Virtual Conference

2020 Asia-Pacific Microwave Conference

APMC 2020

8-11 December, 2020, Hong Kong SAR, PR China

Preliminary Program Book

Organizer

IEEE (HK) Section AP/MTT

Technical Sponsors

State Key Laboratory of Terahertz and Millimeter Waves, City University of Hong Kong

Department of Electrical Engineering, City University of Hong Kong

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2020 Asia Pacific Microwave Conference (APMC 2020) Program at a glance

8 Dec 2020 Tuesday	**Morning (AM)**									
	Place	Room 1					Room 2			
	09:00 - 11:45	Workshop 1 – Metasurfaces					Workshop 2 – Filtering Antennas			
	Afternoon (PM)									
	13:30 - 17:30	Prof. K K Mei Memorial Lecture 1					Prof. K K Mei Memorial Lecture 2			
9 Dec 2020 Wednesday	**Morning (AM)**									
	Place	Room 1								
	09:00-09:30	Opening Ceremony								
	09:30-10:30	Plenary Talk 1, Tatsuo Itoh								
	10:30-10:40	Break								
	10:40-11:40	Plenary Talk 2, Baoyan Duan								
	Afternoon (PM)									
	Place	Room 11								
	12:00-13:00	Industrial Talks 1								
	Place	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room 7	Room 8	Room 9	Room 10
	13:30-15:35	SS01	SS02	SS03	RS01	RS02	RS03	RS04	RS05	RS06	RS07
	15:35-15:50	Break									
	15:50-18:00	SS04	SS05	SS06	RS08	RS09	RS10	RS11	RS12	RS13	RS14
10 Dec 2020 Thursday	**Morning (AM)**									
	Place	Room 1	Place	Room 2	Room 3	Room 4	Room 5	Room 6	Room 7	Room 8	Room 9
	09:00-10:55	SS07*	09:00-10:45	SS08	RS15	RS16	RS17	RS18	RS19	RS20	RS21
	10:55-11:05	Break	10:45-11:00	Break							
	11:05-13:15	SS07*	11:00-12:40	SS09	SS10	RS22	RS23	RS24	RS25	RS26	RS27
	Afternoon (PM)									
	Place	Room 10		Room 2	Room 3	Room 4	Room 5	Room 6	Room 7	Room 8	Room 9
	13:30-15:35	SS11		SS12	RS28	RS29	RS30	RS31	RS32	RS33	RS34
	15:35-15:50	Break									
	15:50-17:55	SS13		SS14	RS35	RS36	RS37	RS38	RS39	RS40	RS41
11 Dec 2020 Friday	**Morning (AM)**									
	Place	Room 1								
	09:00-09:30	Closing Ceremony and Prize Presentation								
	09:30-10:30	Plenary Talk 3, Ke Wu								
	10:30-10:40	Break								
	10:40-11:40	Plenary Talk 4, Nader Engheta								
	Afternoon (PM)									
	Place	Room 11								
	12:00-13:00	Industrial Talks 2								
	Place	Room 1	Room 2	Room 3	Room 4	Room 5	Room 6	Room 7		
	13:30-15:30	SS15	RS42	RS43	RS44	RS45	RS46	RS47		
	15:30-15:50	Break								
	15:50-17:50	RS48	RS49	RS50	RS51	RS52	RS53	RS54		

*** Commemorating the Beginning of Antenna Research by Prof. Kai Fong Lee Four Decades Ago in Hong Kong**

8 Dec 2020 Tuesday AM	Room 1			Room 2	
	Zoom Conference ID: 899 5455 9563 Password: 12345678 https://us02web.zoom.us/j/89954559563?pwd=OUNvZnNaZlJHQTJPUzB4U3BUYm5vdz09			Zoom Conference ID: 843 6881 6489 Password: 12345678 https://us02web.zoom.us/j/84368816489?pwd=U0ZMc1p3bitRZFkxZGg5Q0t3VmR6QT09	
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9 Dec 2020 Wednesday AM/Noon	Room 1			Room 11	
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9 Dec 2020 Wednesday PM	Room 1	Room 2	Room 3	Room 4	Room 5
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	Room 6	Room 7	Room 8	Room 9	Room 10
	Zoom Conference ID: 884 3761 1748 Password: 12345678 https://us02web.zoom.us/j/88437611748?pwd=T0NtRnc3aFRMbmJKcW1SdDBEU1BJQT09	Zoom Conference ID: 814 1692 0977 Password: 12345678 https://us02web.zoom.us/j/81416920977?pwd=am8wcVNNVExwUm1ZTjZpclVtK2c3UT09	Zoom Conference ID: 899 7619 0784 Password: 12345678 https://us02web.zoom.us/j/89976190784?pwd=UjBaL2ROYWFiRHd4MFJtVTFQMHlLUT09	Zoom Conference ID: 837 7363 3708 Password: 12345678 https://us02web.zoom.us/j/83773633708?pwd=eGs0VTNzd2h2OWtLZGN0SXl1WEo4Zz09	Zoom Conference ID: 862 1224 6559 Password: 12345678 https://us02web.zoom.us/j/86212246559?pwd=aC9jRTBaTVhpcVArSmZjS09rSmRyQT09
10 Dec 2020 Thursday AM	Room 1	Room 2	Room 3	Room 4	Room 5
	Zoom Conference ID: 824 3682 8253 Password: 12345678 https://us02web.zoom.us/j/82436828253?pwd=R1A1MmU5U01yN3dkYTF6UGlQTXNKUT09	Zoom Conference ID: 810 3045 7749 Password: 12345678 https://us02web.zoom.us/j/81030457749?pwd=c1A1SzNCYURXU2dKK1RSNEVHdW55UT09	Zoom Conference ID: 850 6675 2713 Password: 12345678 https://us02web.zoom.us/j/85066752713?pwd=azhjdE8yeUVwS3BKaThEbnpELzNxUT09	Zoom Conference ID: 826 2125 3990 Password: 12345678 https://us02web.zoom.us/j/82621253990?pwd=UWZpZWthbnR4aDVJYnVnS0FGcEdndz09	Zoom Conference ID: 818 3179 7872 Password: 12345678 https://us02web.zoom.us/j/81831797872?pwd=ZlVjeFRjU3Y2R1RXRm50b3dRQmdNdz09
	Room 6	Room 7	Room 8	Room 9	
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10 Dec 2020 Thursday PM	Room 2	Room 3	Room 4	Room 5	Room 6
	Zoom Conference ID: 813 4173 6109 Password: 12345678 https://us02web.zoom.us/j/81341736109?pwd=WTVLYmUvUFp1VWczTVpuWFlLQVBidz09	Zoom Conference ID: 889 7772 9141 Password: 12345678 https://us02web.zoom.us/j/88977729141?pwd=RHdxTU1TT04vZW9JVzJxVXppYi90UT09	Zoom Conference ID: 885 4189 3669 Password: 12345678 https://us02web.zoom.us/j/88541893669?pwd=UzNzKzN4c0lCWTNDMUlFSkxXZkhGUT09	Zoom Conference ID: 811 0088 4407 Password: 12345678 https://us02web.zoom.us/j/81100884407?pwd=QVdNejMzckVpVG5FK3RidEVUcDdjQT09	Zoom Conference ID: 867 9704 5369 Password: 12345678 https://us02web.zoom.us/j/86797045369?pwd=cnQwUEZJbWxqeGhvQlpxY0hPYnFPQT09
	Room 7	Room 8	Room 9	Room 10	
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11 Dec 2020 Friday AM/Noon	Room 1	Room 11
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11 Dec 2020 Friday PM	Room 1	Room 2	Room 3	Room 4
	Zoom Conference ID: 872 2463 5879 Password: 12345678 https://us02web.zoom.us/j/87224635879?pwd=cTJSSWM5WEo2T1A0clRreeHdXZHJTdz09	Zoom Conference ID: 841 5220 9741 Password: 12345678 https://us02web.zoom.us/j/84152209741?pwd=dDBGalFia1FIY25YT0Zpekc5WXZWZz09	Zoom Conference ID: 898 9429 2674 Password: 12345678 https://us02web.zoom.us/j/89894292674?pwd=MXc1V21Mc1BQdUNOL0VaYVdlNWNyUT09	Zoom Conference ID: 820 0553 8701 Password: 12345678 https://us02web.zoom.us/j/82005538701?pwd=TVVnTmVvb0hqb0JlK1NIaHN3eFR4dz09
	Room 5	Room 6	Room 7	
	Zoom Conference ID: 896 9694 3159 Password: 12345678 https://us02web.zoom.us/j/89696943159?pwd=NFVKU1cwVHpYbGp4UUpkdUtRbUdBQT09	Zoom Conference ID: 837 3101 1227 Password: 12345678 https://us02web.zoom.us/j/83731011227?pwd=cnlvSnBYL3hLNXBVOXpLVDJwZE5Idz09	Zoom Conference ID: 816 5626 3461 Password: 12345678 https://us02web.zoom.us/j/81656263461?pwd=SUpjSnhBOWpCQUdmeUk5M3Yvam1Bdz09	

Content

Welcome Message from General Chairs

Hang Wong
General Co-Chair

Kwai-Man Luk
General Chair

Quan Xue
General Co-Chair

On behalf of the Organizing Committee, we warmly welcome you to join the 2020 Asia-Pacific Microwave Conference (APMC 2020) virtually in Hong Kong from Tuesday, 8 December 2020 to Friday, 11 December 2020. The conference was launched in India in 1986, China in 1988 and Japan in 1990, and then becomes an annual conference since 1992. It was held in Hong Kong in 1997 and 2008 with great success. The APMC is now recognized as one of the most important microwave conferences in the world.

Due to the travel restrictions imposed in light of the COVID-19 pandemic, we have to organize the APMC 2020 in Hong Kong as an online conference. We are gratified that the change has helped attract many more submissions from many countries in the Asia-Pacific region covering IEEE Region 10 and other Regions across the globe. This enable us to produce a comprehensive technical program for facilitating the exchange of information on the advancement and progress in the fields of microwaves, millimeter waves, terahertz waves, infrared and optical waves for accelerating the technological development in the Asia-Pacific region.

APMC 2020 is organized by the IEEE AP/MTT Hong Kong Chapter, technically co-sponsored by the State Key Laboratory of Terahertz and Millimeter Waves (City University of Hong Kong), the Department of Electrical Engineering (City University of Hong Kong), the Department of Electronic Engineering (The Chinese University of Hong Kong), the IEEE Antennas and Propagation Society, the IEEE Microwave Theory and Technique Society and the European Microwave Association. It is supported by the Hong Kong Science and Technology Parks Corporation, IEEE Hong Kong Section, IEEE CT/OE Hong Kong Chapter.

The organization of the conference is a joint effort by many volunteers. We are deeply grateful to all Organizing Committee members, Technical Program Committee members and paper reviewers for their contributions to ensure the smooth running of the conference. We also

appreciate the great support and encouragement from the International Steering Committee in organizing the APMC through live streaming for the first time.

The technical program consists of high-quality plenary talks, invited and contributed papers. In particular, we urge you not to miss the invited presentations in the two Workshops, the Opening Session, the Closing Session, the Professor Kenneth K. Mei Memorial Lectures, the Session on commemorating the beginning of antenna research by Professor Kai Fong Lee four decades ago in Hong Kong, the Special Sessions and the Regular Sessions, featuring innovative and enabling technologies by national academicians, IEEE award recipients and IEEE Fellows from the academia and world-class technical leaders from the industry.

The prestigious APMC Prize for the best regular papers and best student papers will be announced by the Award Committee Chairs at the Closing Session to be held on Friday, 11 December 2020. Evaluation is based on the novelty and originality of the work described in the paper and presented at the conference.

Last but not least, we are grateful to the industrial sponsors that have offered generously not only monetary terms but also their enthusiastic and continued support.

We look forward to meeting you all during the online conference.

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ABOUT US

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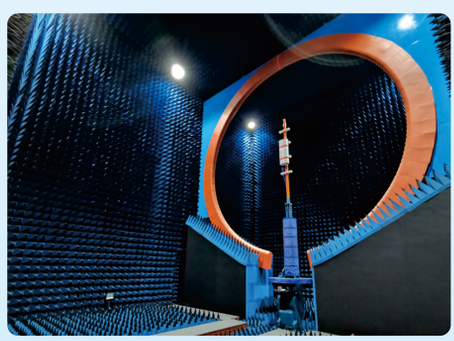
Broadradio Technologies Corporate Head Quarters and Center of Excellence for Research and Development is located in Guangzhou China supported by engineering teams in Hongkong, providing high value market specific solutions for our expanding customer base.

With three manufacturing facilities in Guangzhou and Jieyang city, Broadradio' s total manufacturing area of 65,400 sq-meters. Along with our representative partners throughout the world, Broadradio has well spanned sales networks with direct sales offices in Guangzhou, Dubai, Singapore.

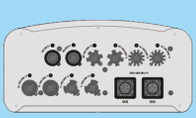
Broadradio Technologies continues to provide innovative BSA solutions to telecommunication operators to help them with network challenges faced by them, such as insufficient network capacity, difficult site acquisition, interference of co-site etc.. Our experienced design and development teams and rapid delivery from engineering concept to production continues to provide cost effective performance enhancing technology for today' s and tomorrow' s cellular networks.



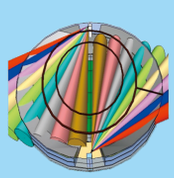
4G+5G Antenna

1.4M
2X698-9601/4X1710-2690MHZ&3.5GHZ
8T8R Antenna

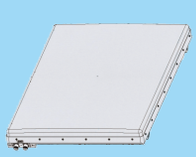
0.4M
698-960/4X170-2690MHZ&3.5GHZ
8T8R Antenna



Nine Beam Antenna



Stadium Antenna



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Welcome Message from the TPC Chairs

Ming Yu
TPC Chair

Lijun Jiang
TPC Co-Chair

Alex Man Hon Wong
TPC Vice-Chair

Shao Yong Zheng
TPC Vice-Chair

On behalf of the Technical Program Committee, we cordially welcome you to the 2020 Asia-Pacific Microwave Conference (APMC 2020) in Hong Kong! Based in the Asia Pacific region, APMC has become one of the premier conferences in the world on microwave and electromagnetics. It is an excellent opportunity to meet together as a global family and exchange your visions, insights, challenges, and progress in the microwave discipline! We are much delighted to present the excellent technical program for APMC 2020, with the great effort from all the authors/speakers, reviewers, and Technical Program Committee members! Despite difficulties presented by the COVID-19 pandemic, we have received more than 500 papers covering the microwave to Terahertz spectrum, with submissions by authors from 28 countries/regions and finally accepted 402 papers after careful and rigorous review. The conference will be held online through the zoom interface. All presentations will be in the oral format, presented in 69 technical sessions (54 regular sessions and 15 special sessions) surrounding major themes of antennas, microwave and systems. Beside regular talks, we are also glad to host 4 plenary talks, 2 Professor Kenneth K. Mei Memorial Lectures, 15 focused talks sessions and 2 workshops throughout the conference.

On the first day of the conference, we will welcome you with 2 parallel workshops (Frontiers in Metasurfaces and Filtering Antennas) in the morning and two parallel Distinguished Talks Sessions (Frontiers in Microwave and Antennas) in the afternoon. The opening ceremony on the second morning will officially launch the conference – anchored by two distinguished lectures: “Recent Advances and Promise of Metasurface for Microwave Applications” by Prof. T. Itoh, from UCLA and “On Electromechanical Coupling Problems in Large Phased Array Microwave Antennas” by Prof. B. Duan from

Xidian University. Two other plenary talks on the last morning – “Emerging Deep Integration and Topological Cohabitation of Front-End Circuit and Antenna for Future Wireless Systems” by Prof. K. Wu from University of Montreal, and “Extreme Metastructures” by Prof. N. Engheta from University of Pennsylvania, will bring the conference to a climatic conclusion. Talks and focus sessions are interspersed throughout the conference, including, notably, a special session commemorating the beginning of antenna research by Prof. Kai Fong Lee four decades ago in Hong Kong.

