Micromachined Rectangular Micro-Coaxial Line for Flexible Component Integration Applications (Invited)

08:30-09:00 Jian Xu Sun, Yu Jian Cheng and Yong Fan (University of Electronic Science and Technology of China, China)

TA2A-2 Memristive RF Devices and Antennas Based on Conducting-Bridge RAM (Invited)

09:00-09:30 Lin-Sheng Wu, Zong-Rui Xu and Yi-Feng Ye (Shanghai Jiao Tong University, China)

TA2A-3 Research on Au/Au Micro-Bump Bonding for Millimeter Wave Frequencies Heterogeneous Integration

09:30-09:45 Ming Wang and Jiayun Dai (Science and Technology on Monolithic Integrated Circuits and Modules Laboratory, China); Fei Wang and Yuechan Kong (Nanjing Electronic Devices Institute, China)

TA2A-4 Low Temperature Wafer Level Au-Au Bonding for Heterogeneous Integration

09:45-10:00 Fei Wang (Nanjing Electronic Devices Institute, China); Jiayun Dai (Science and Technology on Monolithic Integrated Circuits and Modules Laboratory, China); Yuechan Kong and Dongyi Cui (Nanjing Electronic Devices Institute, China)

TA2A-5 High Gain and Low Profile Magnetic Current Array Antenna on Fan-Out Wafer Level Packaging

10:00-10:15 Wen Wu (Harbin Institute of Technology, ShenZhen, China); Zihao Chen
(Harbin Institute of Technology, Shenzhen, China)

08:30 - 10:15, Tue, November 16, 2021

Session: TA3A

Advanced Material Based Power Electronics

Room: Room 3; Zoom Meeting ID: 825 4916 6570; Passcode: 888888;

Zoom Link: <https://us02web.zoom.us/j/82549166570?pwd=ZfZsYmdySWNVVfHkKzVFMIJGcGtrZz09>

Chairs: Haorui Luo, Hanlin Xie

TA3A-1 A Hybrid Large-Signal Compact Model for GaN HEMTs

08:30-08:45 Haorui Luo and Yongxin Guo (National University of Singapore, Singapore)

TA3A-2 Analysis of Heat Dissipation of Nanocrystalline Diamond Capping Layers for GaN HEMTs Applications

08:45-09:00 Haixin Guo, Yizhuang Li, Yuechan Kong and Tangsheng Chen (Nanjing Electronic Devices Institute, China)

TA3A-3 Design of Anti-Interference RF Chip in Satellite Navigation Receiver

09:00-09:15 Yue Yin (Northwestern Polytechnical University, China); Jianfeng Fan (China Ceprei Laboratory, China); Haobo Qi and Shigang Zhou (Northwestern Polytechnical University, China)

TA3A-4 A Novel Wideband Programmable-Gain Amplifier Based on Active-Feedback Technology

09:15-09:30 Yue Yin (Northwestern Polytechnical University, China); Lei Liu (Electronic Product Reliability and Environmental Testing Research Institute, China); Runhuan Zhang; Shigang Zhou (Northwestern Polytechnical University, China)

TA3A-5 Ultra-Wideband 3-Way Equal-Power Divider Based on Multi-Section Chebyshev Matching Method

09:30-09:45 Shaokun Li, Piao Guo, Da Yi and Ming-Chun Tang (Chongqing University, China)

TA3A-6 Design of the Ka-Band Up-Down Conversion Module

09:45-10:00 Song Ming (Beijing Institute of Long March Space Vehicle, China)

TA3A-7 A 2-6 GHz Single-Chip Transceiver Front-End GaN MMIC for Electronic Warfare Application

10:00-10:15 Bowen Tang (University of Electronic Science and Technology of China, China)

10:25 - 12:10, Tue, November 16, 2021

Special Session: TA1B

Efficient Optimization Approaches for Microwave Devices

Room: Room 1; **Zoom Meeting ID:** 823 2574 9816; **Passcode:** 888888;

Zoom Link: <https://us02web.zoom.us/j/82325749816?pwd=d0JvYk95MllsQnpEVVl0VTdZVFZMdz09>

Organizers: Sheng Xin Zhang, Shao Yong Zheng

Chairs: Sheng Xin Zhang, Shao Yong Zheng

TA1B-1 A New Differential Evolution Algorithm for the Optimization of Devices With Hybrid Variables

10:25-10:40 Shaoyong Zheng and Haijun Wang (Sun Yat-Sen University, China)

TA1B-2 Adaptive Optimization of Continuous and Discrete Variables for Electromagnetic Device Design

10:40-10:55 Sheng Xin Zhang (Jinan University, China)

TA1B-3 Improving the Prediction Accuracy for Expensive Microwave Device Optimization With Mahalanobis Distance

10:55-11:10 Yi Nan Wen and Sheng Xin Zhang (Jinan University, China)

TA1B-4 Adaptive Objective Space Selection Algorithm for the Optimization of Computationally Expensive Electromagnetic Problems

11:10-11:25 Jie Lin and Shaoyong Zheng (Sun Yat-Sen University, China)

TA1B-5 Probability Evolution Based DE for Array Antenna Design With Mixed Discrete-Continuous Variables

11:25-11:40 Haijun Wang, Chuangkai Wang and Shaoyong Zheng (Sun Yat-Sen University, China)

TA1B-6 Pixelated Electromagnetic Surface Design Based on Deep Learning

11:40-11:55 Shunjie Gu and Jianxun Su (Communication University of China, China);
Zengrui Li (Communication University of China, China)

10:25 - 12:10, Tue, November 16, 2021

Special Session: TA2B

Modeling of Electromagnetic Interference and Antenna Decoupling

Room: Room 2; **Zoom Meeting ID:** 833 4208 6842; **Passcode:** 888888;

Zoom Link: <https://us02web.zoom.us/j/83342086842?pwd=Zlc2a2xFeWxzUzcyaGV2TVRlMVlZZz09>

Organizers: Jinxin Li, Pei Xiao

Chairs: Jinxin Li, Pei Xiao

TA2B-1 Mutual Coupling Reduction in Circularly Polarized Array Using Decoupling Structure With Polarization Rotation Property (Invited)

