The 23rd IEEE (HK) AP/MTT Postgraduate Conference

19th November 2022, Virtual Event, Hong Kong

Program Book

IEEE (HK) Section
AP/MTT

Department of Electrical Engineering
香港城市大學
City University of Hong Kong

State Key Laboratory of Terahertz and Millimeter Waves
香港城市大學
City University of Hong Kong

MTT-S
IEEE MICROWAVE THEORY & TECHNOLOGY SOCIETY

About the Conference

IEEE (HK) AP/MTT Postgraduate Conference is a dedicated local non-peer-review and non-publication conference for postgraduate students in the fields of Microwave and Antennas. This year is the 23rd anniversary postgraduate conference and will be held virtually on 19th November 2022. The conference is jointly organized by IEEE Hong Kong AP/MTT Joint Chapter, and The City University of Hong Kong. The main purpose is to enhance the communications between the postgraduate students in the region and to provide a platform for ideas exchange. This unique occasion will help our students to gain a deeper understanding on the current research focus of the related fields.

Topics includes microwave theory and technology,antennas and propagation but are not limited to

- Broadband and Multi-Frequency Antennas
- Mobile and Base Station Systems
- Novel Microwave and Millimeter Wave Components
- RF and Microwave Power Amplifiers Design
- Waveguiding Structures
- Dielectric Resonator Antennas
- Terahertz Technology
- Internet of Things and Smart City
- Integrated Circuit Technologies
- Ultra-Wideband Antenna and Systems
- RFIC/MMIC
- EM and Multiphysics Modeling
- Integrated Passive Devices
- Microstrip Antennas, Arrays, and Circuits
- Remote Sensing
- MIMO Antennas for Base Stations and Mobile Systems
- Metasurfaces and Metadevices

Conference Co-Chairs

General Co-Chairs	**Hang WONG** *City University of Hong Kong*
	Alex M. H. WONG *City University of Hong Kong*
Technical Program Committee Co-Chairs	**Kwok Kan SO** *City University of Hong Kong*
	Frankie CHIU *Hong Kong University of Science and Technology*
Finance Chair	**Geng-bo WU** *City University of Hong Kong*
Local Arrangement Co-Chairs	**Ka Fai CHAN** *City University of Hong Kong*
	Kam Man SHUM *City University of Hong Kong*
Publication Chair	**Wai Ho YU** *City University of Hong Kong*

Zoom Instruction

1 Download ZOOM: https://zoom.us/meetings.html or https://zoom.us/zh-cn/meetings.html (PC client is mandatory)

2 **Instructions for Session Chairs**

2.1 Please arrive at your room using the respective Zoom Meeting link at least 10 mins before the session.

2.2 Rename yourself as "**AP-Session Chair-XXX**" or "**MTT-Session Chair – XXX**", where XXX stands for your name in English.

2.3 Our helpers with name "**AP-Support-XXX**" or "**MTT-Support-XXX**" will brief you on the session information with a PowerPoint slide; This slide will be displayed until the session starts.

2.4 The helper will also make you "co-host" so that you can share your screen when you want to present or help manage the session. please also read Section 4 of this instruction for more information on how to share screen in Zoom;

2.5 When the session starts, the helper will mute the rest participants.

2.6 After you let a speaker present his/her paper; the student helper will make the speaker "co-host" so that he/she can share the slides.

2.7 Please keep each presentation to the allotted time slot; the helper will notify you when time is running out

2.8 During the Q&A, you can encourage audiences to "raise hand"; when you choose an audience, the helper will unmute him/her.

3 **Instructions for Speakers**

3.1 Please arrive at your room using the respective Zoom Meeting link at least 10 mins before the session.

3.2 Rename yourself as "**AP-X-Speaker-YYY**" or "**MTT-X-Speaker-YYY**", where X is the ordinal number of your paper in this session; YYY stands for your name in English.

3.3 Our helpers with name "**AP-Support-XXX**" or "**MTT-Support-XXX**" will help test the Share Screen function of Zoom with you; please also read Section 4 of this instruction for more information on how to share screen in Zoom.

3.4 Once the session chair let you present your work, the helper will make you "co- host" and you will be able to share your screen

4 Instructions on How to Share Screen in Zoom

4.1 When you are in a Zoom meeting, you can share your screen by clicking Share Screen button on the bottom of Zoom (see Fig. 1).

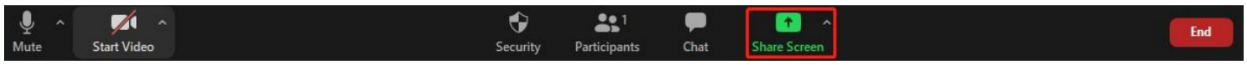

Fig. 1. Bottom control buttons of Zoom.