To appreciate the great efforts on the paper contributions to this APMC and encourage the valuable enthusiasm on research, finalists for best paper awards and best student paper awards are selected from a big pool of candidates. The papers of finalists will be evaluated on site by the Award Committee and the awards will be presented at the final morning, in the closing ceremony punctuated by the aforementioned plenary lectures.

We greatly thank the Technical Program Committee members and reviewers for their invaluable contributions to the technical program. We would also like to thank all the authors and presenters for their diligence in the papers and presentations. We hope you will enjoy this conference and look forward to hosting you all, virtually, in Hong Kong.

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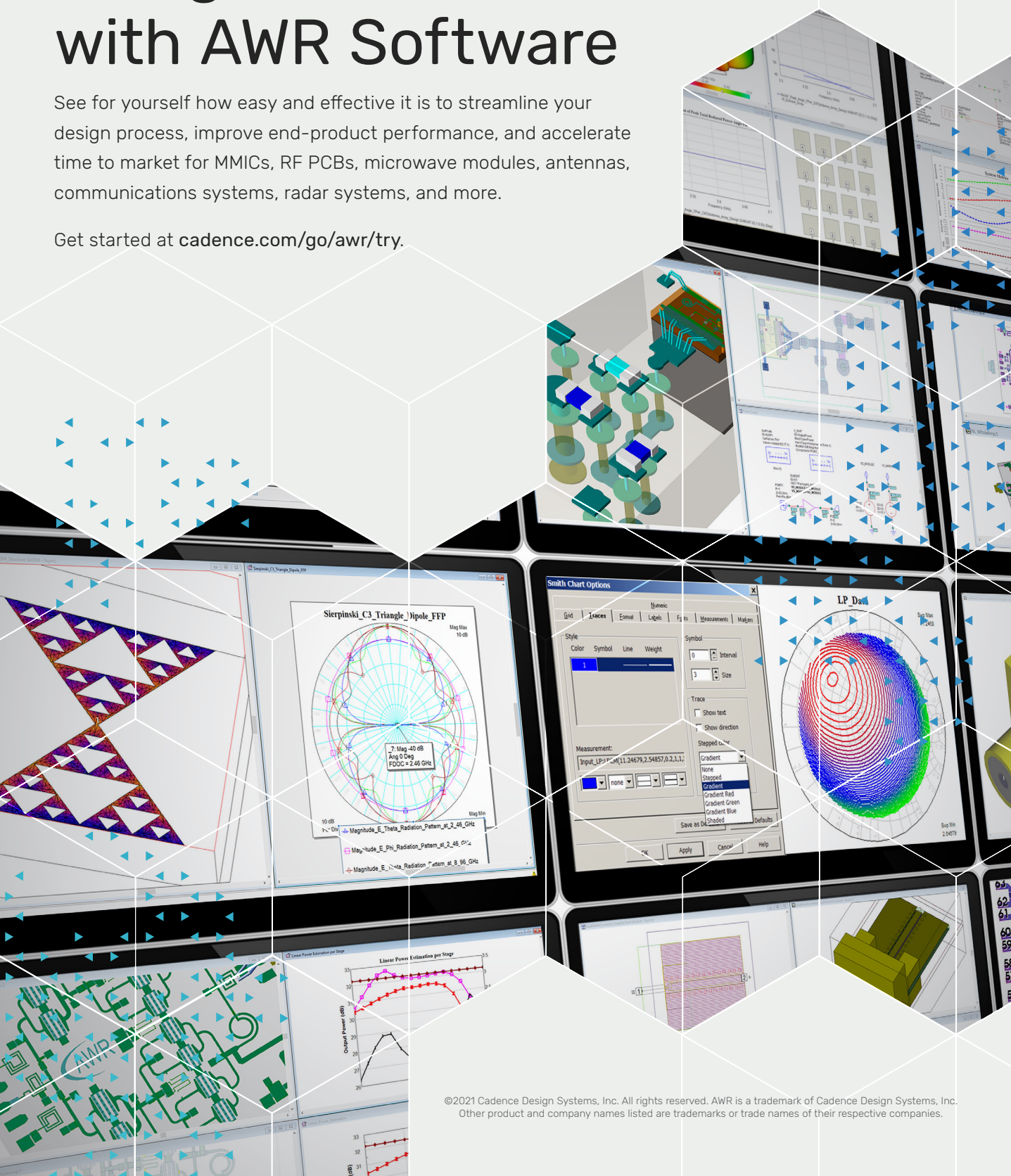

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Best Student Paper Award Committee	**Kin-Fai (Kenneth) Tong (Chair)** University College London
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	Yejun He (Co-Chair) Shenzhen University
	Ying Liu (Co-Chair) Xidian University
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5G NR 28GHz MIMO Test Setup

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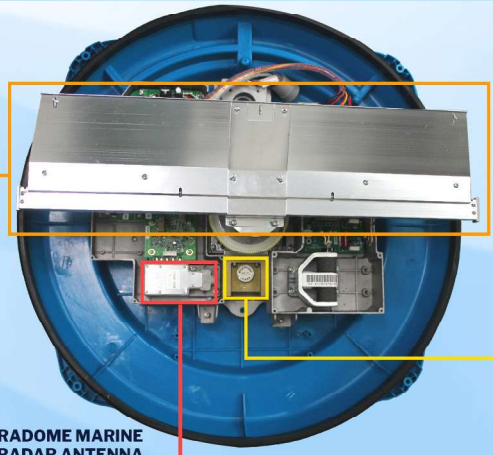
Check out the Microwave Components inside our Radome Marine Radar Atenna manufactured by **ONWA Marine Electronics.**

ANTENNA RADIATOR

Radiator: Slotted Waveguide Array
Radiator Length: 55cm
Horizontal beamwidth: 4°
Vertical beamwidth: 25°
Sidelobe:
Within ± 20° off mainlobe; less than -18 dB
Outside ± 20° off mainlobe; less than -23 dB
Polarization: Horizontal



RADOME MARINE RADAR ANTENNA

FCX75C CIRCULATOR

FCX75C Circulator is a waveguide type circulator, designed for X band Marine Radar

Frequency Range:	9.3- 9.5 GHz
Peak Power:	5 kW
Average Power:	5 W
Storage Temperature:	-40 to +100°C
Operating Temperature:	-30 to +70°C
Pulse width:	1.0 µs (Max)
Duty:	0.001 (Max)

ONWA 1946

ONWA 1946 is designed for the front end of marine radar system
Frequency:
9.38 GHz to 9.44 GHz
Front end module consists of:
PIN diode Limiter, GaAs FET low noise amplifier, Image rejection mixer, Local VCO with buffer amplifier

Electrical Characteristics (at 25°C)

Operating Voltage: 4.8-5.2 V	**Noise Figure:** 5.5 dB (Max)	**Conversation Gain:** 1.0 dB (Min) 4.0 dB(Typical)
Operating Current: 85 (Typical)-100 mA (Max)	**Local Frequency:** 9.41 GHz (Max at VT=4V); 9.53 GHz (Min at VT=24V)	**1 dB Gain Compression Point:** -8.0 dBm (Min); -5.0 dBm (Typical)
Tuning Voltage: 10.5-13.5 V(fLo=9.47 GHz)		**RF repetitive pulse burnout:** 800 W (Max at fRF=9.41 GHz, Pd= 1µsec, Duty= 0.001)

Open-Array Antenna also Available!

ONWA Marine Electronics Co. Ltd.
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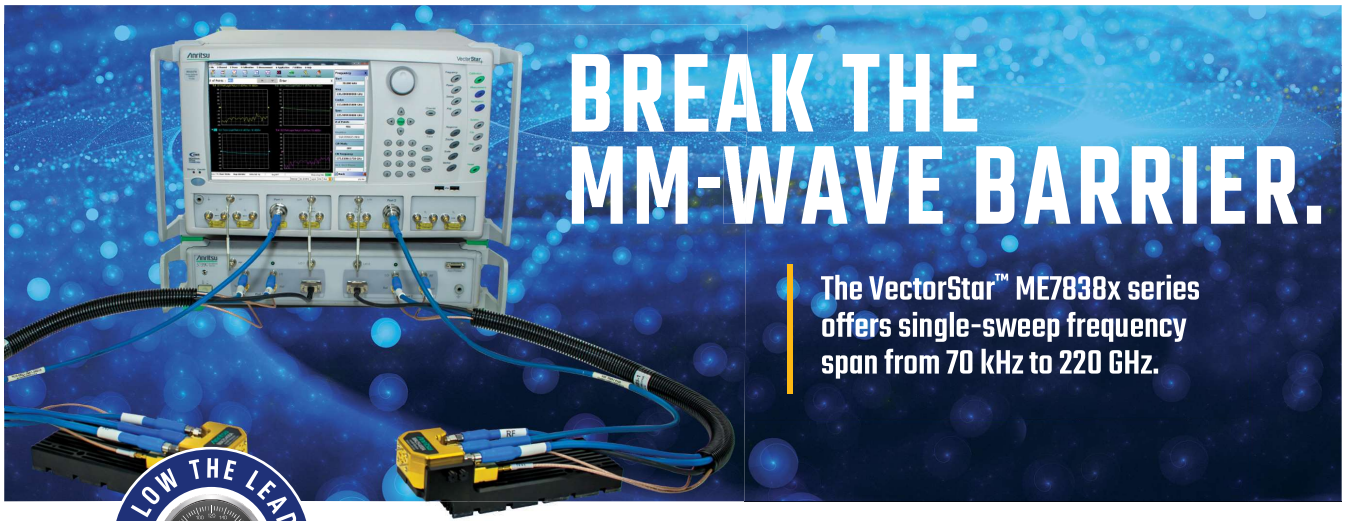

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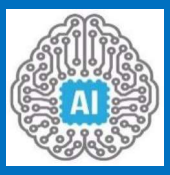

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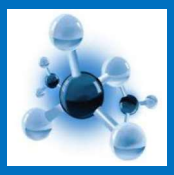

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Presentation Instructions

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Workshops: 30 minutes(25 minutes for presentation and 5 minutes for Q&A);
Invited papers(except SS07): 25 minutes(20 minutes for presentation and 5 minutes for Q&A);
Regular papers & SS07: 20 minutes(15 minutes for presentation and 5 minutes for Q&A).
The session chair will give you a reminder at 3 minutes before the presentation time ends.

(2) Your presentation will be followed by Question & Answer (Q&A) session. The length of your Q&A session will be determined by the session chair(s), depending on the progress of the presentations in the session. Generally, the Q&A session for each paper will not exceed 5 minutes.

(3) You may find your presentation section, date & time in the e-Proceeding, Program Book, or on the website.

(4) Please prepare your presentation materials for the online presentation. We prefer using Microsoft PowerPoint or Adobe Acrobat as the presentation tool. Please follow the ZOOM instructions to share your presentation materials. Collection of presentation materials is not needed.

(5) All papers must be presented in person at the conference in order to be included in the proceedings published in IEEE Xplore.

(6) For more details about using ZOOM, please see the Zoom Instructions.

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Regular papers & SS07: 20 minutes(15 minutes for presentation and 5 minutes for Q&A).
The student helper will give a reminder to you at 4 minutes before the presentation ends.

(2) Presentation will be followed by Question & Answer (Q&A) session. The length of Q&A session will be determined by you and the other session chair (if any), depending on the progress of the presentations in the session. You should control the Q&A session time so that it will not exceed 5 minutes.

(3) Student Helper will help remind Session chair when time is running out. Please keep the presentation to the allotted time slot.

(4) If presentation is no show, this time slot should be remained as schedule. The rest of the presentations time slot should not be changed.

(5) When you are co-hosting the ZOOM conference room, you should not leave the ZOOM room because all the sessions are being recorded, and leaving the room might interrupt the recording. (Leave or finish?)

(6) You may find your chaired section, date & time in the e-Proceeding, Program Book, or the website.

(7) For more details about using ZOOM, please see the Zoom Instructions.

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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

Session	Session code	Chair
Plenary Talk		Chair-**YYY**
Prof. K K Mei Memorial Lecture 1	LT1	LT1-Chair-**YYY**
Prof. K K Mei Memorial Lecture 2	LT2	LT2-Chair-**YYY**
Special Session	SS	SS**XX**-Chair-**YYY**
Regular Session	RS	RS**XX**-Chair-**YYY**
Workshop 1	WS1	WS1-Chair-**YYY**
Workshop 2	WS2	WS2-Chair-**YYY**
Industrial Talk		Chair-**YYY**

where **X** is the ordinal number of your paper in this session; **YYY** stands for your name in English.

2.3 Our helper will brief you on the session information with a PowerPoint slide; This slide will be displayed until the session starts.

Session	Session code	Helper
Plenary Talk		Support-**YYY**
Prof. K K Mei Memorial Lecture 1	LT1	LT1-Support-**YYY**
Prof. K K Mei Memorial Lecture 2	LT2	LT2-Support-**YYY**
Special Session	SS	SS**XX**-Support-**YYY**
Regular Session	RS	RS**XX**-Support-**YYY**
Workshop 1	WS1	WS1-Support-**YYY**
Workshop 2	WS2	WS2-Support-**YYY**
Industrial Talk		Support-**YYY**

where **X** is the ordinal number of the session; **YYY** stands for name in English.

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

Session	Session code	Chair
Plenary Talk		Speaker-**YYY**
Prof. K K Mei Memorial Lecture 1	LT1	LT1-Speaker-**YYY**
Prof. K K Mei Memorial Lecture 2	LT2	LT2-Speaker-**YYY**
Special Session	SS	SS**XX**-Speaker-**YYY**
Regular Session	RS	RS**XX**-Speaker-**YYY**
Workshop 1	WS1	WS1-Speaker-**YYY**
Workshop 2	WS2	WS2-Speaker-**YYY**
Industrial Talk		Speaker-**YYY**

where **X** is the ordinal number of your paper in this session; **YYY** stands for your name in English.

3.3 Our helper 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.

Session	Session code	Helper
Plenary Talk		Support-**YYY**
Prof. K K Mei Memorial Lecture 1	LT1	LT1-Support-**YYY**
Prof. K K Mei Memorial Lecture 2	LT2	LT2-Support-**YYY**
Special Session	SS	SS**XX**-Support-**YYY**
Regular Session	RS	RS**XX**-Support-**YYY**
Workshop 1	WS1	WS1-Support-**YYY**
Workshop 2	WS2	WS2-Support-**YYY**
Industrial Talk		Support-**YYY**

where **X** is the ordinal number of the session; **YYY** stands for name in English.

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).

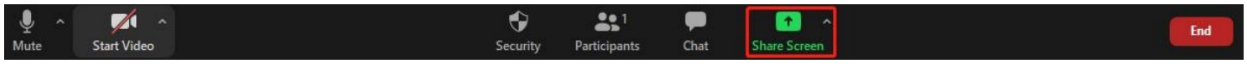

Fig. 1. Bottom control buttons of Zoom.

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

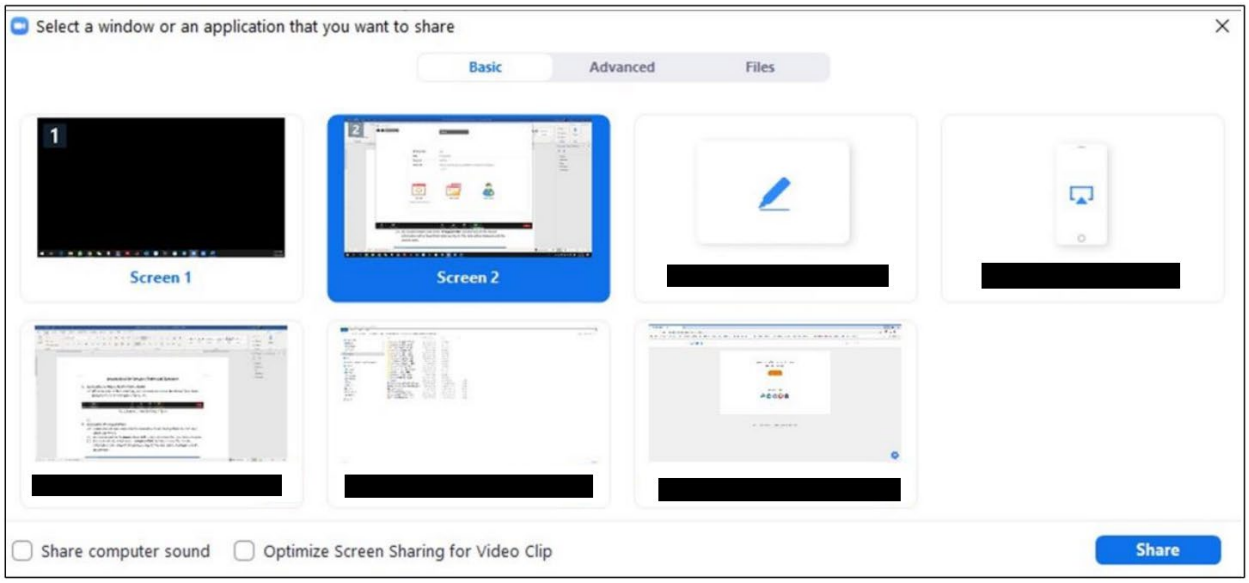

Fig. 2. Pop-up window to select the screen/application to share.