10:25-10:55 Bo Liu and Xiaoming Chen (Xi'an Jiaotong University, China)

TA2B-2 Modeling of Radiated EMI for Hybrid Si/SiC Inverter Circuit

10:55-11:10 Pei Xiao, Jiawei Li, Chao. Zhang and Gaosheng Li (Hunan University, China)

TA2B-3 A Miniaturized Broadband and Multi-Band Omnidirectional Antenna for Electromagnetic Compatibility Measurement

11:10-11:25 Chao. Zhang (Hunan University, China); Zhonghao Lu (National University of Defense Technology, China); Pei Xiao and Gaosheng Li (Hunan University, China)

TA2B-4 Statistical Analysis of the Shielding Effectiveness of an Enclosure Under Multiple Uncertainties

11:25-11:40 Jin-Ping Wang, Bao-Lin Nie, Hao Wang and Yue-Ling Cheng (University of Electronic Science and Technology of China, China)

TA2B-5 A Dual-Polarized Slotline-Coupler-Based Antenna With Low-Profile and High Isolation

11:40-11:55 Jin-Xin Li (Hunan University, China)

TA2B-6 Isolation Enhancement in Closely Packed Wideband Antennas Using Metasurface

11:55-12:10 Jin-Xin Li (Hunan University, China)

10:25 - 12:10, Tue, November 16, 2021

Special Session: TA3B

High Performance Active Devices in Transceivers

Room: Room 3; **Zoom Meeting ID:** 825 4916 6570; **Passcode:** 888888;

Zoom Link: <https://us02web.zoom.us/j/82549166570?pwd=ZFZsYmdySWNVVfhhKzVFMIJGcGtrZz09>

Organizers: Yuanchun Li, Zhijiang Dai

Chairs: Yuanchun Li, Zhijiang Dai

TA3B-1 A Doherty Power Amplifier With Extended Back-Off by Using Non-Infinite Peaking Impedance and Complex Combining Load

10:25-10:40 Feng Xiao, Dai Zhijiang, Pang Jingzhou, Gao Ruibin, Ran Xiongbo and Mingyu Li (Chongqing University, China)

TA3B-2 A 120-166 GHz InP HBT Frequency Doubler With Conversion Gain of 4.4 dB

10:40-10:55 Qin Yu and Weihua Yu (Beijing Institute of Technology, China)

TA3B-3 Dual-Band Filtering Power Amplifier With High Efficiency

10:55-11:10 Yuan Chun Li, Di-Si Wu, Yuanbo Wang and Quan Xue (South China University of Technology, China)

TA3B-4 A Ka-Band Watt-Level High-Efficiency Integrated Doherty Power Amplifier in GaAs Technology

11:10-11:25 Heng Xie (University of Electronic Science and Technology of China, China)

TA3B-5 CMOS-Compatible InAlN/GaN HEMTs on Silicon for RF Power Amplifiers in 5G Mobile SoCs

11:25-11:40 Hanlin Xie (Singapore-MIT Alliance for Research and Technology Centre & Nanyang Technological University, Singapore); Zhihong Liu (Xidian University, China); Wenrui Hu (National University of Singapore, Singapore); Yu Gao (Singapore-MIT Alliance for Research and Technology Center, Singapore); Kenneth Lee (Singapore-MIT Alliance for Research and Technology Centre, Singapore); Yongxin Guo (National University of Singapore, Singapore); Geok Ing Ng (NTU, Singapore)

TA3B-6 High Efficient Kilowatt Power Amplifier Modules for Cyclotrons Applications

11:40-11:55 Renbin Tong and Dragos Dancila (Uppsala University, Sweden)

TA3B-7 Highly Efficient Microwave Power System of Magnetrons Utilizing Frequency-Searching Injection-Locking Technique With No Phase Shifter

11:55-12:10 Yao Liu (Sichuan University, China)

13:30 - 15:30, Tue, November 16, 2021

Special Session: TP1A

Intelligent Metasurfaces for Wireless Sensing and Communications

Room: Room 1; **Zoom Meeting ID:** 823 2574 9816; **Passcode:** 888888;

Zoom Link: <https://us02web.zoom.us/j/82325749816?pwd=d0JvYk95MllsQnpEVVI0VTdZVFZMdz09>

Organizers: Lianlin Li, Yunhua Tan, Jiaqi Han, Yu Zhao

Chairs: Lianlin Li, Yu Zhao

**TP1A-1 Spatiotemporal Metasurface for Electromagnetic Wave Scattering Control
(Invited)**

13:30-14:00 Yijun Feng, Na Zhang, Xinyao Luo and Ke Chen (Nanjing University, China)

**TP1A-2 Machine Vision Assisted Online Array State Code Optimization Method for
1-Bit Programmable Metasurface**

14:00-14:15 Hanting Zhao, Menglin Wei, Hongrui Zhang, Zhuo Wang, Hengxin Ruan,
Siyuan Jiang and Lianlin Li (Peking University, China)

TP1A-3 Microwave Imaging and Classification of Hand Gestures

14:15-14:30 Hongrui Zhang, Hanting Zhao, Zhuo Wang, Menglin Wei, Siyuan Jiang and
Lianlin Li (Peking University, China)

**TP1A-4 Microwave Lip Reading of Chinese Mandarin Based on Programmable
Metasurface**

14:30-14:45 Siyuan Jiang, Hengxin Ruan, Hanting Zhao, Menglin Wei, Zhuo Wang,
Hongrui Zhang and Lianlin Li (Peking University, China)

**TP1A-5 High Resolution 3D Microwave Real Time Imaging System Based on
Intelligent Metasurface**

14:45-15:00 Zhuo Wang, Hanting Zhao, Hongrui Zhang, Menglin Wei, Siyuan Jiang and
Lianlin Li (Peking University, China)

TP1A-6 Holographic Antenna for Polarization Reconfigurable 2-D Beam Scanning

15:00-15:15 Yi-Dong Wang (Peking University, China)