4.2 A pop-up window will show to let you choose the screen to share (see Fig. 2).

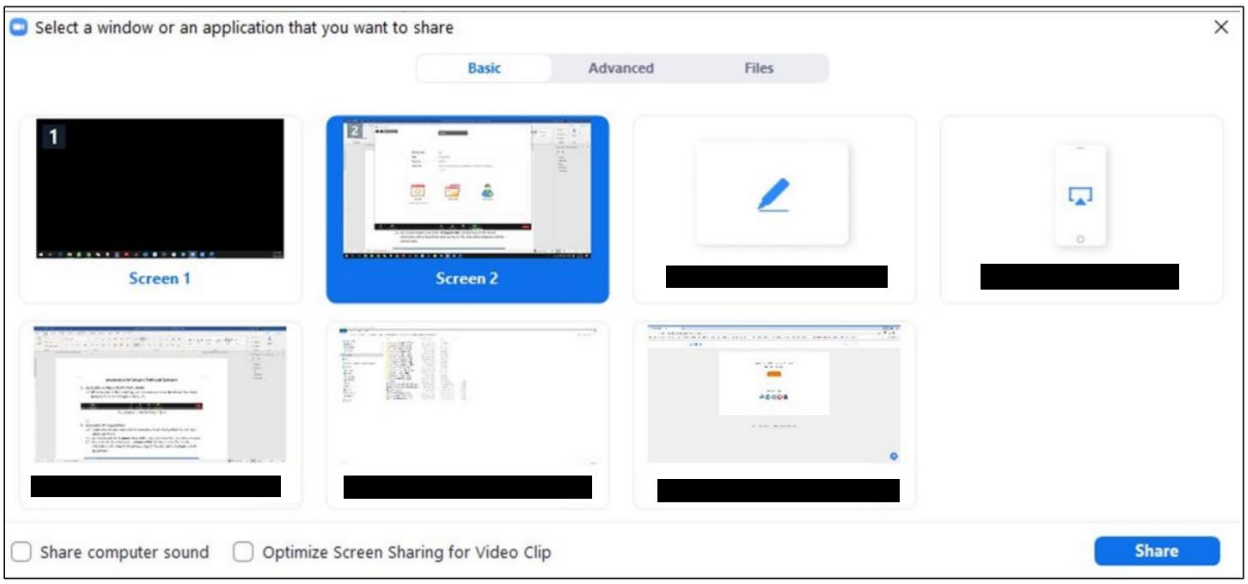

Fig. 2. Pop-up window to select the screen/application to share.

4.3 Be sure to share the window containing your presentation slides.

Program

Session		Antenna and Propagation (AP) Session I 19th November 2022 Session Chair: **Dr. Wei Lin** *The Hong Kong Polytechnic University, Hong Kong, China* Zoom Meeting ID: 958 7195 0895 Zoom Password: 987654 Zoom link: https://cityu.zoom.us/j/95871950895?pwd=Tk5vZzFLTjZKSlg0d0NuREovbUVWdz09
09:00-09:05	**Opening Ceremony**	
09:05-09:25	**AP-01**	**Wideband Dielectric Resonator (DR)-fed Low-profile Patch Antenna** King Tung Lo and Hang Wong *City University of Hong Kong, Hong Kong, China*
09:25-09:45	**AP-02**	**Pattern-reconfigurable Patch Antenna without Extra Feeding Network: Proposal and Design** Shi-Tong Wang and Lei Zhu *The University of Macau, Macao, China*
09:45-10:05	**AP-03**	**Pseudo-complex-amplitude Multiplexing Enabled Multibeam Metasurface Lens Antennas** Ji Liu and Hang Wong *City University of Hong Kong, Hong Kong, China*
10:05-10:25	**AP-04**	**Towards the Experimental Demonstration of a 360° Surface-level Scanning Cylindrical Metasurface** Moustafa Abdelbaky, Abhishek Sharma, and Alex M. H. Wong *City University of Hong Kong, Hong Kong, China*
10:25-10:45	**AP-05**	**Frequency-reconfigurable Dielectric Patch Antenna with Bandwidth Enhancement** Shi-Chang Tang[1], Xue-Ying Wang[1], Shao Yong Zheng[2], Yong Mei Pan[3], and Jian-Xin Chen[1] *[1]Nantong University, Nantong, China* *[2]Sun Yat-Sen University, Guangzhou, China* *[3]South China University of Technology, Guangzhou, China*
10:45-11:05	**Break**	
11:05-11:25	**AP-06**	**Radiation Pattern Decoupling of MIMO DR and Patch Antennas** Changwu Tong[1], Nan Yang[1], and Kwok Wa Leung[1, 2] *[1]Sun Yat-Sen University, Guangzhou, China* *[2]City University of Hong Kong, Hong Kong, China*
11:25-11:45	**AP-07**	**Fast Simultaneous Optimization of S-parameters and Radiation Patterns of Antennas** Zerong Wu[1], Shaoyong Zheng[1], and Yongmei Pan[2] *[1]Sun Yat-Sen University, Guangzhou, China* *[2]South China University of Technology, Hong Kong, China*
11:45-12:05	**AP-08**	**Miniaturized Via-free Magneto-electric Dipole Antenna Fed by Substrate Integrated Coaxial Line on Reactive Impedance Surface** Tsz-Ming Wong[1], Kwai-Man Luk[1], and Kin-Fai Tong[2] *[1]City University of Hong Kong, Hong Kong, China* *[2]University College London, London, United Kingdom*
12:05-12:25	**AP-09**	**Thin Profile Dense Dielectric Patch Antenna for Antenna-in-Package Application** Wen-jian Sun and Hang Wong *City University of Hong Kong, Hong Kong, China*
12:25-12:45	**AP-10**	**Terahertz Dual-polarized Reflective Metasurface with Independently Controllable Dual Beam** Yat Sing To and Hang Wong *City University of Hong Kong, Hong Kong, China*
12:45-13:05	**Break**	