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

Plenary Talk 1

Title	**Recent Advances and Promise of Metasurface for Microwave Applications**
Speaker	Tatsuo Itoh *Member of National Academy of Engineering, UCLA*
Date/ Time	Wednesday, 09 December 2020 / 9:30 – 10:30 (GMT+8)
Zoom link	Room 1 (Zoom Conference ID: **899 7360 7205** / Password: **12345678**) https://us02web.zoom.us/j/89973607205?pwd=WWVXaFl1ZmZGMll4VWUvMlJjTnNOQT09

Abstract

Periodic structures formed in one- to three dimensions have been studied as photonic and microwave components for over 50 years. Corrugations on a guided wave structure has been considered as circuit elements and are used as a slow wave structure (delay line), or a stopband filter based on Bragg phenomena depending on the operating frequency. If the frequency is further increased, the structure supports guided wave which causes leaky structure. Multi (2 or 3) dimensional periodic structures are often called Photonic Crystals or Electromagnetic Bandgap (EBG) structures because of the similarity of the dispersion diagram to that of naturally found crystalline configuration. In late 1970s till 90s, significant scientific and engineering applications of the EBG have been witnessed with the majority in two-dimensional configurations which are fabricated by then standard planar circuit configuration. At the same time, dielectric waveguide structures were also used with a view to application to futuristic millimeter and submillimeter circuits. Examples include Bragg Gunn oscillators similar in structure to Distributed Bragg Reflector (DBR) laser diode. The DBR structures have also been incorporated to planar integrated circuits to control the signal flow. Periodic perturbation is incorporated in the ground plane of the output port of the high-power amplifier from which the second harmonic is suppressed. The signal control by means of ground plane holes were widely used as the defected ground structure (DGS).

In early 2000, significant interest on the interest of the EBG in two dimensions came out in antenna community for improving the radiating characteristics of planar antenna. Various two-dimensional periodic structures were also studied such as impedance plane, perfect magnetic surface, etc. Around this time, a composite EBG (UC-PBG) was introduced which has unit cells made of reverse Jerusalem cross printed on the top surface of a grounded substrate. Since two layers can be used, surface impedance can be controlled more effectively.

Circa 2020 was the time of surprise birth of the artificial (manmade) structures named Metamaterial. Experimental demonstration of negative phase velocity was carried out by periodic structure with the unit cells made of split ring resonator(s) generating negative inductance and wire medium generating negative capacitance. Soon after this demonstration, it was reported that the negative velocity can be realized by using series capacitance and shunt inductance in a unit cell of periodic structure. Since generation of the negative velocity is accomplished by conventional (not resonant) broadband planer circuit elements, this new structure called Composite Right/Left-Handed (CRLH) was widely used for various microwave components including the dual-band couplers, 0th order resonators and entire domain scanning leaky-wave antennas.

Although these Metamaterials can be 1-d, 2-d and 3-d periodic configuration and resemble to EBG structure in appearance, their nature is fundamentally different. Strictly speaking EBG should not

be called Metamaterial. It is interesting, however, that their two-dimensional versions are called Metasurface, perhaps because the interest and usage of the metasurface are along the study of scattering properties.

The terminology metasurface appeared to have origin in optical science and photonic engineering. In optical regime, it is easy to obtain physical size of the components much larger than wavelength. Often, in beam optics configuration, the optical beam is well within the diameter of lens and mirrors. Situation is quite different in microwave electronics. Even for a large phased array, it is rare that the size rarely exceeds 100wavelength. However, the situation in THz electronics is not so bad and the use of "optical" technique might be convincing.

For instance, THz amplifying metasurface reflectors were developed for quantum-cascade lasers (QCL) to achieve high output power and high-quality beam pattern. Some traditional optical devices can find their equivalent metasurface design with much smaller size. Blazed gratings were imitated by a metasurface with periodic simple planar elements, such as metal strips and patches, to reflect the beam back to the path of incidence (retroreflection). Later, metasurface gratings with resonant unit cells at blazing points were designed for wide bandwidth and wide angle of operation. To enhance the retroreflection efficiency, non-periodic metasurfaces were developed assisted by optimization technique. They can overcome the physical constraints faced by the periodic metasurface gratings and can be used to retroreflect circularly polarized wave with either preserved handedness or reversed handedness. If translated to appropriate frequencies, all these metasurfaces may find their applications in Littrow external cavity lasers, radars, RFID, etc.

Now, the metasurface has become an efficient tool to manipulate the magnitude, phase, and polarization of electromagnetic waves in microwave. Different types of metasurfaces, such as Reactive impedance surface (RIS), high impedance surface (HIS) and frequency select surface (FSS), are evolving to impact many microwave applications. They were widely used in antenna miniaturization and performance enhancement, EM field absorbers, and polarization converters to name a few.

Biography

Tatsuo Itoh received Ph.D. in Electrical Engineering from the University of Illinois, Urbana in 1969. He was with SRI International, Menlo Park, CA. He was Associate Professor at the University of Kentucky, Lexington. In 1978, he joined The University of Texas at Austin, and became Hayden Head Centennial Professor. In 1991, he joined the University of California, Los Angeles as Distinguished Professor of Electrical Engineering and Northrop Grumman Endowed Chair of the Microwave Electronics. He received several awards including Educator Award (2000), and Microwave Career Award from MTT Society (2011). He was elected to a member of National Academy of Engineering in 2003. Dr. Itoh is a Life Fellow of the IEEE. He was the Editor of IEEE Transactions on Microwave Theory and Techniques (1983-85) and the founding Editor-in-Chief of IEEE Microwave and Guided Wave Letters (1991-94). He was President of the MTT Society in 1990 and was elected an Honorary Life Member of MTT Society in 1994. He was Chairman of Commission D of URSI for 1993-1996. He received Doctor Honoris Causa, Universitat Autonoma de Barcelona, Spain, Oct 14, 2015. He has 450 journal publications, 910 refereed conference presentations in the areas of microwaves, millimeter-waves, antennas and numerical electromagnetics. He generated 82 Ph.D. students and hosted more than 100 visiting scholars and postdocs from various countries.

Plenary Talk 2

Title	**On Electromechanical Coupling Problems in Large Phased Array Microwave Antennas**
Speaker	Baoyan Duan *Academician of Chinese Academy of Engineering, Xidian University*
Date/ Time	Wednesday, 09 December 2020 / 10:40 – 11:40 (GMT+8)
Zoom link	Room 1 (Zoom Conference ID: **899 7360 7205** / Password: **12345678**) https://us02web.zoom.us/j/89973607205?pwd=WWVXaFl1ZmZGMll4VWUvMlJjTnNOQT09

Abstract

Large phased array antenna (PAA) is a kind of complex integrated system involving electromagnetic, mechanical and thermal technologies. Advanced mechanical technology is needed to maintain the electronic performance of the PAA, otherwise, it may restrict the realization of the PAA with high performance. With the three new developing trends of high frequency and high gain, high density and miniaturization, and fast response and high pointing accuracy, the tightly coupling between these technologies can be imagined. This talk will focus on the coupling problems of the PAA.

Firstly, the multifield coupling (MFC) model among electromagnetic, structural displacement and temperature field for phased arrays of microwave antennas is introduced.

Secondly, the influence mechanism (IM) of nonlinear mechanical errors on the electronic performance of antennas is described.

Thirdly, the MFC and IM based multidisciplinary design optimization methodology is proposed.

Finally, several engineering applications are given to demonstrate the MFC model, IM and optimization methodology.

Biography

Baoyan Duan
Academician of Chinese Academy of Engineering (CAE)
President of Xidian University, China (2002 - 2012)
Full Prof of Electromechanical Egging, Xidian University, China

He received the B.S., M.S., and Ph.D. degrees in Electromechanical Engineering from Xidian University, Xi'an, China, in 1981, 1984, and 1989 respectively. From 1991 to 1994, he studied as Postdoctoral Fellow at Liverpool University, U.K. and worked as Visiting Scientist at Cornell University, Ithaca, NY, in 2000. He is currently a full Professor of Electromechanical Engineering at Xidian University where he founded the research institute on mechatronics about electronic equipment design.

He is Chairman of national antenna industry alliance of China, Chairman of Electromechanical Engineering Society of China. He is Fellows of Int. Engineering and Technology (IET) and Chinese Institute of Electronics (CIE), Members of Int. Society for Structural and Multidisciplinary Optimization (ISSMO). He serves as chief editor of Electromechanical Engineering of China, deputy chief editor of Chinese Journal of Electronics, disciplinary chief editor of ***Engineering***, CAE flagship Int. J. and editors of 10 more other int. or domestic academic journals.

His has been dedicating himself in the research of electromechanical engineering and opened new area of electromechanical coupling (EMC) theory of microwave electronic equipment (MEE) in

China. He has established multifield coupling theory model (MFCTM) among electromagnetic, structural deformation and temperature fields of MEE, made known the influence mechanism (IM) of nonlinear mechanical parameters on electronic performance of MEE and developed the integrated design methodology of MEE based on MFCTM and IM. The above results have been successfully applied in national major engineering projects such as the lunar exploration, the Shenzhou spacecraft, the "Tiantong No.1", and the FAST500m largest radio telescope.

He has published authored or coauthored 200 papers and six books, authorized 40 patents of invention. He has received, as the first author, the 2nd prize of national award for science and technology progress of China three times (2004, 2008 and 2013). In 2009, he was selected as science Chinese person. In 2012, he was issued Hong Kang HLHL prize of science and technology progress. In 2017, he received award for outstanding scientific and technological achievement from Chinese Academy of Science and the golden prize of "good design" of China. In 2018, he received award from Asian Society of Structural and Multidisciplinary Optimization.

CCTV (**C**hinese **C**entral **T**ele**V**ision station) made up and broadcasted a special program titled **DUAN Baoyan: Minor discipline and Great Vision** **https://v.qq.com/x/page/i08412h2chd.html**(**English**) in 2016.

Plenary Talk 3

Title	**Emerging Deep Integration and Topological Cohabitation of Front-End Circuit and Antenna for Future Wireless Systems**
Speaker	Ke Wu *Fellow of the Royal Society of Canada, University of Montreal*
Date/ Time	Friday, 11 December 2020 / 9:30 – 10:30 (GMT+8)
Zoom link	Room 1 (Zoom Conference ID: **831 4817 8419** / Password: **12345678**) https://us02web.zoom.us/j/83148178419?pwd=VWFuY1dqdHBsNlkwZllXSVlQVG0wUT09

Abstract

Large-scale integration of front-end circuit (FEC) and antenna for wireless systems has undergone a remarkable progress with the evolution of operating frequency ranges over time. Spurred by performance-limited conventional approach in which FEC and antenna are developed independently, the co-design scheme of FEC with antenna, widely known as active integrated antenna (AIA), has gained prominence and significance. Nevertheless, there are still significantly detrimental issues in the AIA platform, which become much more pronounced at the rapidly emerging millimeter wave and terahertz range frequencies. Therefore, there is an immediate and tremendous need in search for disruptive solutions.

To this end, we have proposed and demonstrated a transformative concept of unified and integrated circuit antenna (UNICA) with focus on topologically cohabitating active devices and antennas. This emerging technology is to realize joint circuit and antenna functions through a unified space without resorting to additional connecting lines and impedance matching networks. In this talk, we will discuss the architectural evolution of FEC integration schemes with antenna, covering the state of art deep integration techniques for realizing various active circuit-antenna functions such as oscillation, amplification, mixing, and frequency multiplication, which are implemented in either PCB or on-chip platforms.

Biography

Ke Wu is Endowed Industrial Research Chair in Future Wireless Technologies and Professor of Electrical Engineering at École Polytechnique (University of Montreal), where he is 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 held/holds visiting/honorary professorships at various universities around the world. Dr. Wu has graduated over 70 Ph.D. and 94 M.Sc. Students. He has authored/co-authored over 1300 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. He was 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 including the inaugural IEEE MTT-S Outstanding Young Engineer Award, 2004 Fessenden Medal of the IEEE Canada, 2009 Thomas W. Eadie Medal from the Royal Society of Canada, Queen Elizabeth II Diamond Jubilee Medal, 2013 Award of Merit of Federation of Chinese Canadian Professionals, 2014 IEEE MTT-S Microwave Application Award, the 2014 Marie-Victorin Prize (Prix du Quebec), 2015 Prix d'Excellence en Recherche et Innovation of Polytechnique Montréal, 2015 IEEE Montreal Section Gold Medal of

Achievement, and 2019 IEEE MTT-S Microwave Prize. 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.

Plenary Talk 4

Title	**Extreme Metastructures**
Speaker	Nader Engheta *H. Nedwill Ramsey Professor, University of Pennsylvania*
Date/ Time	Friday, 11 December 2020 / 10:40 – 11:40 (GMT+8)
Zoom link	Room 1 (Zoom Conference ID: **831 4817 8419** / Password: **12345678**) https://us02web.zoom.us/j/83148178419?pwd=VWFuY1dqdHBsNlkwZllXSVlQVG0wUT09

Abstract

Metamaterials and Metasurfaces have provided versatile platforms for wave-matter interactions with various applications in microwave, THz, and optical domains. Since material parameters can be tailored to achieve exciting functionalities in such platforms, various extreme scenarios for these parameters can be considered. In my group, we have been exploring the salient wave-based features of extreme-parameter metamaterials and metasurfaces. One of our research programs in this area is the concept of metastructures that can perform mathematical computing with waves, e.g., properly designed platforms that can solve equations with near speed of light, as the waves traverse through them. In such structures, one can envision metamaterials that function as analog computing machines. Another category of extreme metastructures is the near-zero-index (NZI) media in which the effective relative permittivity and/or relative permeability can attain near-zero values around the operating frequencies of interest. In such NZI structures, effective wavelength "stretches", and consequently numerous unprecedented wave phenomena emerge. In this talk, I will give an overview of some of our ongoing research programs in the areas of extreme metastructures. I will also present physical insights into the results, and will forecast future research directions in these areas.

Biography

Nader Engheta is the H. Nedwill Ramsey Professor at the University of Pennsylvania in Philadelphia, with affiliations in the Departments of Electrical and Systems Engineering, Bioengineering, Materials Science and Engineering, and Physics and Astronomy. He received his BS degree from the University of Tehran, and his MS and Ph.D. degrees from Caltech.

He has received several awards for his research including the *Max Born Award* from the Optical Society, *Ellis Island Medal of Honor,* the *IEEE Pioneer Award in Nanotechnology*, the *Gold Medal from SPIE, the Balthasar van der Pol Gold Medal* from the International Union of Radio Science (URSI), the *William Streifer Scientific Achievement Award* from the IEEE Photonics Society, induction to the *Canadian Academy of Engineering* as an International Fellow, *the Fellow of US National Academy of Inventors (NAI),* the *IEEE Electromagnetics Award*, *the IEEE Antennas and Propagation Society Distinguished Achievement Award,* the *Beacon of Photonics Industry Award*, *the Vannevar Bush Faculty Fellowship Award* from US Department of Defense*, the Wheatstone Lecture in King's College London, 2006 Scientific American Magazine 50 Leaders in Science and Technology*, the *Guggenheim Fellowship*, and the *IEEE Third Millennium Medal.*

He is a Fellow of seven international scientific and technical organizations, i.e., IEEE, Optical Society of America (OSA), American Physical Society (APS), Materials Research Society (MRS), International Society for Optics and Photonics (SPIE), International Union of Radio Science (URSI), and American Association for the Advancement of Science (AAAS). He has received the honorary doctoral degrees from the Aalto University in Finland in 2016, the University of Stuttgart, Germany in 2016, and Ukraine's National Technical University Kharkov Polytechnic Institute in 2017.