13:30 - 15:30, Tue, November 16, 2021

Special Session: TP2A

New Progress in 2D Material and Metasurface for RF and Antenna Applications

Room: Room 2; **Zoom Meeting ID:** 833 4208 6842; **Passcode:** 888888;

Zoom Link: <https://us02web.zoom.us/j/83342086842?pwd=Zlc2a2xFeWxzUzcyaGV2TVRlMVlZZz09>

- Organizers:** Weiren Zhu, Bian Wu, Zhenguo Liu,
Guan-Long Huang, Mustafa K. Taher Al-Nuaimi
- Chairs:** Bian Wu, Guan-Long Huang
- TP2A-1 Recent Progress in Applications of Graphene in Microwave (Invited)**
- 13:30-14:00 Zhen-Guo Liu, Hao Chen, Ming-Yang Geng and Wei Bing Lu (Southeast University, China)
- TP2A-2 Nature Inspired Metasurfaces for EM-Wave Shaping (Invited)**
- 14:00-14:30 Mustafa Khalid Taher Al-Nuaimi (Foshan University, China)
- TP2A-3 Dynamic Polarization Manipulation in Graphene-Based Metasurface**
- 14:30-14:45 Jin Zhang and Weiren Zhu (Shanghai Jiao Tong University, China)
- TP2A-4 Graphene-Based Risorber With Wide Transmission Band and Narrow Transitional Band**
- 14:45-15:00 Sibao Mao (Xidian University, China); Shining Sun and Xiaochun Liu (Research Institute for Special Structures of Aeronautical Composite AVIC, China); Bian Wu (Xidian University, China)
- TP2A-5 Design of CP Reflectarray for 80 - 100 GHz Band Based on Pancharatnam-Berry Phase Theory**
- 15:00-15:15 Mustafa Khalid Taher Al-Nuaimi and Guan-Long Huang (Foshan University, China)
- TP2A-6 Design of a Compact D-Band All-Metal Antenna Fed by a Circular Waveguide**
- 15:15-15:30 Chao Gu (Queen's University Belfast, United Kingdom); Fei Cheng (Sichuan University, China); Zhiwei Zhang (Hangzhou Dianzi University, China)

13:30 - 15:30, Wed, November 16, 2021

Session: TP3A

Emerging Materials for Microwave Applications

Room: Room 3; Zoom Meeting ID: 825 4916 6570; Passcode: 888888;

Zoom Link: <https://us02web.zoom.us/j/82549166570?pwd=ZfZsYmdySWNVVfHkKzVFMIJGcGtrZz09>

Chairs: Wenhua Gu, Cong Wang

TP3A-1 Design of the Transparent and Flexible Metamaterial Cross Polarization Converters (Invited)

13:30-14:00 Yanghui Wu, Chen Fu and Huiyu Chang (Nanjing University of Science and Technology, China); Senfeng Lai (Guangdong Polytechnic Normal University, China); Xue Chen and Wenhua Gu (Nanjing University of Science and Technology, China)

TP3A-2 A Flexible Low Profile and RCS Broadband Dual Circularly Polarized Metasurface Antenna

14:00-14:15 Hua Li (University of Chinese Academy of Sciences & Aerospace Information Research Institute, Chinese Academy of Sciences, China)

TP3A-3 Microwave MIM Capacitors Enabled by an iCVD N-Type Parylene Dielectric for Flexible MMIC

14:15-14:30 Wenhao Zheng (University of Electronic Science and Technology, China)

TP3A-4 Optically Transparent and Flexible FSS and Microwave Absorbers Based on Silver Nanowire Ink (Invited)

14:30-15:00 Atif Shamim (King Abdullah University of Science and Technology, Saudi Arabia)

TP3A-5 Fast Electrical and Optical Activation of RF Switches Integrating Vanadium Dioxide (VO₂) Phase Change Material

15:00-15:15 Aurelian Crunteanu (XLIM, CNRS/ University of Limoges, France); Vinod VK Thalakkatukulathil (XLIM Research Institute, CNRS/University of Limoges, France); Jean-Christophe Orlianges (XLIM, CNRS/ Université de Limoges,

France); Annie Bessaudou (XLIM Research Institute, CNRS/University of Limoges, France)

TP3A-6 Terahertz On-Chip Tunable Spoof Surface Plasmon Polaritons Transmission Lines Based on Vanadium Dioxide

15:15-15:30 Huali Zhu and Yong Zhang (University of Electronic Science and Technology of China, China); Haoding Murong (Information Center of Shenzhen Customs, China); Yukun Li (University of Electronic Science and Technology of China, China); Jinxiong Xie (Shenzhen Academy of Inspection and Quarantine, China); Chengkai Wu (UESTC, China)

15:40 - 17:40, Tue, November 16, 2021

Special Session: TP1B

Advanced Materials and Emerging Applications of WPT

Room: Room 1; **Zoom Meeting ID:** 823 2574 9816; **Passcode:** 888888;

Zoom Link: <https://us02web.zoom.us/j/82325749816?pwd=d0JvYk95MllsQnpEVVI0VTdZVFZMdz09>

Organizers: Hao Zhang, Siping Gao

Chairs: Hao Zhang, Siping Gao

TP1B-1 High Power and Wide Input Power Range Rectifying Metasurface With GaN Diode

15:40-15:55 Mingyang Chang, Hao Xue, Xiaonan Wu, Song Zhang, Fangjie Cheng and Long Li (Xidian University, China)

TP1B-2 Investigation of Uneven Power Feed to Rectifiers for RF Energy Harvesting

15:55-16:10 Sun Hucheng and Yong Wang (Nanjing University of Information Science and Technology, China)

TP1B-3 Broadband Textile Hexagonal Metasurface Antenna for Wearable Applications

16:10-16:25 Rui Pei and Wenli Lu (Donghua University, China); Yuanchen Wang (University of Liverpool, United Kingdom); Jingchen Wang, Mark Leach, Eng Gee Lim and Zhao Wang (Xi'an Jiaotong-Liverpool University, China); Wenzhang Zhang, Jiafeng Zhou and Yi Huang (University of Liverpool, United Kingdom)