13:05-13:10	**Closing Ceremony**

Session		**Antenna and Propagation (AP) Session II** 19th November 2022 Session Chair: **Dr. Fan Wu** *Southeast University, Nanjing, China* Zoom Meeting ID: 935 9450 4515 Zoom Password: 987654 Zoom link: https://cityu.zoom.us/j/93594504515?pwd=YjYyZ0NhWlBNSTN2SE1KYkZkVU9Ydz09
09:00-09:05	**Opening Ceremony**	
09:05-09:25	**AP-11**	**Wideband Co-linearly Polarized Magneto-electric Dipole Antenna for In-band Full-duplex Applications** Qian Tan and Kwai-Man Luk *City University of Hong Kong, Hong Kong, China*
09:25-09:45	**AP-12**	**Dual-band and High-gain Shared-aperture Antenna Hybridizing Folded Transmitarray and Fabry-Perot Cavity** Shuai Gao and Hang Wong *City University of Hong Kong, Hong Kong, China*
09:45-10:05	**AP-13**	**Risley Prism-inspired Beam Steering Reflectarray Antenna** Chenfeng Yang, Geng-Bo Wu, and Chi Hou Chan *City University of Hong Kong, Hong Kong, China*
10:05-10:25	**AP-14**	**Dual-band Leaky-wave Antenna with Forward and Backward Frequency Scanning Using Sinusodally Modulation** Peiwen Tang and Hang Wong *City University of Hong Kong, Hong Kong, China*
10:25-10:45	**AP-15**	**A Broadband End-fire Antenna with High FTBR Level** Kai-cheng Wang and Hang Wong *City University of Hong Kong, Hong Kong, China*
10:45-11:05	**Break**	
11:05-11:25	**AP-16**	**A Sub-THz Reconfigurable Transmitarray Using Quartz Glass and GaAs Schottky Diode** Kaiwen Peng, Bin Li, and Weihua Yu *Beijing Institute of Technology, Beijing, China*
11:25-11:45	**AP-17**	**A Fully Integrated Millimeter-wave Dielectric Resonator Antenna** Chao Jun Ma and Shao Yong Zheng *Sun Yat-Sen University, Guangzhou, China*
11:45-12:05	**AP-18**	**Deep Learning for mmWave Beamforming** Chun Kit Wong and Hang Wong *City University of Hong Kong, Hong Kong, China*
12:05-12:25	**AP-19**	**Wideband High-Gain Metal-lens-integrated Omnidirectional Biconical Antenna** Zhi-Yi Zhang[1], Kwok Wa Leung[1], and Kai Lu[2] *[1]City University of Hong Kong, Hong Kong, China* *[2]Sun Yat-Sen University, Guangzhou, China*
12:25-12:45	**AP-20**	**Dielectric Resonator Antenna Design Automation Using Swarm Intelligence and Machine Learning** Kai Fu and Kwok Wa Leung *City University of Hong Kong, Hong Kong, China*