His current research activities span a broad range of areas including metamaterials, electrodynamics, microwaves, photonics, nano-optics, graphene photonics, imaging and sensing inspired by eyes of animal species, microwave and optical antennas, and physics and engineering of fields and waves.

Workshop 1

Title	**Frontiers in Metasurfaces: Fundamentals, Applications and Future Trends**
Date/Time	Tuesday, December 8, 2020 / 09:00 – 11:45 (GMT+8)
Organizer & Chair	Alex Man Hon Wong (City University of Hong Kong)
Zoom link	Room 1 (Zoom Conference ID: **899 5455 9563** / Password: **12345678**) https://us02web.zoom.us/j/89954559563?pwd=OUNvZnNaZlJHQTJPUzB4U3BUYm5vdz09

Scope:
The metasurface has vitalized electromagnetics research and brought forth a powerful tool to manipulate EM waves at will, with applications limited only by imagination. In this workshop, distinguished speakers share their inspiring works on fundamental and application-driven aspects of metasurface research, and offer their views on promising current and future directions.

9:00	[*Invited*] Perspectives on Passive and Active Huygens' Metasurfaces *George V. Eleftheriades (University of Toronto)*
9:30	[*Invited*] Intelligent Methods for Designing Advanced Electromagnetic Surfaces Using Machine Learning and Optimization *Sean V Hum (University of Toronto)*
10:00	Break
10:15	[*Invited*] Space-Time Coding Metasurface for Wireless Communication *Qiang Cheng (Southeast University)*
10:45	[*Invited*] Topological Metasurfaces *Daniel Sievenpiper (University of California, San Diego)*
11:15	[*Invited*] Microwave Metalens: A Classic but New Antenna Solution *Zhi Ning Chen (National University of Singapore)*

Workshop 2

Title	**Filtering Antennas: From Innovative Design to Industrial Application**
Date/Time	Tuesday, December 8, 2020 / 09:00 – 11:15 (GMT+8)
Organizer & Chair	Xiu Yin Zhang (South China University of Technology)
Zoom link	Room 2 (Zoom Conference ID: **843 6881 6489** / Password: **12345678**) https://us02web.zoom.us/j/84368816489?pwd=U0ZMc1p3bitRZFkxZGg5Q0t3VmR6QT09

Scope:
With the rapid development of wireless communication, we will access more and more wireless services/applications, which are based on different frequency bands. In order to eliminate the interference amid various services, the antenna with tailored performance outperform conventional antennas are highly desired. This workshop will focus on novel filtering antennas technologies, designing methods, and potential applications in industry. Latest research achievements regarding microwave-/millimeter-wave band filtering antennas with improved frequency selectivity, bandwidth controllability, multiple-band operation and potential applications in industry will be presented.

9:00	[*Invited*] Filtering antenna and its application to base-station Array *Xiu Yin Zhang (South China University of Technology)*
9:30	[*Invited*] High Efficiency Waveguide Slot Filtering Antenna *Wei Wang (The 38th Research Institute of CETC)*
10:00	Break
10:15	[*Invited*] Modelling and Optimization of Filtering Antennas Based on Coupled Resonator Circuits *Lin Sheng Wu (Shanghai Jiao Tong University)*
10:45	[*Invited*] Designs and Realizations of Compact, Multi-Functional Filtennas *Ming Chun Tang (Chongqing University)*

Professor Kenneth K. Mei Memorial Lecture I

Title	**Frontiers in Antennas**
Date/Time	Tuesday, December 8, 2020 / 13:30 – 17:30 (GMT+8)
Chair	Kwok Wa Leung (City University of Hong Kong)
Zoom link	Room 1 (Zoom Conference ID: **874 3365 2049** / Password: **12345678**) https://us02web.zoom.us/j/87433652049?pwd=VUhIcmdvclB0dHd2aTU1R2VJM1FVUT09

13:30	[*Invited*] The Design of Multi-Beam Scanning Area for Optical Short Range Indoor Communication System *Hiroyuki Arai* (Yokohama National University)*
13:55	[*Invited*] The Challenges of 5G OTA Measurement *Dau-Chyrh Chang* (Oriental Institute of Technology)*
14:20	[*Invited*] Single-Feed, Highly-Directive, Higher-Order-Mode Cavity Antenna and Its Beam Tilting Realization *Shu-Lin Chen (University of Technology Sydney); Richard Ziolkowski and Y. Jay Guo* (University of Technology Sydney); Yanhui Liu (University of Electronic Science and Technology of China Chengdu)*
14:45	[*Invited*] Multi-Material 3D Printed Antennas *Henry Giddens and Yang Hao* (Queen Mary University of London)*
15:10	Break
15:25	[*Invited*] Design of Meta-Surface to Reduce Reflection Loss of Multi-Layer Dielectric Plate by Deriving Optimum Equivalent Circuit in Transmission Line Model *Kunio Sakakibara*, Takahiro Murai, Shota Ino, Yoshiki Sugimoto and Nobuyoshi Kikuma (Nagoya Institute of Technology)*
15:50	[*Invited*] A Wideband Magneto-Electric Dipole Ridge Gap Waveguide Slotted Array Antenna *Hongjian Wang* (National Space Science Center, University of Chinese Academy of Sciences)*
16:15	[*Invited*] Omnidirectional Horizontally Polarized Magnetic Dipole Array Facilitated by Folded TE0.5,0 Mode Waveguide *Wei Lin and Richard Ziolkowski* (University of Technology Sydney)*
16:40	[*Invited*] Fast Direct Solution of Integral Equation Based on Strong Admissibility Skeletonization Factorization *Zhi Rong, Lin Lei and Jun Hu* (University of Electronic Science and Technology of China)*
17:05	[*Invited*] Wideband MIMO Antennas for 5G Mobile Terminals *Hanyang Wang* (Huawei Technologies Co., Ltd)*

*: Paper presenter

Professor Kenneth K. Mei Memorial Lecture II

Title	**Frontiers in Microwaves**
Date/Time	Tuesday, December 8, 2020 / 13:30 – 17:05 (GMT+8)
Chair	Chi Hou Chan (City University of Hong Kong)
Zoom link	Room 2 (Zoom Conference ID: **858 7205 8610** / Password: **12345678**) https://us02web.zoom.us/j/85872058610?pwd=KzlvQ1g4SnFmTXdkbEpLTFZCQWpDdz09

13:30	[*Invited*] Intelligent RF Circuits and Systems with Memory Elements *Zong-Rui Xu, Yi-Feng Ye, Lin-Sheng Wu and Junfa Mao* (Shanghai Jiao Tong University)*
13:55	[*Invited*] Bandpass Filter Using Half-Mode Substrate Integrated Plasmonic Waveguide *Yue Cui (Tohoku University), Kai-Da Xu (Tohoku University & Xi'an Jiaotong University) and Qiang Chen* (Tohoku University)*
14:20	[*Invited*] Asymmetric Full-Digital Beamforming mmWave Massive MIMO Systems for B5G/6G Wireless Communications *Wei Hong*, Jianyi Zhou, Jixin Chen, Zhihao Jiang, Chao Yu and Chong Guo (Southeast University)*
14:45	[*Invited*] Modeling of Ring Resonator of Noninteger Indices *Ching-Kuang Tzuang* (National Taiwan University)*
15:10	Break
15:25	[*Invited*] Design of SAW Filter and Multiplexer Module for 5G Carrier Aggregation *Shu-Yuan Tseng and Ruey-Beei Wu* (National Taiwan University)*
15:50	[*Invited*] A 120 GHz Wideband CMOS I/Q Transmitter for Short-Range Wireless Device-To-Device Communication *Seung Hun Kim (Korea Advanced Institute of Science and Technology,); Tae Hwan Jang (Samsung Advanced Institute of Technology); Dong Min Kang and Chul Soon Park* (Korea Advanced Institute of Science and Technology)*
16:15	[*Invited*] Harnessing Ambient RF Waves for Novel Applications *Ross Murch*, Chi-Yuk Chiu and Shanpu Shen (The Hong Kong University of Science and Technology)*
16:40	[*Invited*] Novel Dual-Mode Dielectric-Filled Waveguide Filters *Qing-Xin Chu*, Jian-Ye Mai and Pei-Wen Shu (South China University of Technology)*

*: Paper presenter

Special Sessions

Session Code	Session Title/Organizers
SS01	**Transmitarrays and Reflectarrays: Latest Developments and the Future** Peiyuan Qin (University of Technology Sydney) Shi-Wei Qu (University of Electronic Science and Technology of China)
SS02	**Antenna Designs, Solutions, and Trends for 5G and Beyond** Huan-Chu Huang (Etheta Comm. Technology Co., Ltd) Yujian Li (Beijing Jiaotong University)
SS03	**Recent Advances in Antennas and Propagation Research in Japan** Hiroyoshi Yamada (Niigata University)
SS04	**Advanced Antennas and Arrays Based on Metamaterials and Spoof Surface Plasmon Polaritons (SSPPs)/ Recent Progress on Frequency Selective Surfaces** Mei Li (Chongqing University) Junping Geng (Shanghai Jiao Tong University) Ming-Chun Tang (Chongqing University) Qing Feng Zhang (Southern University of Science and Technology) Amir Khurrum Rashid (Southern University of Science and Technology)
SS05	**Plasmonic Devices and Antennas at Microwave/THz Frequencies** Kai Da Xu (Tohoku University) Renbin Zhong (University of Electronic Science and Technology of China)
SS06	**Wideband/Multiband Planar Antennas** Neng-Wu Liu (Xidian University) Lei Zhu (University of Macau)
SS07	**Commemorating the Beginning of Antenna Research by Prof. Kai Fong Lee Four Decades Ago in Hong Kong** Kwai Man Luk (City University of Hong Kong) Kin-Fai Kenneth Tong (University College London)
SS08	**Phase Shifters/Phase-Shifting Networks** Yun-Peng Lyu (Nanjing University of Posts and Telecommunications) Lei Zhu (University of Macau)

SS09	**Recent Advances on Bio-Sensing Technologies** Chia-Chan Chang (National Chung-Cheng University) Chao-Hsiung Tseng (National Taiwan University of Science and Technology)
SS10	**Doppler Radar: System Architecture and Applications** Tzyy-Sheng Horng (National Sun Yat-Sen University) Fu-Kang Wang (National Sun Yat-Sen University)
SS11	**Recent Advances in Dielectric Resonator Antenna for 5G-Related Applications** Lei Guo (Dalian University of Technology) Jian Ren (Xidian University)
SS12	**Advances in Microwave Filter and Multiplexers** Ming Yu (The Chinese University of Hong Kong; Southern University of Science and Technology, China) Roberto Gómez-García (University of Alcal´a)
SS13	**Advanced Power Amplifier Design and Linearization Techniques for Future Wireless Communication Systems/All-spectrum-access Base Station/Smart Terminal Antennas** Jing Xia (Jiangsu University) Shichang Chen (Hangzhou Dianzi University) Yejun He (Shenzhen University) Amir Boag (Tel Aviv University)
SS14	**Advanced Filter Design** Pei-Ling Chi (National Chiao Tung University) Tzong-Lin Wu (National Taiwan University)
SS15	**Recent Advances in High Performance Passive Filter Design** Xiaolong Wang (Jilin University) Chun-Ping Chen (Kanagawa University)

Industrial talks

Session	Industrial Talks 1
Date/ Time	Wednesday, December 9, 2020 / 12:00 – 13:00 (GMT+8)
Chair	Kam Man Shum *City University of Hong Kong*
Zoom link	Room 11 (Zoom Conference ID: **851 3999 9884** / Password: **12345678**) https://us02web.zoom.us/j/85139999884?pwd=cklDU0QzS0RLQWdFa0c0Sm9TdG84dz09
12:00	Keysight Technologies Hong Kong Ltd.
12:15	Guangdong Broadradio Communication Technology Co., Ltd.
12:30	Cadence Design System, Inc.
12: 45	Fragrant Mountain Microwave Co., Ltd.

Session	Industrial Talks 2
Date/ Time	Friday, December 11, 2020 / 12:00 – 13:00 (GMT+8)
Chair	Kam Man Shum *City University of Hong Kong*
Zoom link	Room 11 (Zoom Conference ID: **840 5617 3053** / Password: **12345678**) https://us02web.zoom.us/j/84056173053?pwd=VTlzRk54VUJ2SzV4eTdFRU9RbjVKdz09
12:00	ANTWave Technology Ltd.
12:15	Rohde & Schwarz Hong Kong Ltd.
12:30	Antritsu Co., Ltd.
12:45	Virginia Diodes, Inc.

Technical Program — December 09, 2020 (Wednesday)	
Session	**Opening Ceremony**
Date/ Time	Wednesday, December 9, 2020 / 09:00 – 09:30 (GMT+8)
Zoom link	Room 1 (Zoom Conference ID: **899 7360 7205** / Password: **12345678**) https://us02web.zoom.us/j/89973607205?pwd=WWVXaFl1ZmZGMll4VWUvMlJjTnNOQT09
Session	**Plenary Talk 1**
Date/ Time	Wednesday, December 9, 2020 / 09:30 – 10:30 (GMT+8)
Title	Recent Advances and Promise of Metasurface for Microwave Applications
Speaker	Tatsuo Itoh *Member of National Academy of Engineering, UCLA*
Chair	Hang Wong *City University of Hong Kong*
Zoom Link	Room 1 (Zoom Conference ID: **899 7360 7205** / Password: **12345678**) https://us02web.zoom.us/j/89973607205?pwd=WWVXaFl1ZmZGMll4VWUvMlJjTnNOQT09
10:30-10:40	Break
Session	**Plenary Talk 2**
Date/ Time	Wednesday, December 9, 2020 / 10:40 – 11:40 (GMT+8)
Title	On Electromechanical Coupling Problems in Large Phased Array Microwave Antennas
Speaker	Baoyan Duan *Academician of Chinese Academy of Engineering, Xidian University*
Chair	Hang Wong *City University of Hong Kong*
Zoom Link	Room 1 (Zoom Conference ID: **899 7360 7205** / Password: **12345678**) https://us02web.zoom.us/j/89973607205?pwd=WWVXaFl1ZmZGMll4VWUvMlJjTnNOQT09

Technical Program — December 09, 2020 (Wednesday)	
Session	**Industrial Talk 1**
Date/ Time	Wednesday, December 9, 2020 / 12:00 – 13:00 (GMT+8)
Chair	Kam Man Shum *City University of Hong Kong*
Zoom link	Room 11 (Zoom Conference ID: **851 3999 9884** / Password: **12345678**) https://us02web.zoom.us/j/85139999884?pwd=cklDU0QzS0RLQWdFa0c0Sm9TdG84dz09
12:00	Keysight Technologies
12:15	Broadradio
12:30	Cadence
12: 45	F&MM

Technical Program — December 09, 2020 (Wednesday)

Session	**Special Session: SS01** **Transmitarrays and Reflectarrays: Latest Developments and the Future**
Date/Time	Wednesday, December 9, 2020 / 13:30 – 15:35 (GMT+8)
Organizer(s) & Chair(s)	Peiyuan Qin (University of Technology Sydney); Shi-Wei Qu (University of Electronic Science and Technology of China)
Zoom link	Room 1 (Zoom Conference ID: **869 9371 8752** / Password: **12345678**) https://us02web.zoom.us/j/86993718752?pwd=TXhZVmRjbEZYa2RUYWlyOFNaK2ZSQT09