TP1B-4 Design of Magnetic Resonance Wireless Power Charging System for Unmanned Aerial Vehicle With GaN HEMT

16:25-16:40 Chen Gao (National University of Singapore, Singapore); Hao Zhang (Northwestern Polytechnical University, China); Junqi Yang (National University of Singapore Suzhou Research, China)

TP1B-5 E-Textile RF Energy Harvesting and Storage Using Organic-Electrolyte Carbon-Based Supercapacitors

16:40-16:55 Mahmoud Wagih, Nicholas Hillier, Alex S Weddell and Stephen Beeby (University of Southampton, United Kingdom)

TP1B-6 Rapid Diplexer Design for High Isolation of Fundamental and 2nd-Harmonic Spectrums

16:55-17:10 Yu-Xuan Deng, Rong-Yao Wang and Hao Zhang (Northwestern Polytechnical University, China)

TP1B-7 1-Bit Reconfigurable Transmitarray for Wireless Power Transmission

17:10-17:25 Kang Shuai, Changrong Liu and Xueguan Liu (Soochow University, China)

TP1B-8 Design of a 6.78 MHz Magnetic-Resonance Wireless Power Transfer System Using GaN HEMT

17:25-17:40 Yi Li and Yongxin Guo (National University of Singapore & National University of Singapore Research Institute-Chongqing, China)

15:40 - 17:40, Tue, November 16, 2021

Special Session: TP2B

Novel Antenna Designs for 5G/6G Mobile Terminals

Room: Room 2; Zoom Meeting ID: 833 4208 6842; Passcode: 888888;

Zoom Link: <https://us02web.zoom.us/j/83342086842?pwd=Zlc2a2xFeWxzUzcyaGV2TVRlMlVlZz09>

- Organizers:** Cong Wang, Yujian Li, Yan Wang, Le Chang
- Chairs:** Yan Wang, Le Chang
- TP2B-1** **A Lightweight K/Ku/Ka-Band Dual-Polarized Perforated Reflector Antenna for Satellite Communication Using 3D Printing**
- 15:40-15:55 Cong Wang, Yongxin Guo (National University of Singapore, Singapore)
- TP2B-2** **A Millimeter-Wave 3D Printed Luneburg Lens Antenna**
- 15:55-16:10 Yujiao Guo (Beijing Jiaotong University, China)
- TP2B-3** **Design of Ka-Band Ortho Mode Transducer With High Isolation**
- 16:10-16:25 Boyang Qian, Shuai Zhang and Sen Zhang (Nanjing University of Science and Technology, China); Li Wu (NanJing University of Science And Technology, China)
- TP2B-4** **Common-Aperture Design of Sub-6 GHz and Millimeter-Wave Antennas for 5G Metal-Rimmed Smartphone**
- 16:25-16:40 Zi-Yue Liang and Yong-Ling Ban (University of Electronic Science and Technology of China, China)
- TP2B-5** **Wideband Self-Decoupled Antenna for 5G Plastic Mobile Phone**
- 16:40-16:55 Fangzhou Zhou, Guomin Yang and Yan Wang (Fudan University, China); Chengfei Zhao and Zhongwei Ji (ZTE Corporation, China)
- TP2B-6** **Co-Frequency Shared-Aperture Dual Antenna Pairs for 5G MIMO Terminals**
- 16:55-17:10 Le Chang (Xi'an Jiaotong University, China)
- TP2B-7** **A Low-Profile Broadband Phased Array Antenna With Wide-Scanning Range**
- 17:10-17:25 Dan Sun, Ruina Xing and Mingxiang Du (AVIC LEIHUA Electronic Technology Research Institute, China, China)

15:40 - 17:40, Tue, November 16, 2021

Session: TP3B

Microwave Chemistry

Room: Room 3; Zoom Meeting ID: 825 4916 6570; Passcode: 888888;

Zoom Link: <https://us02web.zoom.us/j/82549166570?pwd=ZFZsYmduSWNVVfFkKzVFMIJGcGtrZz09>

Chairs: Yanping Zhou, Qian Zhang

TP3B-1 Molecular Mechanism on Non-Thermal Biological Effect of Electromagnetic Radiation: Microwave Post-Polarization Effect (Invited)

15:40-16:10 Kama Huang (Sichuan University, China)

TP3B-2 Simultaneous Removal of p-Nitrophenol and Cr(VI) With Microwave Atmospheric Pressure Plasma

16:10-16:25 Chaoxia Zhao and Kama Huang (Sichuan University, China)

TP3B-3 An Electrodeless Atmospheric Microwave Plasma Jet for Efficient Degradation of Antibiotic Norfloxacin

16:25-16:40 Li Xue and Kama Huang (Sichuan University, China)

TP3B-4 Influence of Weak Microwaves on Spatial Collision and Energy Distribution of Water Molecules

16:40-16:55 Dezhi Gou (Sichuan University, China)

TP3B-5 Incoherent Microwaves Heating of Water: A Combined Experimental and Simulated Investigation

16:55-17:10 Hongxiao Shi (Sichuan University, China)

TP3B-6 Towards Graphene Based Molecular Electronics

17:10-17:25 Qian Zhang (National University of Singapore (Chongqing) Research Institute, China)

TP3B-7 Graphene Based Molecular Junctions: From Molecular Wire to Controllable Electronics Devices

17:25-17:40 Shuhui Tao (National University of Singapore (Chongqing) Research Institute, China)

08:30 - 10:00, Wed, November 17, 2021

Special Session: WA1A

Microwave Devices and Sensors Based on Integrated Passive Device Technology

Room: Room 1; **Zoom Meeting ID:** 882 7187 3423; **Passcode:** 888888;

Zoom Link: <https://us02web.zoom.us/j/88271873423?pwd=YmpHa0lKZzJ2TVpIL0pQNGFHakt6QT09>