12:45-13:05	**AP-21**	**A Series-Fed Millimeter Wave Microstrip Linear Array With Broadband and Low-Sidelobe** Lin Hai Xu, Yu Qing Guo and Yong Mei Pan *South China University of Technology, Guangzhou, China*
13:05-13:10	**Closing Ceremony**	

Session	**Microwave Theory and Technology (MTT) Session** 19th November 2022 Session Co-Chairs: **Dr. Wai Wa Choi** *University of Macau, Macao, China* **Dr. Liang Wu** *The Chinese University of Hong Kong, Shenzhen, China* Zoom Meeting ID: 520 016 0783 Zoom Password: 987654 Zoom link: https://cityu.zoom.us/j/5200160783?pwd=TFFvMk5qYURVSmNrTHlHMk9VVlhQQT09
09:00-09:05	**Opening Ceremony**
09:05-09:25	**MTT-01**	**Temperature-drift Effect Analysis of Microstrip Filters Based on DGTD and FETD Method with Memory Reduction Technique** Zheng Lang Jia[1], Huan Huan Zhang[1], and Lijun Jiang[2] *[1]Xidian University, Xian, China* *[2]The Chinese University of Hong Kong, Hong Kong, China*
09:25-09:45	**MTT-02**	**Planar Polarization-rotation Pattern Manipulation Surface (PRPMS): Proposal and Characterization** De Yin and Lei Zhu *The University of Macau, Macao, China*
09:45-10:05	**MTT-03**	**Enhanced A-EFIE System with Quasi-Helmholtz Projectors** Wen-Jing Chen[1], Sheng Sun[1], Yang Liu[2], Lijun Jiang[3], and Jun Hu[1] *[1]University of Electronic Science and Technology of China, Chengdu, China* *[2]Institute of Applied Physics and Computational Mathematics, Beijing, China* *[2]The Chinese University of Hong Kong, Hong Kong, China*
10:05-10:25	**MTT-04**	**Simulation and Design of Curved Unit Cells for Cylindrical Metasurface** Sheng Lei, Xiaoluo He, and Alex M. H. Wong *City University of Hong Kong, Hong Kong, China*
10:25-10:45	**MTT-05**	**Linear Regression-based Polynomial Chaos Expansion Scheme for Uncertainty Quantification in PEEC Method** Yuan Ping[1] and Lijun Jiang[2] *[1]The University of Hong Kong, Hong Kong, China.* *[2]The Chinese University of Hong Kong, Hong Kong, China*
10:45-11:05	**Break**	
11:05-11:25	**MTT-06**	**A Frequency-independently Tunable Dual-band Bandpass Filter with Large Frequency Ratio and Ultra-wide Stopband** Weisheng Tang and Shaoyong Zheng *Sun Yat-Sen University, Guangzhou, China*

11:25-11:45	**MTT-07**	**Data-driven Optimization for High-efficiency Power Amplifier Designs** Peiwen Shu[1], Xinyu Zhou[2], Tushar Sharma[3], Liheng Zhou[4], and Wing Shing Chan[1] *[1]City University of Hong Kong, Hong Kong, China* *[2]Stanford University, Stanford, USA* *[3]University of Calgary, Calgary, Canada* *[4]Nantong University, Nantong, China*
11:45-12:05	**MTT-08**	**An Efficient Broadband Symmetrical Doherty Power Amplifier with Extended Back-off Range Based on Phase Compensation** Jian Rong Zhang, Shao Yong Zheng, and Nan Yang *Sun Yat-Sen University, Guangzhou, China*
12:05-12:25	**MTT-09**	**Multi-three-phase Coils and Its Artificial Intelligence Design Method for Position-insensitive Wireless Charging of Multi-Robots** Yunxin Zhang[1, 2], Huapeng Zhao[3], Hang Wong[1], and Qingsha S. Cheng[2] *[1]City University of Hong Kong, Hong Kong, China* *[2]Southern University of Science and Technology, Shenzhen, China* *[3]University of Electronic Science and Technology of China, Chengdu, China*
12:25-12:45	**MTT-10**	**Directional and Selective Coupling with Active Huygens and Janus Sources** Bo Xue and Alex M. H. Wong *City University of Hong Kong, Hong Kong, China*
12:45-13:05	**MTT-11**	**Quality Factor Analysis of Switched-segmented Inductor Structure in Low-power LC Dual-band VCO Application** Zongyao Yang, Xiaoping Wu, Shiyuan Zheng, Liangping Chen, and Liang Wu *The Chinese University of Hong Kong, Shenzhen, China*
13:05-13:10	**Closing Ceremony**	