13:30	Dual-Layer Huygens Element Based Conformal Transmitarray with A High-Efficiency *Li-Zhao Song, Pei-Yuan Qin, Yan-Hui Liu, Y. Jay Guo (University of Technology Sydney)*
13:50	[*Invited*] Ultra-Wideband High-Gain Transmitarray Antenna *Lin Xiao, Shi-Wei Qu, Wei Tang; Peng-Yu Feng and Senlin Lu (University of Electronic Science and Technology of China)*
14:15	A Broadband Planar Reflectarray Antenna Based on Half-Cut Elements *Meijin Guo and Lu Guo (Nanjing University of Science and Technology)*
14:35	Asymmetric Harmonic Manipulation of Electromagnetic Wave by 2-Bit Time-Varying Coding Metasurface *Na Zhang, Ke Chen, Qi Hu, Kai Qu, Junming Zhao and Yijun Feng (Nanjing University)*
14:55	A Single-Layer Cross Polarization Conversion Subwavelength Element Based on Double Square Rings Loaded with Splits *Xiaoyu Tong, Xibei Zhao and Feng Wei (Xidian University)*
15:15	The Use of Magneto-Electric Dipole to Design Wideband Transmitarray Element *Fan Wu (Southeast University)*

Technical Program — December 09, 2020 (Wednesday)

Session	**Special Session: SS02** **Antenna Designs, Solutions, and Trends for 5G and Beyond**
Date/Time	Wednesday, December 9, 2020 / 13:30 – 15:15 (GMT+8)
Organizer(s) & Chair(s)	Huan-Chu Huang (Etheta Comm. Technology Co., Ltd); Yujian Li (Beijing Jiaotong University)
Zoom link	Room 2 (Zoom Conference ID: **811 2195 1303** / Password: **12345678**) https://us02web.zoom.us/j/81121951303?pwd=V294d3BpU0RQbk1OM0pOVU1vVktNQT09

13:30	[*Invited*] 5G Miniaturized Module of Wideband Dual-Polarized Mm-Wave Antennas-In-Package Integrating Non-Mm-Wave Antennas (AiPiA) for Cell Phones *Huan-Chu Huang, Zhixing Qi and Dasong Gao (Etheta Communication Technologies Co.); Junyong Liu (East China Research Institute of Microelectronics); Yanchao Zhou (Etheta Communication Technologies Co.); Jingwei Li (East China Research Institute of Microelectronics); Hong Lin (Etheta Communication Technologies Co.)*
13:55	Differentially-Fed Circular Patch Antenna Under Dual High-Order Modes for Enhanced Bandwidth and Stable High Gain *Guo-Xiong Li, Xiao Zhang and Kai-Dong Hong (Shenzhen University); Lei Zhu (University of Macau); Tao Yuan (Shenzhen University)*
14:15	A Four-Port MIMO Antenna System for 5G Mobile Terminals *Xi Wang and Yuandan Dong (University of Electronic Science and Technology of China)*
14:35	EMI Radiation Suppression of Cables and Connectors for 5G Mobile Devices *Ting-Yan Tan (Shenzhen University); Xian-Qin Hu and Ke He (Avary Holding (Shenzhen) Co., LTD); Xiao Zhang and Tao Yuan (Shenzhen University)*
14:55	An Efficient Decoupling Technique for WLAN MIMO Antenna Applications *Xiao-Yu Ma, Zi-Yu Pang and Ge Zhao (Shenzhen University); Guan-Long Huang (Peng Cheng Laboratory & Shenzhen University)*

Technical Program — December 09, 2020 (Wednesday)

Session	**Special Session: SS03** **Recent Advances in Antennas and Propagation Research in Japan**
Date/Time	Wednesday, December 9, 2020 / 13:30 – 15:15 (GMT+8)
Organizer(s) & Chair(s)	Hiroyoshi Yamada (Niigata University)
Zoom link	Room 3 (Zoom Conference ID: **896 4878 4625** / Password: **12345678**) https://us02web.zoom.us/j/89648784625?pwd=SFhMTEdNUGpLVGh5QXg0Sloxc1Rsdz09

13:30	[*Invited*] Recent Progress of Corporate-Feed Slot Array Antennas for Non-Far Region Communication *Jiro Hirokawa (Tokyo Institute of Technology)*
13:55	Radiation Efficiency Improvement of U-Shaped Slot Antennas on Metal Casings Using Characteristic Mode Analysis *Takumi Nishime, Naobumi Michishita and Hisashi Morishita (National Defense Academy, Japan)*
14:15	Human Location Estimation by Passive Radar Using WLAN Access Point *Hiroyoshi Yamada and Tatsuya Ogawa (Niigata University)*
14:35	3D Printed Wideband Circularly Polarized Pyramidal Horn Antenna with Binomial Polarizer for CP-SAR Application *Agus Hendra Wahyudi and Josaphat Tetuko Sri Sumantyo (Chiba University); Folin Oktafiani and Hardi Nusantara (Institute Teknologi Bandung); Ari Sugeng Budiyanta (National Institute of Aeronautics and Space); Achmad Munir (Institute Teknologi Bandung)*
14:55	Compact High-Efficient CPS 2.45 GHz Multistage RF-DC Rectifier for Wireless Energy Harvesting *Mohamed M. Mansour (Kyushu University & Electronics Research Institute, Egypt); Shuya Yamamoto, Shota Torigoe and Haruichi Kanaya (Kyushu University)*

Technical Program — December 09, 2020 (Wednesday)

Session	Regular Session: RS01 MMICs
Date/Time	Wednesday, December 9, 2020 / 13:30 – 15:30 (GMT+8)
Chair(s)	Wenjie Feng (Nanjing University of Science and Technology)
Zoom link	Room 4 (Zoom Conference ID: **879 9903 6656** / Password: **12345678**) https://us02web.zoom.us/j/87999036656?pwd=czV1dEpvWHRyYVdXeksweVpVejNYZz09

13:30	A 21-41 GHz Compact Wideband Low-Noise Amplifier Based on Transformer-Feedback Technique in 65-Nm CMOS *Xiongyao Luo (South China University of Technology); Wenjie Feng (South China University of Technology & Nanjing University of Science and Technology); Haoshen Zhu (South China University of Technology); Liang Wu (The Chinese University of Hong Kong, Shenzhen); Wenquan Che and Quan Xue (South China University of Technology)*
13:50	A High Output Power 1 - 150 GHz Distributed Power Amplifier in InP HBT Technology *Nguyen L. K. Nguyen and Duy P. Nguyen (University of California, Davis); Alexander Stameroff (Keysight Technologies); Anh-Vu Pham (University of California, Davis)*
14:10	A 28 GHz and 38 GHz Dual-Band LNA Using Gain Peaking Technique for 5G Wireless Systems in 22 nm FD-SOI CMOS *Xin Xu, Songhui Li, Laszlo Szilagyi, Paolo Valerio Testa, Corrado Carta and Frank Ellinger (Technische Universität Dresden)*
14:30	A 24-48 GHz Wideband Frequency Tripler in SiGe BiCMOS Technology *Heekang Son and Doyoon Kim (Korea University); Yan Zhao and Richard Al Hadi (Alcatera InC,); Mehmet Kaynak (IHP-Leibniz-Institut für innovative Mikroelektronik); Jae-Sung Rieh (Korea University)*
14:50	An Ultra-Wideband High-Gain GaN Amplifier With 10 W Output Power *Qian Lin (Qinghai University for Nationalities); Haifeng Wu (Chengdu Ganide Technology Co Ltd); Lin-Sheng Liu (Chengdu University of Technology); Yu-Nan Hua, Yi-Jun Chen and Liu-Lin Hu (Chengdu Ganide Technology Co Ltd)*
15:10	Wideband 4-Way Combined Power Amplifier in BiCMOS Technology for D-Band Applications *Abdul Ali (University of Rome Tor Vergata); Wael Abdullah Ahmad (IHP-Leibniz-Institut für innovative Mikroelektronik); Herman Jalli Ng (Karlsruhe University of Applied Sciences); Dietmar Kissinger (Ulm University); Franco Giannini and Paolo Colantonio (University of Rome Tor Vergata)*

Technical Program — December 09, 2020 (Wednesday)	
Session	**Regular Session: RS02** **Control Circuits (1)**
Date/Time	Wednesday, December 9, 2020 / 13:30 – 15:10 (GMT+8)
Chair(s)	Wen Cheng Lai (National Taiwan University of Science and Technology) Chien-Nan Kuo (National Chiao-Tung University)
Zoom link	Room 5 (Zoom Conference ID: **875 4061 5080** / Password: **12345678**) https://us02web.zoom.us/j/87540615080?pwd=ekFWVkM2cHI5MkhZM0xqRHUrREhqZz09

13:30	Active V-Band Frequency Multiplier by-4-Chain in SiGe HBT Technology *Faryal Baig and David Bierbüsse (Rheinisch-Westfälische Technische Hochschule Aachen); Suramate Chalermwisutkul (King Mongkut's University of Technology North Bangkok); Renato Negra (Rheinisch-Westfälische Technische Hochschule Aachen)*
13:50	A Low Phase Noise W-Band MMIC GaN HEMT Oscillator *Thanh Ngoc Thi Do, Yu Yan and Dan Kuylenstierna (Chalmers University of Technology)*
14:10	A 94 GHz Down-Conversion Mixer for Radar System in 40 nm Digital CMOS Technology *Kai-Chieh Yu and Chien-Nan Kuo (National Chiao-Tung University)*
14:30	Probabilistic Behavioural Model Based on X-Parameters *Anna Davis Manjaly, Rajneesh Sharma and Justin King (Trinity College Dublin)*
14:50	Even-Modulus Injection-Locked Frequency Divider Using Transformerbased Resonator *Wen Cheng Lai (National Yunlin University of Science and Technology & National Taiwan University of Science and Technology); Sheng-Lyang Jang, Xin-Fu Guo and Miin-Horng Juang (National Taiwan University of Science and Technology)*

Technical Program — December 09, 2020 (Wednesday)	
Session	**Regular Session: RS03** **Metamaterials and EBG Structures (1)**
Date/ Time	Wednesday, December 9, 2020 / 13:30 – 15:15 (GMT+8)
Chair(s)	Takeshi Fukusako (Kumamoto University)
Zoom link	Room 6 (Zoom Conference ID: **884 3761 1748** / Password: **12345678**) https://us02web.zoom.us/j/88437611748?pwd=T0NtRnc3aFRMbmJKcW1SdDBEU1BJQT09

13:30	[*Invited*] Metasurface Designs for Wideband Circularly Polarized Patch Antennas: A Review and an Interpretative Study *Takeshi Fukusako and Ryuji Kuse (Kumamoto University)*
13:55	Frequency Tunable and High Selective Frequency Selective Surfaces for Ku-Band *Di Jiang, Xiaoyu Chen, Jie Zhuang, Puhang Ran and Xiaoyu Li (University of Electronic Science and Technology of China)*
14:15	Polarization Plane Controllable Beam Scanning Leaky Wave Antenna Based on Pseudo-Traveling-Wave Resonance Using Nonreciprocal Metamaterials *Masaki Kamino and Tetsuya Ueda (Kyoto Institute of Technology); Tatsuo Itoh (University of California at Los Angeles)*
14:35	Two-Dimensional Full-Tensor Anisotropic Metamaterials with the Impedance of Free Space for Transformation Electromagnetics *Tsutomu Nagayama, Seiji Fukushima and Toshio Watanabe (Kagoshima University)*
14:55	Pixelated Checkerboard Metasurface with a Simplified Design Method *Kaijie Jiang (Harbin Engineering University); Jiajun Lu (Marine Design Research Institute of China); Rongyu Xu and Gang Liu (Wuhan Second Ship Design & Research Institute); Jiangnan Xing and Tao Jiang (Harbin Engineering University)*

Technical Program — December 09, 2020 (Wednesday)

Session	Regular Session: RS04 Metamaterials and EBG Structures (2)
Date/ Time	Wednesday, December 9, 2020 / 13:30 – 15:10 (GMT+8)
Chair(s)	Yongmei Pan (South China University of Technology); Dinesh Rano (Moscow Institute of Electronics and Mathematics, NRU, Higher School of Economics)
Zoom link	Room 7 (Zoom Conference ID: **814 1692 0977** / Password: **12345678**) https://us02web.zoom.us/j/81416920977?pwd=am8wcVNNVExwUm1ZTjZpclVtK2c3UT09

13:30	Single-Layer Polarization-Controllable Transmissive and Reflective Metasurface for Gain Enhancement of Antenna *Jun Lang Wu and Yongmei Pan (South China University of Technology)*
13:50	All Metallic CPW-Fed Corner Bent Orthogonal Pattern Diversity Antenna Module for mmWave 5G Smartphones *Muhammad Idrees Magray, Yung-Chuang Hsu and Jenn-Hwan Tarng (National Chaio Tung University)*
14:10	Miniaturized Slot-Loaded Mushroom EBG Cell for MBAN and Wi-Fi Bands *Dinesh Rano (Moscow Institute of Electronics and Mathematics, NRU, Higher School of Economics); Mohammad Hashmi (Nazarbayev University); Muhammad Akmal Chaudhary (Ajman University); Andrey Albertovich Yelizarov (Moscow Institute of Electronics and Mathematics, NRU, Higher School of Economics)*
14:30	Frequency Reconfigurable SRR-Based Compact Antenna for IoT Application *Zhan Wang, Yuandan Dong and Yinwan Ning (University of Electronic Science and Technology of China)*
14:50	Dipole Antenna Based on Graphene Plasmonics over the AMC Surface *Arun Kumar Varshney, Nagendra Prasad Pathak, and Debabrata Sircar (Indian Institute of Technology Roorkee)*

Technical Program — December 09, 2020 (Wednesday)

Session	**Regular Session: RS05** **Antenna Measurements and Applications**
Date/ Time	Wednesday, December 9, 2020 / 13:30 – 15:15 (GMT+8)
Chair(s)	Libin Sun (Tsinghua University)
Zoom link	Room 8 (Zoom Conference ID: **899 7619 0784** / Password: **12345678**) https://us02web.zoom.us/j/89976190784?pwd=UjBaL2ROYWFiRHd4MFJtVTFQMHlLUT09

13:30	[*Invited*] A New Methodology of Antenna Decoupling by Common and Differential Modes Cancellation *Libin Sun and Zhijun Zhang (Tsinghua University)*
13:55	Hexagonal Monopole Antenna with Modified Ground Plane for Sub-6 GHz Communication Applications *Abhishek Joshi and Rahul Singhal (Birla Institute of Technology & Sciences)*
14:15	A Dual W-Band High-Order Mode Substrate Integrated Waveguide Cavity-Backed Antenna for Radar Sensing and Communication Applications *Ching-Wen Chiang and Nai-Chen Liu (National Chaio Tung University); Rulin Huang (University of California Los Angeles); Chung-Tse Michael Wu (Rutgers University); Yen-Cheng Kuan (National Chiao Tung University)*
14:35	Improved Performance for 8-Channel Multiplexing OAM Communication by Suppressing Interference *Hisanosuke Miyake, Akira Saitou and Hiroshi Suzuki, Ryo Ishikawa, Kazuhiko Honjo (The University of Electro-Communications)*
14:55	A N77/78/79 Self-Decoupled Antenna Pair for 5G Smartphones *Yue Zhao (Shenzhen Sunway Communication Co., Ltd)*

Technical Program — December 09, 2020 (Wednesday)	
Session	**Regular Session: RS06** **Antenna Theory and Design (1)**
Date/ Time	Wednesday, December 9, 2020 / 13:30 – 15:35 (GMT+8)
Chair(s)	Bratin Ghosh (Indian Institute of Technology); Wei Lin (University of Technology Sydney)
Zoom link	Room 9 (Zoom Conference ID: **837 7363 3708** / Password: **12345678**) https://us02web.zoom.us/j/83773633708?pwd=eGs0VTNzd2h2OWtLZGN0SXl1WEo4Zz09