Organizers: Jun-Ge Liang, Yong-Le Wu

Chairs: Jun-Ge Liang, Yong-Le Wu

WA1A-1 Co-Design of GaN Based Schottky Barrier Diode and Rectification Sensor With High Efficiency and Sensitivity

08:30-08:45 Yang Li and Jiayi Yang (Jiangnan University, China); Taofei Pu (Shenzhen University, China); Jinping Ao (Jiangnan University, China)

WA1A-2 Synthesis of Centrosymmetric-Coupled Stub Structure Bandpass Filter: Dual-Band, Triple-Band, Quad-Band, and Quint-Band

08:45-09:00 Fan Zhang (Communication University of China, China); Xiao Wang (Jiangnan University, China); Xiang-Lin Huang (Communication University of China, China); Jun-Ge Liang (Jiangnan University, China)

WA1A-3 NSRR Microwave Sensor Based on PLL Technology for Concentration Detection of Glucose Solution

09:00-09:15 Xiao-dong Fu, Jun-Ge Liang, Xiao Wang, Jia-Kang Wu and Xiao-Feng Gu (Jiangnan University, China); Cong Wang (Harbin Institute of Technology, China); Yongle Wu (Beijing University of Posts and Telecommunications, China)

WA1A-4 Thin-Film Integrated Passive Device Technology Based Ultraminiaturized Bandpass Filter for 5G Communication Application

09:15-09:30 Xiao Tan, Cong Wang, Yuchen Wei and Alok Kumar (Harbin Institute of Technology, China)

WA1A-5 A Non-Invasive RF Sensor With Fast Response Based on Artistic Patch Antenna

09:30-09:45 Zhao Yao (Qingdao University, China)

WA1A-6 Miniaturized Wideband 90° Coupler Based on Shorted 4-Line Coupled-Line Sections

09:45-10:00 Yana Zheng, Weimin Wang, Yongle Wu, and Yuanan Liu (Beijing University of Posts and Telecom, China)

08:30 - 10:00, Wed, November 17, 2021

Special Session: WA2A

Multifunctional Antenna and Smart-Surface for B5G Application

Room: Room 2; Zoom Meeting ID: 890 7376 8319; Passcode: 888888;

Zoom Link: <https://us02web.zoom.us/j/89073768319?pwd=ZFFGaVFmK0l0bks1d1lmcVU3K0wzQT09>

Organizers: Zhe Chen, Jian Ren

Chairs: Zhe Chen, Jian Ren

WA2A-1 Millimeter-Wave Spoof Surface Plasmon Polariton Based Antenna Using Machine-Learning-Assisted Optimization Method

08:30-08:45 Qian Zhu, Yaxi Jiao, Rui Ni. Ganghua Yang (Huawei Technologies Co., Ltd., China)

WA2A-2 A Slot-Loaded Wideband Patch Antenna Fed With a Dual-Function U-Resonator for Stable Radiation

08:45-09:00 Kai-Dong Hong, Zhe Chen, Xiao Zhang and Tao Yuan (Shenzhen University, China)

WA2A-3 Pattern-Reconfigurable Half-Mode Substrate-Integrated Waveguide Antenna

09:00-09:15 Peicong Chen, Lei Ge (Shenzhen University, China)

WA2A-4 Millimeter-Wave Dual-Band Rectangular Dielectric Resonator Antenna Excited by a Backed Cavity

09:15-09:30 Xuan-Ji Wu and Zhe Chen (Shenzhen University, China)

WA2A-5 Design of 1-Bit Reconfigurable Reflectarray Based on Miniaturized Reconfigurable Unit

09:30-09:45 Puchu Li, Tian Yang, Jian Ren and Ying Zeng Yin (Xidian University, China)

WA2A-6 A Radiation Pattern-Reconfigurable Antenna With Water and Anisotropic Materials

09:45-10:00 Ya-Xing Wang, Xuan-Ji Wu, Zhe Chen and Tao Yuan (Shenzhen University, China)

8:30 - 10:00, Wed, November 17, 2021

Special Session: WA3A

Recent Advances on Electromagnetics Simulation Techniques

Room: Room 3; **Zoom Meeting ID:** 853 6778 6486; **Passcode:** 888888;

Zoom Link: <https://us02web.zoom.us/j/85367786486?pwd=ZkFGakNJeUM5N3B2SFIPd2NxOTRuZz09>

Organizers: Yan Shi, Yumao Wu

Chairs: Yan Shi, Yumao Wu

WA3A-1 Discontinuous Galerkin Time Domain Method With Nonconformal Meshes and Arbitrary Order Bases

8:30-8:45 Shui Peng Li, Peng Wang, Yan Shi (Xidian University, China)

WA3A-2 The Fast Physical Optic Method for the Scattering From Rough Surfaces

8:45-9:00 Yang Su, Yu Mao Wu and Ya-Qiu Jin (Fudan University, China)

WA3A-3 An Electrically Controlled Terahertz Modulator With Slow Wave Based on High Electron Mobility Transistor

9:00-9:15 Tao Chen, Jia Ran, and Yi Ren (Chongqing University of Post and Communications, China)

WA3A-4 JEC-FDTD Method Based on Face-Centered Cube

9:15-9:30 Yang Lixia (Jiangsu University, China); Liufeng Wang, Wei Chen and Yong Bo (Anhui University, China)

WA3A-5 Multi-Objective Optimization Technique Based on Convolutional Autoencoders for Microwave Filter Design

9:30-9:45 Yanxing Wang (The Inner Mongolia University of Hohhot, China); Yaxin Yi, Shuai Bao, Jiaxuan Han and Yongliang Zhang (Inner Mongolia University, China)

10:40 - 12:10, Wed, November 17, 2021

Special Session: WA1B

Phased Array Antennas for Future Wireless Communications

Room: Room 1; Zoom Meeting ID: 882 7187 3423; Passcode: 888888;

Zoom Link: <https://us02web.zoom.us/j/88271873423?pwd=YmpHa0lKZzJ2TVpIL0pQNGFHakt6QT09>