13:30	[*Invited*] Wideband RCS Reduction Based on Polarization Rotation Reflective Metasurface *Ying Liu and Yongtao Jia (Xidian University)*
13:55	Dual-Polarized Patch Antenna with Compact Ground Plane for Microwave Wireless Power Transfer *Boyuan Ma and Jin Pan (University of Eletronic Science and Technology of China); Suibin Liu and Tung Ngo (National University of Singapore); Zaw Thet Aung (WaveBoost Pte Ltd); Yong-Xin Guo (National University of Singapore)*
14:15	Antenna Pattern Synthesis Using Phase Mode for Circular Array with Reduced Side-Lobe Level *Mahesh Singh and Bratin Ghosh (Indian Institute of Technology)*
14:35	Antenna Pattern Synthesis for SAR Based on Genetic Algorithm *Yongbo Zhai and Xiaolu Wang (No.38 Research Institute of CETC)*
14:55	Investigations of Multi-Resonant Wideband Null Frequency Scanning Microstrip Patch Antennas *Zhi-Fang Wu, Jian Yu and Wenjun Lu (Nanjing University of Posts and Telecommunications)*
15:15	A Method of Reducing the Antenna Beamwidth Variation with the Frequency *Yongbo Zhai and Xiaolu Wang (No.38 Research Institute of CETC)*

Technical Program — December 09, 2020 (Wednesday)

Session	Regular Session: RS07 Wireless Power Transfer System
Date/ Time	Wednesday, December 9, 2020 / 13:30 – 15:30 (GMT+8)
Chair(s)	Naoki Hasegawa (Softbank Corp.)
Zoom link	Room 10 (Zoom Conference ID: **862 1224 6559** / Password: **12345678**) https://us02web.zoom.us/j/86212246559?pwd=aC9jRTBaTVhpcVArSmZjS09rSmRyQT09

13:30	2-D Beam Steering by the Simple Phased-Array Technique for Microwave Power Transfer *Naoki Hasegawa, Yuki Takagi, Yuta Nakamoto and Yoshichika Ohta (Softbank Corp.)*
13:50	A Study on Microwave Power Transmission System to High Altitude Platform Station Considering Rectification Efficiency *Yuta Nakamoto, Naoki Hasegawa and Yoshichika Ohta (Softbank Corp.); Naoki Shinohara (Kyoto University)*
14:10	Existence of Lossy Objects Through Power Transmission Path of Resonator-Coupled Type Wireless Power Transfer System *Nur Syafiera Azreen Norodin, Masashi Hotta and Kousuke Nakamura (Yamaguchi University)*
14:30	High-Isolation, Low Cross-Polarization, Differential-Feed, Dual-Polarized Patch Antenna Array for a 2.45 GHz Retrodirective System Application *Jiangjie Zeng, Xianqi Lin, Yongmu Yang, Tao Qin and Yuxin Kang (EHF Key Lab of Fundamental Science &University of Electronic Science and Technology of China)*
14:50	A Dual-Band Integrated Network Analyzer for RF Bio Sensing Application *Mayank Awasthi, Kunal Wadhwani and Azeemuddin Syed (International Institute of Information Technology (IIIT) Hyderabad); Mohammad Hashmi (Nazarbayev University)*
15:10	Analysis and Verification of a 60-GHz Single-Antenna Doppler Radar for Vital Sign Detection *Jiawang Li, Xiaoming Liu, Jing Jin and Jianjun Zhou (Shanghai Jiao Tong University)*

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Technical Program — December 09, 2020 (Wednesday)	
Session	**Special Session: SS04** **Advanced Antennas and Arrays Based on Metamaterials and Spoof Surface Plasmon Polaritons (SSPPs) Structures / Recent Progress on Frequency Selective Surfaces**
Date/Time	Wednesday, December 09, 2020 / 15:50 – 17:30 (GMT+8)
Organizer(s)	Mei Li (Chongqing University); Junping Geng (Shanghai Jiao Tong University); Ming-Chun Tang (Chongqing University); Qing Feng Zhang (Southern University of Science and Technology); Amir Khurrum Rashid (Southern University of Science and Technology)
Chair(s)	Ming-Chun Tang (Chongqing University) Qing Feng Zhang (Southern University of Science and Technology)
Zoom link	Room 1 (Zoom Conference ID: **869 9371 8752** / Password: **12345678**) https://us02web.zoom.us/j/86993718752?pwd=TXhZVmRjbEZYa2RUYWlyOFNaK2ZSQT09

15:50	A Compact Frequency-Reconfigurable Differential-Fed Microstrip Antenna *Jiaxin Zhang, Hanmin Deng, Pengfei Zhang, Zhehao Zhang, Mei Li and Ming-Chun Tang (Chongqing University)*
16:10	Space Scanning SSPPs Antenna with Phase Mode by Dual-Port Feeding *Zhang Jing, Junping Geng, Kun Wang, Han Zhou, Chaofan Ren, Silei Yang, Xianling Liang and Ronghong Jin (Shanghai Jiao Tong University)*
16:30	A Low-Profile Dual-Band Antenna with Vertically Polarized Omnidirectional Radiation *Jiawei Han, Junping Geng, Kun Wang, Han Zhou, Chaofan Ren, Silei Yang, Zhang Jing, Xianling Liang and Ronghong Jin (Shanghai Jiao Tong University)*
16:50	A Low Profile, Wideband Filtenna Based on Differential Feed Structure *Dingmou Hong, Yaqing Yu, Weiwei Guo, Mei Li and Ming-Chun Tang (Chongqing University)*
17:10	High-Selectivity Frequency-Selective Surface Using Stub and Pin Loaded for Coupling Enhancement *Guowen Chen, Sai-Wai Wong, Zhimin Du, Lin Wang, Yin Li and Long Zhang (Shenzhen University)*

Technical Program — December 09, 2020 (Wednesday)

Session	**Special Session: SS05** **Plasmonic Devices and Antennas at Microwave/THz Frequencies**
Date/Time	Wednesday, December 09, 2020 / 15:50 – 17:55 (GMT+8)
Organizer(s) & Chair(s)	Kai Da Xu (Tohoku University); Renbin Zhong (University of Electronic Science and Technology of China)
Zoom link	Room 2 (Zoom Conference ID: **811 2195 1303** / Password: **12345678**) https://us02web.zoom.us/j/81121951303?pwd=V294d3BpU0RQbk1OM0pOVU1vVktNQT09

15:50	[*Invited*] Dielectric Stereostructure on Graphene for Ultrawideband Terahertz Absorber *Renbin Zhong, Long Yang, Zekun Liang, Zheng Fang, Zhehua Wu and Shenggang Liu (University of Electronic Science and Technology of China)*
16:15	A Band-Notched Dual-Polarized Crossed Dipole Antenna for Base Station *Min Li and Feng Xu (Nanjing University of Posts and Telecommunications); Yaohui Zhang and Lili Qu (University of Electronic Science and Technology of China)*
16:35	A Wideband Bandpass Filter with Compact Size and Good Selectivity *Wei Nie and Zhi-Chao Han (Chongqing University of Posts and Telecommunications); You-Bing Pang (China Electronics Technology GroupCorporation); Xiaoheng Tan (Chongqing University); Mu Zhou and LiangBo Xie (Chongqing University of Posts and Telecommunications)*
16:55	Compact Substrate Integrated Waveguide Bandstop Filter Based on CSRRs *Ju-An Wang, Daotong Li, Ying Liu, Zhen Chen, Zhirui Zheng and Yi Deng (Chongqing University)*
17:15	A Twelve-Element Antenna Array for Tri-Band MIMO Operations in the 5G Smartphone *Haoyu Zhu, Xuehui Guan, Baoping Ren, Xujie Zhang, Chuanyun Wang and Xiaoyan Zhang (East China Jiaotong University)*
17:35	Dual-Polarized Filtering Antenna with High Selectivity Using Short-Circuited Coupled Line Structure *Zhen Chen, Daotong Li, Ying Liu, Yi Deng, Zhirui Zheng and Ju-An Wang (Chongqing University)*

Technical Program — December 09, 2020 (Wednesday)	
Session	**Special Session: SS06** **Wideband/Multiband Planar Antennas**
Date/Time	Wednesday, December 09, 2020 / 15:50 – 18:00 (GMT+8)
Organizer(s) & Chair(s)	Neng-Wu Liu (Xidian University); Lei Zhu (University of Macau)
Zoom link	Room 3 (Zoom Conference ID: **896 4878 4625** / Password: **12345678**) https://us02web.zoom.us/j/89648784625?pwd=SFhMTEdNUGpLVGh5QXg0Sloxc1Rsdz09

15:50	[*Invited*] Single-Layer Low-Profile Patch Antennas with Improved CP Performance by Using Multiresonant Modes *Neng-Wu Liu (Xidian University); Lei Zhu (University of Macau)*
16:15	[*Invited*] Gain Enhancement of 2×1 Printed Monopole Antenna Array by Using H-Type EBG Applications *Wen-Shan Chen and Rong-Da Lin (Southern Taiwan University of Science and Technology)*
16:40	3-D Printed Metallic CP Antenna with Dual-Cavity Structure and Enhanced Axial Ratio Bandwidth *Shiyan Wang, Wenting Ge and Gang Zhang (Nanjing Normal University); Yin Li and Sai-Wai Wong (Shenzhen University); Lei Zhu (University of Macau)*
17:00	A Modal Method to Enhance AR Bandwidth: Exemplified by A CP Crossed Dipole Antenna *Jiang-Feng Lin and Lei Zhu (University of Macau)*
17:20	Far-Field Pattern Analysis of Multimode Circular Patch Antenna on SISL Platform Using CMA *Eric Newton Moro, Kaixue Ma, Yu Luo, Ningning Yan and Bin Tang (Tianjin University)*
17:40	Beam Steering Using Non-Planar Broadside Coupled Split Ring Resonators *Pratik Ghate and Jonathan Bredow (University of Texas at Arlington)*

Technical Program — December 09, 2020 (Wednesday)

Session	**Regular Session: RS08** **High Power Devices and Circuits (1)**
Date/ Time	Wednesday, December 09, 2020 / 15:50 – 17:55 (GMT+8)
Chair(s)	Kwok-keung (Michael) Cheng (Chinese University of Hong Kong); Hwann-Kaeo Chiou (National Central University)
Zoom link:	Room 4 (Zoom Conference ID: **879 9903 6656** / Password: **12345678**) https://us02web.zoom.us/j/87999036656?pwd=czV1dEpvWHRyYVdXeksweVpVejNYZz09

15:50	[*Invited*] A Simple Design Methodology of Compact, Wide OBO Range, Symmetrical Doherty Amplifer with Non-Ideal Effects *Haoyu Liu and Kwok-Keung M. Cheng (The Chinese University of Hong Kong)*
16:15	40-GS/s Delta-Sigma Modulator in 250-nm InP DHBT for Radio-over-Fiber *Naoki Terao, Munehiko Nagatani, Teruo Jyo, Yuta Shiratori, Miwa Muto and Hideyuki Nosaka (NTT Corporation)*
16:35	An 11-W Ka-Band GaN HPA MMIC Based on Self-Developed Empirical Model *Xu Yan (National University of Singapore); Jingyuan Zhang (National University of Singapore & National University of Singapore Suzhou Research Institute) Wenrui Hu (National University of Singapore); Haorui Luo and Yongxin Guo (National University of Singapore & National University of Singapore Suzhou Research Institute)*
16:55	An Ultra-Compact 14.9-W X-Band GaN MMIC Power Amplifier *Li-Hsien Huang and Hwann-Kaeo Chiou (National Central University)*
17:15	Broadband High-Efficiency Power Amplifiers in 150 nm AlGaN/GaN Technology at Ka-Band *Stanislav Samis (Hamburg University of Technology); Christian Friesicke, Thomas Maier and Rüdiger Quay (Fraunhofer Institute for Applied Solid State Physics); Arne F Jacob (Hamburg University of Technology)*
17:35	A CMOS Linear Cascode Power Amplifier for Bluetooth Dual-Mode Long-Range Applications *Chien-Chia Ma and Chien-Nan Kuo (National Chiao-Tung University)*

Technical Program — December 09, 2020 (Wednesday)	
Session	**Regular Session: RS09** **High Power Devices and Circuits (2)**
Date/ Time	Wednesday, December 09, 2020 / 15:50 – 17:55 (GMT+8)
Chair(s)	Xudong Chen (National University of Singapore); Dmitry Kholodnyak (Saint Petersburg Electrotechnical University)
Zoom link	Room 5 (Zoom Conference ID: **875 4061 5080** / Password: **12345678**) https://us02web.zoom.us/j/87540615080?pwd=ekFWVkM2cHI5MkhZM0xqRHUrREhqZz09

15:50	[*Invited*] Deep Learning Approaches for Electromagnetic Computational Imaging: A Review *Xudong Chen (National University of Singapore)*
16:15	A Wide-Angle Series-Fed Active Metasurface *Chen Xue and Alex Wong (City University of Hong Kong)*
16:35	Design and Simulation of an Ultra-Bandwidth Ka-Band Gyro-TWT with a Curved Output Stage *Hao Li, Chunguang Ma, JianXun Wang and Yong Luo (University of Electronic Science and Technology of China)*
16:55	Design of Non-Foster Negative Capacitances by Using Decomposition of Linvill's Circuit *Bair Buiantuev, Nikita Kalmykov and Dmitry Kholodnyak (Saint Petersburg Electrotechnical University); Leo Vincelj, Ante Brizić and Silvio Hrabar (University of Zagreb)*
17:15	A Ka-Band CMOS Variable Gain Amplifier with High Gain Resolution and Low Phase Variation *Qingfeng Zhang, Chenxi Zhao, Yiming Yu, Huihua Liu, Yunqiu Wu, Kai Kang (University of Electronic Science and Technology of China)*
17:35	An 80 GHz Power Amplifier with 17.4 dBm Output Power and 18 % PAE in 22 nm FD-SOI CMOS for Binary-Phase Modulated Radars *Songhui Li, Mengqi Cui, Xin Xu, Laszlo Szilagyi AND Corrado Carta (Technische Universität Dresden); Wolfgang Finger (Globalfoundries Dresden); Frank Ellinger (Technische Universität Dresden)*

Technical Program — December 09, 2020 (Wednesday)	
Session	**Regular Session: RS10** **Metamaterials and EBG Structures (3)**
Date/ Time	Wednesday, December 09, 2020 / 15:50 – 17:50 (GMT+8)
Chair(s)	Kimberley W. Eccleston (Lincoln Agritech Ltd); Wenmei Zhang (Shanxi University)
Zoom link	Room 6 (Zoom Conference ID: **884 3761 1748** / Password: **12345678**) https://us02web.zoom.us/j/88437611748?pwd=T0NtRnc3aFRMbmJKcW1SdDBEU1BJQT09

15:50	Grating Lobe Mitigation in Linear Phased Array Antennas Using Leaky-Mode of Bed of Nails *Wasim Alshrafi and Dirk Heberling (RWTH Aachen University)*
16:10	Metamaterial-Loaded Huygens' Box Antenna: Highly-Directive Beam Steering with Very Few Phasing Elements *Kayode Adedotun Oyesina and Alex M. H. Wong (City University of Hong Kong)*
16:30	Planar Lens Based on Dielectric Resonators and Printed Continuous Metal Strips *Kimberley W. Eccleston, Yiwen Zhou, Ian G Platt, Adrian E.-C. Tan and Ian M Woodhead (Lincoln Agritech Ltd)*
16:50	Design of Absorptive/Transmissive Integrated Metasurface with Lumped Resistors *Wenjian Gong and Wenmei Zhang (Shanxi University)*
17:10	Design of Compact, Broadband Polarization Insensitive Dual-Circular Circuit Analogue Absorber for X, Ku and Ka-Band Applications *Mohammad Abdul Shukoor and Sukomal Dey (Indian Institute of Technology Palakkad)*
17:30	Flexible Liquid-Metal-Tuned Higher-Order Bandpass Frequency Selective Surfaces *Kevin Xu and Jun H. Choi (University at Buffalo & The State University of New York)*

Technical Program — December 09, 2020 (Wednesday)	
Session	**Regular Session: RS11** **Multi-Band, Broadband, Tunable, and Reconfigurable Filters (1)**
Date/ Time	Wednesday, December 09, 2020 / 15:50 – 17:35 (GMT+8)
Chair(s)	Eng Leong Tan (Nanyang Technological University)
Zoom link	Room 7 (Zoom Conference ID: **814 1692 0977** / Password: **12345678**) https://us02web.zoom.us/j/81416920977?pwd=am8wcVNNVExwUm1ZTjZpclVtK2c3UT09

15:50	[*Invited*] Comparison of Vector Fitting and Contour Integration Methods for Pole-Zero Analysis of Microwave Filters *Eng Leong Tan and Ding Yu Heh (Nanyang Technological University)*
16:15	Independent Control over Center Frequency and Bandwidth of Bandpass Filter Based on SIW Loaded with Rectangular Mushroom Resonators *Soumit Samadder Chaudhury (Indian Institute of Information Technology Allahabad); Seema Awasthi (Indian Institute of Technology Kanpur); Rajat Kumar Singh (Indian Institute of Information Technology Allahabad)*
16:35	High Selectivity Bandpass Filter Using Substrate Integrated Waveguide Technique *Meichun Huang and Haoshen Zhu (South China University of Technology); Wenjie Feng (South China University of Technology & Nanjing University of Science and Technology); Wenquan Che and Quan Xue (South China University of Technology)*
16:55	Novel Sext-Band Band-Pass Filter with Non-Coupled Structure Based on Multi-Shorted-Stub Resonators *YI WU, Erwan Fourn and Philippe Besnier (Univ Rennes, INSA Rennes, IETR)*
17:15	Analysis of the Coverage of Lossy Tunable Matching Networks *Eyad Arabi, Kevin M. Morris and Mark M. Beach (University of Bristol)*

Technical Program — December 09, 2020 (Wednesday)	
Session	**Regular Session: RS12** **Antenna Theory and Design (2)**
Date/ Time	Wednesday, December 09, 2020 / 15:50 – 17:55 (GMT+8)
Chair(s)	Shaowei Liao (South China University of Technology)
Zoom link	Room 8 (Zoom Conference ID: **899 7619 0784** / Password: **12345678**) https://us02web.zoom.us/j/89976190784?pwd=UjBaL2ROYWFiRHd4MFJtVTFQMHlLUT09

15:50	[*Invited*] A Hybrid Antenna of Magneto-Electric Dipole and Liquid Dielectric Resonator *Yi Huang, Chaoyun Song, Elliot L. Bennett and Jianliang Xiao (The University of Liverpool)*
16:15	A 3-D Printed Circularly Polarized Multi-Beam Antenna with Full Azimuthal Coverage *Shao Cong Peng and Zi Long Ma (South China University of Technology)*
16:35	W-Band Dual Polarized Array Antenna Based on Gap Waveguide Technology *Mengmeng Guo and Fei Yang (Southeast University)*
16:55	A Compact Dual-Polarized Stacked Patch Antenna for 5G Millimeter-Wave Applications *Yuanfa Sun, Shaowei Liao, Wenhai Zhang, Wenquan Che and Quan Xue (South China University of Technology)*
17:15	Performance Enhancement of Microstrip Antenna Using Dual Substrates for RF Power Harvesting *Hina Yadav (University of Delhi); Kamla Prasan Ray (DIAT); Mridula Gupta (University of Delhi)*
17:35	A Ku-Band Circularly Polarized Antenna Based on High-Order Dual-Mode SIW Cavity *Tian Liang, Zhan Wang and Yuandan Dong (University of Electronic Science and Technology of China)*

Technical Program — December 09, 2020 (Wednesday)	
Session	**Regular Session: RS13** **Antenna Theory and Design (3)**
Date/ Time	Wednesday, December 09, 2020 / 15:50 – 17:55 (GMT+8)
Chair(s)	*S*teven Gao (University of Kent)
Zoom link	Room 9 (Zoom Conference ID: **837 7363 3708** / Password: **12345678**) https://us02web.zoom.us/j/83773633708?pwd=eGs0VTNzd2h2OWtLZGN0SXl1WEo4Zz09

15:50	[*Invited*] Wideband Dual-Polarized Antennas for Base Stations *Lehu Wen and Steven Gao (University of Kent); Jian Wu and Xiaofei Ren (China Research Institute of Radiowave Propagation); Xuexia Yang (Shanghai University)*
16:15	A Low-Profile Magneto-Electric Dipole Folding Antenna *Xinyang Ji, Jin Pan, Kai Sun, Zhengjun Du and Yin Zou (University of Electronic Science and Technology of China)*
16:35	Wideband Microstrip Reflectarray Antenna Using Multiple-Frequency Phase Synthesis Approach *Pei-Ling Chi and Hung-Ti Hsu (National Chiao Tung University); Tao Yang (University of Electronic Science and Technology of China)*
16:55	Flexibility of Kaiser Function on Power Weighted Linear Antenna Array *Hartuti Mistialustina, Chairunnisa and Achmad Munir (Institut Teknologi Bandung)*
17:15	Antenna Optimized Array Based on Schlottmann Aperiodic Tiling *Lirong Jian and Peng Yang (University of Electronic Science and Technology of China)*
17:35	A HIS Backed Band-Reconfigurable Antenna *Kapil Saraswat (Central University of Rajasthan & Indian Institute of Technology Kanpur); A. R. Harish (Indian Institute of Technology Kanpur)*

Technical Program — December 09, 2020 (Wednesday)	
Session	**Regular Session: RS14** **Millimeter-Wave and THz Biomedical Applications (1)**
Date/ Time	Wednesday, December 09, 2020 / 15:50 – 17:10 (GMT+8)
Chair(s)	Changzhan Gu (Shanghai Jiao Tong University); Tingting Mo (Shanghai Jiao Tong University)
Zoom link	Room 10 (Zoom Conference ID: **862 1224 6559** / Password: **12345678**) https://us02web.zoom.us/j/86212246559?pwd=aC9jRTBaTVhpcVArSmZjS09rSmRyQT09

15:50	Optically Steerable Phased Array Enabling Technology Based on Mesogenic Azobenzene Liquid Crystals for Starlink Towards 6G *Jinfeng Li (Imperial College London)*
16:10	Suppressing Coupling and Stationary Clutters in FMCW Radars with Temporal Filtering *Jingtao Liu (Shanghai Jiao Tong University & MoE Key Lab of Artificial Intelligence); Changzhan Gu, Yueping Zhang and Jun-Fa Mao (Shanghai Jiao Tong University)*
16:30	A 28GHz RF Phase Shifter with High Phase Resolution in 180-Nm CMOS Technology *Xiaojing Lv, Tingting Mo and Chang Yu (Shanghai Jiao Tong University)*
16:50	Stable Light Focusing by Meta-Axicons Applicable in Biosensors, Particle Trapping, Astronomical, and Imaging Devices *Mahdieh Hashemi (Fasa University); Andra Naresh Kumar Reddy (Samara National Research University); Mohammad Alibakhshikenari (University of Rome "Tor Vergata"); Francisco Falcone (Public University of Navarra); Tayeb A. Denidni (University of Quebec); Ernesto Limiti (University of Rome "Tor Vergata")*

Technical Program — December 10, 2020 (Thursday)	
Session	**Special Session: SS07** **Commemorating the Beginning of Antenna Research by Prof. Kai Fong Lee Four Decades Ago in Hong Kong**
Date/Time	Thursday, December 10, 2020 / 09:00 – 13:15 (GMT+8)
Organizer(s) & Chair(s)	Kwai Man Luk (City University of Hong Kong); Kin-Fai Kenneth Tong (University College London)
Zoom link	Room 1 (Zoom Conference ID: **824 3682 8253** / Password: **12345678**) https://us02web.zoom.us/j/82436828253?pwd=R1A1MmU5U01yN3dkYTF6UGlQTXNKUT09

09:00	Introduction Stuart A. Long (University of Houston); Kwai Man Luk (City University of Hong Kong)
09:15	[*Invited*] Enhanced DRA Gain by a Dielectric Ring for Millimeter-Wave Applications *Yazan Al-Alem and Ahmed A Kishk (Concordia University); Yahia Antar (Royal Military College)*
09:35	[*Invited*] Slotted Microstrip Patch Antenna and Its Influence on Wideband Planar Antenna Designs *Lotfollah Shafai (University of Manitoba)*
09:55	[*Invited*] Metantennas: From Patch Antennas to Metasurface Mosaic Antennas *Zhi Ning Chen (National University of Singapore)*
10:15	[*Invited*] 5G/B5G Multi-Gbps Antennas for User Terminals and Their Throughput Verification *Kin-Lu Wong (National Sun Yat-Sen University)*
10:35	[*Invited*] Differential Microstrip Patch Antennas *Yue Ping Zhang (Nanyang Technological University)*
10:55	Break
11:05	[*Invited*] From U-Slot Patch Antenna to 5G Phased Array- Antenna Research Inspired by Prof. Kai Fong Lee *Fan Yang (Tsinghua University)*
11:25	[*Invited*] Metaline Application to a Linearly Polarized Wave Beam-Steering Antenna *Hisamatsu Nakano, Tomoki Abe and Junji Yamauchi (Hosei University)*
11:45	[*Invited*] Small and Wideband Antennas for Biomedical Applications *Yongxin Guo (National University of Singapore)*
12:05	[*Invited*] Microstrip Antenna Cross-Polarized Radiations, Kai Fong Lee, and Recent Insightful Observations *Debatosh Guha (University of Calcutta)*

12:25	Response Kai Fong Lee
12:45	Panel Discussion Invited speakers and all attendees

Technical Program — December 10, 2020 (Thursday)	
Session	**Special Session: SS08** **Phase Shifters/Phase-Shifting Networks**
Date/Time	Thursday, December 10, 2020 / 09:00 – 10:40 (GMT+8)
Organizer(s) & Chair(s)	Yun-Peng Lyu (Nanjing University of Posts and Telecommunications) Lei Zhu (University of Macau)
Zoom link	Room 2 (Zoom Conference ID: **810 3045 7749** / Password: **12345678**) https://us02web.zoom.us/j/81030457749?pwd=c1A1SzNCYURXU2dKK1RSNEVHdW55UT09

9:00	Recent Developments and Future Challenges of Differential Phase Shifters *Shaoyong Zheng (Sun Yat-sen University)*
9:20	An N41-Band Bandpass BAW Filter Chip for Mobile Communications Based on FBARs *Jieping Gu and Yongle Wu (Beijing University of Posts and Telecommunications); Zhiguo Lai (Suzhou HunterSun Electronics); Haopeng Wu, Weimin Wang and Yuhao Yang (Beijing University of Posts and Telecommunications)*
9:40	An Integration Perspective for Power Divider and Phase Shifter with Performance Enhancement *Yun-Peng Lyu (Nanjing University of Posts and Telecommunications); Lei Zhu (University of Macau); Chong-Hu Cheng (Nanjing University of Posts and Telecommunications)*
10:00	Compact Microstrip Balanced Phase Shifter with Common-Mode Suppression *Wei Zhang, Yi Nie and Jin Shi (Nantong University)*
10:20	Design of Reflectarray/Radome Using Novel Circular Polarization Selective Surface *Wenjie Wu and Bo Li (Nanjing University of Posts and Telecommunications); Lei Zhu (University of Macau)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Regular Session: RS15** **MIMO Antennas**
Date/ Time	Thursday, December 10, 2020 / 09:00 – 10:45 (GMT+8)
Chair(s)	Chi-Yuk Chiu (Hong Kong University of Science and Technology)
Zoom link	Room 3 (Zoom Conference ID: **850 6675 2713** / Password: **12345678**) https://us02web.zoom.us/j/85066752713?pwd=azhjdE8yeUVwS3BKaThEbnpELzNxUT09

09:00	[*Invited*] Antenna System Design and Realization for an Advanced 28GHz Channel Sounder *Zhinong Ying (Sony Coporation)*
09:25	High-Gain Broadband Dual-Polarized Antenna with Meta-Surface *Xing Zhou, Yikai Chen and Shiwen Yang (University of Electronic Science and Technology of China)*
09:45	Low Mutual Coupling Dual-Polarized Antenna Array with Novel Baffles for Base Station Applications *Xiaochi Lu, Yikai Chen and Shiwen Yang (University of Electronic Science and Technology of China)*
10:05	A Two-Port Compact and High-Isolated Microstrip MIMO Antenna *Dazhi Piao, Meng Wang, Linkun Zhang and Jie Zuo (Communication University of China)*
10:25	Design Considerations of Feeding Dual-Port Microstrip Square-Ring Antenna *Chi-Yuk Chiu and Ross Murch (Hong Kong University of Science and Technology)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Regular Session: RS16** **Waveguides and Transmission Lines (1)**
Date/ Time	Thursday, December 10, 2020 / 09:00 – 10:45 (GMT+8)
Chair(s)	Yue Li (Tsinghua University); Nicholas E Buris (NEBENS, LLC & Shanghai University)
Zoom link	Room 4 (Zoom Conference ID: **826 2125 3990** / Password: **12345678**) https://us02web.zoom.us/j/82621253990?pwd=UWZpZWthbnR4aDVJYnVnS0FGcEdndz09

09:00	[*Invited*] Flexible Waveguide Inspired by Photonic Doping *Yue Li (Tsinghua University)*
09:25	Managing 60 GHz Field Peaking of an Liquid Crystal Enclosed Coplanar Waveguide by Core Edge Shaping *Jinfeng Li (Imperial College London)*
09:45	Harris Hawks Optimization Algorithm for Waveguide Filter Designs *Pei-Wen Shu, Qing-Xin Chu and Jian-Ye Mai (South China University of Technology)*
10:05	A Deep Learning Framework for Solving Rectangular Waveguide Problems *Xiaolin Hu and Nicholas E. Buris (Shanghai University)*
10:25	A Method to Approximate the Resonance Frequencies of a Coaxial TEM-Cell *Pham Hoang Duc, Tuting Katja and Garbe Heyno (Leibniz University Hannover); Koch Michael (University of Applied Sciences and Arts Hannover)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Regular Session: RS17** **Resonators (1)**
Date/ Time	Thursday, December 10, 2020 / 9:00 – 10:40 (GMT+8)
Chair(s)	Girdhari Chaudhary (Jeonbuk National University); Masataka Ohira (Saitama University)
Zoom link	Room 5 (Zoom Conference ID: **818 3179 7872** / Password: **12345678**) https://us02web.zoom.us/j/81831797872?pwd=ZlVjeFRjU3Y2R1RXRm50b3dRQmdNdz09

9:00	A Microstrip Box-Type Coupling Bandpass Filter Using Even/Odd-Symmetric Electric Field Distributions of Half-Wavelength Resonator *Miho Ono, Masataka OHIRA and Zhewang Ma (Saitama University)*
9:20	Input-Reflectionless Balanced Wideband Bandpass Filter Using Multilayered Vertical Transitions *Li Yang and Roberto Gómez-García (University of Alcalá); Maoyu Fan (University of Electronic Science and Technology of China)*
9:40	Filtering Power Divider with Arbitrary Prescribed Phase Difference *Suyeon Kim, Girdhari Chaudhary and Yongchae Jeong (Jeonbuk National University)*
10:00	Hybrid Dielectric TE/TM Mode Resonator Filter with Wide Spurious Free Range and Transmission Zeros Generated by Higher Order Modes *Patrick Boe, Daniel Miek, Fynn Kamrath and Michael Höft (Kiel University)*
10:20	A Microwave Sensor for Leaf Moisture Detection Based on Split-Ring Resonator *YuHeng Yan, XianQi Lin, Zhe Chen, Yang Cai and Zhi Chen (University of Electronic Science and Technology of China)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Regular Session: RS18** **Scattering and Propagation (1)**
Date/ Time	Thursday, December 10, 2020 / 9:00 – 10:45 (GMT+8)
Chair(s)	Zhongxiang Shen (Nanyang Technological University); Liying Feng (Tianjin University of Technology and Education)
Zoom link	Room 6 (Zoom Conference ID: **868 3420 9987** / Password: **12345678**) https://us02web.zoom.us/j/86834209987?pwd=RlR5aHU2VnAra21zdDVJVG01UU9aUT09