Organizers: Li Sun, Yu-Hang Yang

Chairs: Li Sun, Yu-Hang Yang

WA1B-1 A Rapid Calibration and Pattern Test Method for Phased Array Antenna

10:40-10:55 Rui Ma (Beijing Institute of Space Long March Vehicle, China)

WA1B-2 A Pin Diode Controlled Dual-Mode Branch-Line Coupler

10:55-11:10 Xiaotian Huang (Xidian University, China)

WA1B-3 Design of Beamforming Network With Flat-Topped Radiation Patterns

11:10-11:25 Li Sun (Northwestern Polytechnical University, China)

WA1B-4 An End-Fire Dual Circularly Polarized Antenna for Millimeter-Wave Applications

11:25-11:40 Chan Shao, Yu-Hang Yang and Shigang Zhou (Northwestern Polytechnical University, China)

WA1B-5 Design of Miniaturized Ultra-Wide-Angle Scan Dual-Polarization Array Antenna

11:40-11:55 Lianwei Zhu and Shigang Zhou (Northwestern Polytechnical University, China)

WA1B-6 A Wide-Angle Scanning Phased Array With Low Gain Variation Using Novel Feeding Scheme

11:55-12:10 Chuan Shao, Hui Chu and Xiaohua Zhu (Nanjing University of Science and Technology, China)

10:40 - 12:10, Wed, November 17, 2021

Session: WA2B

Recent Development in Antennas

Room: Room 2; Zoom Meeting ID: 890 7376 8319; Passcode: 888888;

Zoom Link: <https://us02web.zoom.us/j/89073768319?pwd=ZFFGaVFmK0l0bks1d1lmcVU3K0wzQT09>

Chairs: Bing Zhang, Yongle Wu

WA2B-1 A Design of 5G Antenna Array Based on Fractal Structure

10:40-10:55 Haoran Sun (University of Information Technology Chengdu, China)

WA2B-2 A Resonance Point Optimization Method for Axial Size Reduction of the Log-Periodic Dipole Array

10:55-11:10 Junlin Pu and Bing Zhang (Sichuan University, China)

WA2B-3 A New Planar Multi-Fed High-Isolation Broadband Filtering Integrated Triplex Antenna

11:10-11:25 Wenjing Xu, Yongle Wu, Weimin Wang, Yuhao Yang, Yuanan Liu (Beijing University of Posts and Telecom, China)

WA2B-4 Design of A Broad Beam Circularly Polarized Antenna With Dual Modes

11:25-11:40 Wei Wei Guan (Beijing Institute of Aerospace Long March Vehicle, China)

WA2B-5 A Low-Cost Millimeter-Wave High-Gain Slot Antenna Array Fed by Multilayer Waveguide

11:40-11:55 Yifan Yu, Yongle Wu, Yuhao Yang and Weimin Wang (Beijing University of Posts and Telecommunications, China); Jianhong Chen and Cheng Jin (Beijing Institute of Technology, China)

WA2B-6 Power Capacity in Waveguide Longitudinal Shunt Slots Arrays

11:55-12:10 Yong Liao (The Institute of Applied Electronics, China Academy of Engineering Physics, China)

10:40 - 12:10, Wed, November 17, 2021

Session: WA3B

Novel Applications of Metasurfaces

Room: Room 3; **Zoom Meeting ID:** 853 6778 6486; **Passcode:** 888888;

Zoom Link: <https://us02web.zoom.us/j/85367786486?pwd=ZkFGakNJeUM5N3B2SFIPd2NxOTRuZz09>

Chairs: Jianing Yang, Zhi Hao Jiang

WA3B-1 Generalized Sequential Rotation Arrays (SRAs): Theory, Design, and Experiments (Invited)

10:40-11:10 Zhi Hao Jiang and Xinyu Wu (Southeast University, China)

WA3B-2 Utilizing Metamaterial Characteristic to Enhance the Tunability of Liquid Crystal

11:10-11:25 Jun Shu and Yue-Ping Zhang (Shanghai Jiao Tong University, China)

WA3B-3 Tunable Non-Diffraction Spoof Surface Plasmon Polaritons With Liquid Crystal Terahertz Metasurface

11:25-11:40 Ke Chen, Shaojie Wang, Junming Zhao and Yijun Feng (Nanjing University, China)

WA3B-4 Ultra-Low-Profile, Compact, Wideband Metasurface Antenna

11:40-11:55 Zhentian Wu, Pengfei Zhou, Zhi Yang and Ming-Chun Tang (Chongqing University, China)

WA3B-5 Design of Frequency Reconfigurable Near-Zero Refractive Index Materials

11:55-12:10 Tao Tang (Chengdu University of Information Technology, China)

13:30 - 15:30, Wed, November 17, 2021

Special Session: WP1A

Novel Shielding Materials for Advanced Applications

Room: Room 1; **Zoom Meeting ID:** 882 7187 3423; **Passcode:** 888888;

Zoom Link: <https://us02web.zoom.us/j/88271873423?pwd=YmpHa0lKZzJ2TVpIL0pQNGFHakt6QT09>

Organizers: Siping Gao, Da Yi

Chairs: Siping Gao, Da Yi

WP1A-1 Construction of Novel Polymer Composites for Adjustable EMI Shielding and Microwave Absorption Under External Stimuli (Invited)

13:30-14:00 Bin Shen, Xichen Jia and Guoqing Wang (Chinese Academy of Sciences, China)

WP1A-2 Modeling and Analysis of Conductive Aircraft Composite Under Lightning Direct Effects (Invited)

14:00-14:30 Hui Min Lee, Richard Xian-Ke Gao, Zaifeng Yang (Institute of High Performance Computing, A*STAR, Singapore)

WP1A-3 Tailored Biochar and Cementitious Mixtures for Electromagnetic Interference Shielding of Buildings (Invited)

14:30-15:00 Harn Wei Kua, Si-Ping Gao, Kok Ann (Ivan) Tan and Yongxin Guo (National University of Singapore, Singapore)

WP1A-4 Comparative Study of Electric and Magnetic Losses in Shielding Materials for Far-Field and Near-Field Electromagnetic Interference Suppression

15:00-15:15 Zhiyang Qi, Liu Tang, Da Yi and Ming-Chun Tang (Chongqing University, China)

WP1A-5 A Novel Waveguide-Based Test Kit for Material Characterization Over Temperature

15:15-15:30 Si-Ping Gao and Cong Wang (National University of Singapore, Singapore)

13:30 - 15:30, Wed, November 17, 2021

Session: WP2A

Novel Functional Sensors and Antenna Arrays

Room: Room 2; Zoom Meeting ID: 890 7376 8319; Passcode: 888888;

Zoom Link: <https://us02web.zoom.us/j/89073768319?pwd=ZFFGaVFmK0l0bks1d1lmcVU3K0wzQT09>

Chairs: Hongxing Zheng, Liwei Zhao

WP2A-1 A Conformal Microwave Biosensor for Detecting Blood Viscosity

13:30-13:45 Ren Wang, Haoran Sun, Shou-Zhao Jing and Yong Fan (University of Electronic Science and Technology of China, China)

WP2A-2 A Compact Broadband Circular Polarization Slot Antenna With Coplanar Waveguide Feeding

13:45-14:00 Zongyu Zhang, Jiawang Li, Jianyi Zhou (Southeast University, China)

WP2A-3 SIW Leaky-Wave Antenna With Zirconia Ceramic Block for Suppressing the Open Stopband

14:00-14:15 Ziwei Li and Hongxing Zheng (Hebei University of Technology, China)

WP2A-4 Analysis and Design of Wideband Graphite Antenna for Wearable Communication Applications

14:15-14:30 Xiaojun Ying, Qingwen Deng, Siyi Shen, Youjian Hu, Kun Yin and Zhiwei Xu (Zhejiang Lab, China)

WP2A-5 A Wideband Circularly Polarized Endfire Antenna Applied to Luneburg Lens Feeding

14:30-14:45 Liwei Zhao and Yongxin Guo (National University of Singapore & National University of Singapore Research Institute-Chongqing, China)

WP2A-6 A Miniaturized 105 GHz FMCW Radar Based on Antennas/Bare Chip and PCB Interconnection Techniques

14:45-15:00 Li Ya-bin, Hongli Peng, Weihao Li and Mingming Li (Shanghai Jiao Tong University, China)

WP2A-7 Design of an S/X Dual-Band Shared Aperture Antenna Array

15:00-15:15 Pei Su, Rong Shen and Dan Sun (AVIC LEIHUA Electronic Technology Research Institute, China)

WP2A-8 A Novel Dual Circularly-Polarized Transceiver Multi-Beam Antenna

15:15-15:30 Miaomiao Cao, Xuan Wang, Long Wei He, Xiaoning Huo, Yongsheng Cheng, Feng Su, Yang Chuo and Bao Li (Beijing Institute of Space Long March Vehicle, China)

13:30 - 15:30, Wed, November 17, 2021

Session: WP3A

Progress in Emerging Antennas

Room: Room 3; Zoom Meeting ID: 853 6778 6486; Passcode: 888888;

Zoom Link: <https://us02web.zoom.us/j/85367786486?pwd=ZkFGakNJeUM5N3B2SFIPd2NxOTRuZz09>

Chairs: Lei Ge, Lin Zhou

WP3A-1 A Magneto-Electric Dipole Antenna Array With Agile Polarizations and Steerable Beams (Invited)

13:30-14:00 Jun Hu, Xujun Yang and Lei Ge (Shenzhen University, China); Hang Wong (City University of Hong Kong, China)

WP3A-2 A Millimeter-Wave Dual-Band Wideband Metasurface Antenna Based on Printed Ridge Gap Waveguide Feeding

14:00-14:15 Zefang Yu, Yongle Wu, Weimin Wang, Yuhao Yang, Yuanan Liu (Beijing University of Posts and Telecom, China)

WP3A-3 Reconfigurable Fixed-Frequency Beam Steering Leaky-Wave Antenna Based on Binary Coding

14:15-14:30 Dan Zhao, Huiyi Wang and Zhenzhong Rao (Nanjing University of Science and Technology, China)

WP3A-4 Design of a Dual-Polarized Crossed Dipole With Broadband and Broad Beam Width

14:30-14:45 Yang Chuo (Beijing Institute of Space Long March Vehicle, China)

WP3A-5 Wimax Antenna Design and Experiments With Noise Troubleshooting

14:45-15:00 Wen Cheng Lai (National Taiwan University of Science and Technology)

WP3A-6 Design of a Novel K-Band Broadband Circularly Polarized Micro-Strip Antenna Array

15:00-15:15 Shuang Wang (Beijing Institute of Space Long March Vehicle, China)

15:40 - 17:40, Wed, November 17, 2021

Session: WP1B

Novel Processing and Characterization Methods

Room: Room 1; Zoom Meeting ID: 882 7187 3423; Passcode: 888888;

Zoom Link: <https://us02web.zoom.us/j/88271873423?pwd=YmpHa0lKZzJ2TVplL0pQNGFHakt6QT09>

Chairs: Yi Zhang, Da Yi

WP1B-1 Compact Wideband Balun Using Hybrid Folded Substrate Integrated Waveguide/Slotline Resonator (Invited)

15:40-16:10 Dong Gan, Jie Zhou, Yunbo Rao and Xun Luo (University of Electronic Science and Technology of China, China)

WP1B-2 A Broadband Microstrip-To-Microstrip Transition for Flip-Chip Interconnects

16:10-16:25 Zelong Qiu and Tianwei Deng (Sun Yat-Sen University, China)

WP1B-3 Phaseless Spherical Near-Field Antenna Measurement Based on Cubic Spline Interpolation

16:25-16:40 Jiaxin Wang, Weimin Wang, Yongle Wu, Yuanan Liu (Beijing University of Posts and Telecom, China); Weijin Li (GuangDong Communications & Networks Institute, China)

WP1B-4 Measurement of Optical Signal by Microwave Coaxial Resonator

16:40-16:55 Zhengyang Yuan, Jianyu Wang, Jintao Zhang, En Li and Yafeng Li (University of Electronic Science and Technology of China, China)

WP1B-5 Virtual Antenna Array Based Wideband THz MIMO Channel Measurement

16:55-17:10 Hua Xu, Weimin Wang, Yichong Rui, Yongle Wu, Yuanan Liu (Beijing University of Posts and Telecom, China); Lulu Tang (GuangDong Communications & Networks Institute, China)

WP1B-6 Comparison of an Inkjet Fabrication Method on Low-Cost PCB Substrates With Semi Additive and Subtractive Technologies Regarding RF-Performance

17:10-17:25 Felix Sepaintner (Technische Hochschule Deggendorf, Germany); Michael Schmalzbauer (Rohde & Schwarz GmbH & Co. KG, Germany); Johannes Jakob and Andreas Scharl (Technische Hochschule Deggendorf, Germany); Georg Weber (Rohde & Schwarz GmbH & Co. KG, Germany); Franz Röhl (Rohde & Schwarz GmbH & Co. KG, Germany); Werner Bogner (Technische Hochschule Deggendorf, Germany); Stefan Zorn (Rohde & Schwarz GmbH & Co. KG, Germany)

15:40 - 17:40, Wed, November 17, 2021

Session: WP2B

Circuit and System

Room: Room 2; Zoom Meeting ID: 890 7376 8319; Passcode: 888888;

Zoom Link: <https://us02web.zoom.us/j/89073768319?pwd=ZFFGaVFmK0l0bks1d1lmcVU3K0wzQT09>

Chairs: Shaoyong Zheng, Yuan Chun Li

WP2B-1 Switch Controlled 4 Bands Bandpass Filter With Two E-Shaped SIRs

15:40-15:55 Tao Tang (Chengdu University of Information Technology, China)

WP2B-2 Miniaturized Dual-Band Filtering Switch Based on Multi-Mode Dielectric Resonator

15:55-16:10 Di-Si Wu, Yuan Chun Li, Xin Fang, Quan Xue and Bin-jie Hu (South China University of Technology, China)

WP2B-3 Design Band Switching Voltage Controlled Oscillator for Phase Locked Loop of Receiver Applications

16:10-16:25 Wen Cheng Lai (National Taiwan University of Science and Technology)

WP2B-4 Design of Triple-Mode Bandpass Filter Using Improved Ring Resonator

16:25-16:40 Zhang Weihao, Li Sipei, Xu Han, Zhu Zhaojun, Shuai Ding (University of Electronic Science and Technology of China, China)

WP2B-5 A 26GHz On-Chip Antenna Based on a 65nm CMOS Process for Microsensor Applications

16:40-16:55 Zhihang Xie, Zhuohan Sun, Feng Yan, Kangkang Sun, Jingjing Liu, Yuan Jiang (Sun Yat-Sen University, China); Mingwei Huang (Fujian Shu Bo Xun Information Technology Co. Ltd., China)

WP2B-6 Design of A Microwave Multi-Channel T-R Module

16:55-17:10 Wei Wei Guan (Beijing Institute of Aerospace Long March Vehicle, China)

WP2B-7 A Millimeter-Wave Multi-Beam Series-Fed Antenna Array Without Extra Beamforming Network

17:10-17:25 Chaojun Ma, Shaoyong Zheng (Sun Yat-Sen University, China); Yongmei Pan (South China University of Technology, China)

**WP2B-8 Near-Field Focused Antenna Array Based on Three-Dimensional Coaxial
Waveguide Feed Network With Separate Amplitude and Phase Control**

17:25-17:40 Jing Hou (Sichuan University, China)

15:40 - 17:40, Wed, November 17, 2021

Session: WP3B

Novel Absorber and FSS

Room: Room 3; Zoom Meeting ID: 853 6778 6486; Passcode: 888888;

Zoom Link: <https://us02web.zoom.us/j/85367786486?pwd=ZkFGakNJeUM5N3B2SFIPd2NxOTRuZz09>

Chairs: Jianxun Su, Ting Shi

WP3B-1 Optically Transparent Microwave Absorber Based on Cross Roundabout Pattern

15:40-15:55 Yanpei Guo, Guiyang Liu and Senfeng Lai (Guangdong Polytechnic Normal University, China)

WP3B-2 Optically Transparent Ultrawideband Microwave Absorber Based on Flower Petal Structure

15:55-16:10 Guiyang Liu, Yanpei Guo and Senfeng Lai (Guangdong Polytechnic Normal University, China)

WP3B-3 Design of Absorber for Special Angle Oblique Incidence in Dual Modes

16:10-16:25 Junwei Wang, Cheng Jin, Qihao Lv, Binchao Zhang, Na Kang and Ziyang Li (Beijing Institute of Technology, China)

WP3B-4 Design of Metamaterial Absorber for Large Angle Oblique Incidence With Impedance Matching

16:25-16:40 Hengyan Hu, Yang Yang, Xiaoxiang He, Yan Chen, Fukang Li and Yan Deng (Nanjing University of Aeronautics and Astronautics, China); Lei Yang (Jiangsu Tianan Smart Science & Technology Co., Ltd., China)

WP3B-5 Frequency Selective Surface Based on Fractal Structure With Wide Angular Stability

16:40-16:55 XiaoHui Yu, Xiaoxiang He, Yang Yang, Boyu Hua and Fukang Li (Nanjing University of Aeronautics and Astronautics, China); Lei Yang (Jiangsu Tianan Smart Science & Technology Co., Ltd., China)

WP3B-6 Radar Absorbing Material Applied to Precise RCS Regulation of Complex Scatterer Structure

16:55-17:10 Chengxiang Xu, Jianxun Su, Zengrui Li (Communication University of China, China)

WP3B-7 W-Band Absorber on Non-Developable Spherical Surface

17:10-17:25 Huiyu Chang, Binyu Han, Chen Fu and Chunjie Feng (Nanjing University of Science and Technology, China); Hanshuo Shen (VAIE Academy of Innovation and Excellence, China); Wenhua Gu (Nanjing University of Science and Technology, China)