9:00	[*Invited*] Radome: Past, Present, and Future *Zhongxiang Shen (Nanyang Technological University)*
9:25	Analysis of Radar Echo Characteristics of Rectangular Targets with Different Medium Parameters *Ying Liu, Xinyue Liu and Liying Feng (Tianjin University of Technology and Education)*
9:45	Inversion of the Surface Duct from Radar Sea Clutter Using the Improved Grey Wolf Optimization *Gengyao Li, Chao Yang (Xi'an University of Posts and Telecommunicaitons)*
10:05	A Multistatic Uniform Diffraction Tomographic Algorithm for Real-Time Moisture Detection *Adel Omrani, Guido Link and John Jelonnek (Karlsruhe Institute of Technology)*
10:25	Multiple Signal DoA Estimation with Unknown Electromagnetic Coupling Using Gaussian Process *Qifeng Wang, Nicholas E. Buris and Xiaolin Hu (Shanghai University)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Regular Session: RS19** **Antennas and Propagation**
Date/ Time	Thursday, December 10, 2020 / 9:00 – 10:45 (GMT+8)
Chair(s)	A. Alphones (Nanyang Technological University); Hong-Lin Zhang (South China University of Technology)
Zoom link	Room 7 (Zoom Conference ID: **827 3019 9205** / Password: **12345678**) https://us02web.zoom.us/j/82730199205?pwd=TTRuTmFLYllXYmQ1UElQZzNWWmNlUT09

9:00	[*Invited*] A Clover-Shaped Circularly Polarised Antenna for Satellite Systems *Divya Rajagopal (Nanyang Technological University); Nasimuddin (Institute for Infocomm Research); A. Alphones (Nanyang Technological University)*
9:25	A Low-Profile Dual-Polarized Antenna with Frequency Selected Surface for Base Station Applications *Guoyan Shen, Wang Li and Yuehui Cui (South China University of Technology)*
9:45	Hyper Beamforming in Time Modulated Linear Arrays *Yue Ma (Nanjing University of Science and Technology & Ministerial Key Laboratory of JGMT); Chen Miao, Wen Wu and Yuehua Li (Nanjing University of Science and Technology)*
10:05	An Ultra-Wideband Differential Patch Antenna with Embedded Matching Sleeve Shells *Hong-Lin Zhang, Jianhao Ye, Zhijian Chen and Binjie Hu (South China University of Technology); Guoqing Huang (Nanchang University)*
10:25	Wideband Millimeter Wave Antenna for 5G Applications with Out-Of-Band Rejection *Deepika Sipal, Shakti Singh Chauhan, Ananjan Basu, Mahesh P. Abegaonkar and Shiban K. Koul (Indian Institute of Technology Delhi (IITD))*

Technical Program — December 10, 2020 (Thursday)	
Session	**Regular Session: RS20** **IoT/M2M/RFID Systems**
Date/ Time	Thursday, December 10, 2020 / 9:00 – 10:20 (GMT+8)
Chair(s)	Steve Wai Yin Mung (The Hong Kong Polytechnic University); Deepika Sipal (Indian Institute of Technology Delhi)
Zoom link	Room 8 (Zoom Conference ID: **820 1894 5335** / Password: **12345678**) https://us02web.zoom.us/j/82018945335?pwd=TUQydGJZUnpzcFd0MVBiSS9FNldYdz09

9:00	A -121dBm Sensitivity, 2.8μJ/bit Rx, 47.5% Efficient Tx, Narrowband IoT Transceiver *M. Kumarasamy Raja, Zhao Bin, Yan Dan Lei, Chemmanda John Leo (Institute of Microelectronics & A-STAR)*
9:20	Wideband Planar Coupled-Feed Antenna for Internet of Things Applications *Man Ho Tsoi, Ka Ming Wu, Joseph S. M. Yuen, Yat Sze Choy, Steve W. Y. Mung (The Hong Kong Polytechnic University)*
9:40	Behavioral Modeling and Digital Predistortion for Fully-Connected Hybrid Beamforming Massive MIMO Transmitters *Xin Liu, Wenhua Chen and Jiaming Chu (Tsinghua University)*
10:00	LoRa Data Throughput Enhancement by Slotted Channel Activity Detection *Man Ho Tsoi (The Hong Kong Polytechnic University); Tsz Hong Ng (Linked-Technologies Limited); Daniel P. K. Lun, Yat Sze Choy and Steve W. Y. Mung (The Hong Kong Polytechnic University)*

Technical Program — December 10, 2020 (Thursday)

Session	**Regular Session: RS21** **High-Speed and Broadband Millimeter and THz Wave Systems**
Date/ Time	Thursday, December 10, 2020 / 9:00 – 10:40 (GMT+8)
Chair(s)	Yasuhiro Takahashi (Gifu University); Yifan Chen (University of Waikato & University of Electronic Science and Technology of China)
Zoom link	Room 9 (Zoom Conference ID: **864 0869 1275** / Password: **12345678**) https://us02web.zoom.us/j/86408691275?pwd=a2xPcFNTZzM1dEcwMVJ3WENraTdlQT09

9:00	A Hybrid Tomographic Reconstruction for Dielectric-Varying Scatterers Based on Kalman Filtering and Distorted Born Iterative Method *Yahui Ding (University of Electronic Science and Technology of China); Yifan Chen, Xiaoyou Lin and Zheng Gong (University of Waikato); Jun Hu (University of Electronic Science and Technology of China)*
9:20	Substrate Integrated Waveguide (SIW) Power Amplifier Using SIW Bandstop Filter for Harmonic Control Working at 3.55 GHz *Djitiningo Thierry Joel Diatta and Chan-Wang Park (Université du Québec à Rimouski)*
9:40	Chiral Terahertz Emission from the Weyl Semimetals *Y. Gao and J. Qi (University of Electronic Science and Technology of China)*
10:00	49.4-dBΩ 46.8-GHz Multiple Shunt-Shunt Feedback Regulated Cascode TIA in 0.25-Um InP-HBT *Kaito Fukuta, Yasuhiro Takahashi, Daisuke Ito and Makoto Nakamura (Gifu University); Teruo Jyo and Munehiko Nagatani (NTT Corporation); Yuta Shiratori (NTT Device Technology Laboratories, NTT Corporation); Miwa Muto and Hideyuki Nosaka (NTT Corporation)*
10:20	3D Printed 60-GHz High-Gain Horn Antenna Arrays with 40% Bandwidth *Fanqi Sun, Yujian Li and Junhong Wang (Beijing Jiaotong University)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Special Session: SS09** **Recent Advances on Bio-Sensing Technologies**
Date/Time	Thursday, December 10, 2020 / 11:00 – 12:20 (GMT+8)
Organizer(s) & Chair(s)	Chia-Chan Chang (National Chung-Cheng University); Chao-Hsiung Tseng (National Taiwan University of Science and Technology)
Zoom link:	Room 2 (Zoom Conference ID: **810 3045 7749** / Password: **12345678**) https://us02web.zoom.us/j/81030457749?pwd=c1A1SzNCYURXU2dKK1RSNEVHdW55UT09

11:00	A Transformation of Biological Tissue from Non-Planar to Effective Planar Based on Complementary Split-Ring Resonators *Yao-Hui Wang; Chin-Lung Yang (National Cheng Kung University)*
11:20	Permittivity Measurement of Sucrose Solution Using Complementary Spit-Ring Resonator Sensor *Jian-You Lu and Chao-Hsiung Tseng (National Taiwan University of Science and Technology)*
11:40	A Pulsed Electrochemistry Readout IC for Single-Transistor-Based Biosensor *Siang-Sin Shan, Shao-Yung Lu, Shu-Ping Lin, Minghan Xian, Fan Ren, Stephen Pearton, Chin-Wei Chang, Jenshan Lin, and Yu-Te Liao, (National Chiao Tung University)*
12:00	A 1-Mbps Frequency-Shift Keying Receiver for Inductively Powered Biomedical Applications *Yu-Ting Hou and Ping-Hsuan Hsieh (National Tsing Hua University)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Special Session: SS10** **Doppler Radar: System Architecture and Applications**
Date/Time	Thursday, December 10, 2020 / 11:00 – 12:40 (GMT+8)
Organizer(s) &Chair(s)	Tzyy-Sheng Horng (National Sun Yat-Sen University); Fu-Kang Wang (National Sun Yat-Sen University)
Zoom link	Room 3 (Zoom Conference ID: **850 6675 2713**/ Password: **12345678**) https://us02web.zoom.us/j/85066752713?pwd=azhjdE8yeUVwS3BKaThEbnpELzNxUT09

11:00	A 100-GHz High-Sensitivity Doppler Radar Using Double-Sideband Low-IF Architecture for Acoustic-Induced Vibration Study *Xujun Ma and Lin Lu (Southeast University & Purple Mountain Laboratories); Tao Zhang (Xidian University); Xiaohu You (Southeast University & Purple Mountain Laboratories); Jenshan Lin (University of Florida); Lianming Li (Southeast University & Purple Mountain Laboratories)*
11:20	See-Through-Wall (STW) Life Detector Using Self-Injection-Locked (SIL) Technology *Fu-Kang Wang, Tzyy-Sheng Jason Horng, Ju-Yin Shih, Zhi-Jie Hsu, Wei-Chih Su and Pin-Hsun Juan (National Sun Yat-sen University)*
11:40	Millimeter-Wave Real Time Radar Based on Sliding Correlation Technique *Zuo-Min Tsai, Shiang-Jie Jan and Wei-Jin Chen (National Chiao Tung University)*
12:00	Determining Vital Signs with CW Doppler Radar Based on Particle Swarm Optimization *Jian-Shun Ciou and Jia-Ying Li (National Chiayi University); Shih-Cheng Lin (National Chung Cheng University)*
12:20	Liquid Aerosol Detection Based on Sub-THz Portable Doppler Radars *Davi V. Q. Rodrigues, Daniel Rodriguez and Changzhi Li (Texas Tech University)*

Technical Program — December 10, 2020 (Thursday)

Session	**Regular Session: RS22** **Low-Noise Device and Circuits (1)**
Date/ Time	Thursday, December 10, 2020 / 11:00 – 12:40 (GMT+8)
Chair(s)	Chau-Ching Chiong (Institute of Astronomy and Astrophysics, Academia Sinica)
Zoom link	Room 4 (Zoom Conference ID: **826 2125 3990** / Password: **12345678**) https://us02web.zoom.us/j/82621253990?pwd=UWZpZWthbnR4aDVJYnVnS0FGcEdndz09

11:00	A 17.7-42.9-GHz Low Power Low Noise Amplifier with 83% Fractional Bandwidth for Radio Astronomical Receivers in 65-Nm CMOS *Kai Chun Chang, Bo-Ze Lu and Yunshan Wang (National Taiwan University); Chau-Ching Chiong (Institute of Astronomy and Astrophysics, Academia Sinica); Huei Wang (National Taiwan University)*
11:20	Phase Noise Improvement of Multi-Element Push-Push Oscillator Using Electric and Magnetic Field Couplings *Reou Kikuchi, Takayuki Tanaka and Ichihiko Toyoda (Saga University)*
11:40	A 41.8 GHz Drain-To-Source and Gate-To-Source Feedback Colpitts VCO in 40-Nm CMOS *Dong Min Kang and Seung Hun Kim (Korea Advanced Institute of Science and Technology); Tae Hwan Jang (Samsung Advanced Institute of Technology); Chul Soon Park (Korea Advanced Institute of Science and Technology)*
12:00	Co-Design of a Ka-Band High-Gain Low-Noise Amplifier and Antenna-In-Package *Zhe Chen, Hao Gao, Dusan Milosevic and Peter Baltus (Eindhoven University of Technology)*
12:20	A Wideband Low Phase Noise 20GHz Class-F VCO in 14nm FinFET CMOS Technology *Yuan Liu, Chao Yang, Xiaoming Liu and Jing Jin (Shanghai Jiao Tong University)*

Technical Program — December 10, 2020 (Thursday)

Session	**Regular Session: RS23** **Multi-Band, Broadband, Tunable, and Reconfigurable Filters (2)**
Date/ Time	Thursday, December 10, 2020 / 11:00 – 12:40 (GMT+8)
Chair(s)	Kyoya Takano (Tokyo University of Science)
Zoom link	Room 5 (Zoom Conference ID: **818 3179 7872** / Password: **12345678**) https://us02web.zoom.us/j/81831797872?pwd=ZlVjeFRjU3Y2R1RXRm50b3dRQmdNdz09

11:00	Additive Manufacturing of E-Plane Cut Extracted Pole Waveguide Filters with Frequency-Dependent Coupling Apertures *Daniel Miek, Fynn Kamrath, Patrick Boe and Michael Höft (Kiel University)*
11:20	Design of Dual-Band Bandpass Filter Based on Chained Chebyshev Polynomials of the Second Kind *Guan Shen Ng, Yuhao Leong, Sovuthy Cheab, Isnani B. Alias and Socheatra Soeung (Universiti Teknologi PETRONAS)*
11:40	Narrowband BPF Made of Waveguide Loaded by SRR-Based Frequency Selective Surfaces *Hardi Nusantara, R. A. Rizka Qori Yuliani Putri, Hartuti Mistialustina and Achmad Munir (Institut Teknologi Bandung)*
12:00	A 135 GHz CMOS Marchand Balun With Ground Shields *Hajime Sakai, Kyoya Takano and Yohtaro Umeda (Tokyo University of Science)*
12:20	Passband Ripple Improvement Technique for General Chebyshev Filters with Finite Q *Hao Liu, Shengxian Li (Xi'an Institute of Space Radio Technology)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Regular Session: RS24** **Small Antennas (1)**
Date/ Time	Thursday, December 10, 2020 / 11:00 – 12:20 (GMT+8)
Chair(s)	Yuandan Dong (University of Electronic Science and Technology of China)
Zoom link	Room 6 (Zoom Conference ID: **868 3420 9987** / Password: **12345678**) https://us02web.zoom.us/j/86834209987?pwd=RlR5aHU2VnAra21zdDVJVG01UU9aUT09

11:00	Miniaturized Broadband Planar Antenna Using Cross-Shaped Inter-Embedded Metasurface Structure *Dongxu Chen (South China University of Technology & Nanjing University of Science and Technology); Wenquan Che, Wanchen Yang and Quan Xue (South China University of Technology)*
11:20	Design of a Simple, Compact and Ultra-Wideband Quasi-Yagi Antenna with Single Fed Monopole *Amar D. Chaudhari, K. P. Ray (Defence Institute of Advanced Technology (DIAT), India)*
11:40	Low-Profile Metasurface-Inspired Dual-Polarized Cavity Antenna for 5G NR Applications *Shuxuan Liu, Zhan Wang and Yuandan Dong (University of Electronic Science and Technology of China)*
12:00	Small Size Dual Polarization Antenna Array for 5G(28GHz) User Equipment Made by LTCC Technology *Daisuke Yamashita, Hiroyuki Takahashi, Satoshi Hirano (NGK SPARK PLUG CO., LTD.)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Regular Session: RS25** **Broadband and Multi-Band Antennas**
Date/ Time	Thursday, December 10, 2020 / 11:00 – 12:40 (GMT+8)
Chair(s)	Weimin Wang (Beijing University of Posts and Telecommunications); Yongle Wu (Beijing University of Posts and Telecommunications)
Zoom link	Room 7 (Zoom Conference ID: **827 3019 9205** / Password: **12345678**) https://us02web.zoom.us/j/82730199205?pwd=TTRuTmFLYllXYmQ1UElQZzNWWmNlUT09

11:00	Analysis of a Coplanar Parasitically Coupled Patch Antenna Using CMA and CMT *John Borchardt (Sandia National Labs)*
11:20	A Millimeter-Wave Differential Filtering Dual-Patch Antenna Based on Coupling Power Divider Feeding *Zefang Yu, Yongle Wu, Weimin Wang, Murong Zhuo and Peng Tian (Beijing University of Posts and Telecommunications)*
11:40	A Simple Integrated Filtering Duplex Patch Antenna with High Gain and Selectivity *Wenjing Xu, Yongle Wu, Yuhao Yang and Weimin Wang (Beijing University of Posts and Telecommunications)*
12:00	A 3D-Printed K-/Ka-Band Dual Circularly Polarized Feed for Offset-Fed Reflector Antennas *Cong Wang, Jie Wu, Boyuan Ma and Yongxin Guo (National University of Singapore)*
12:20	A 3D-Printed Wideband Multilayered Cylindrical Dielectric Resonator Antenna with Air Layers *Chen YANG, Yuqi XIAO and Kwok Wa LEUNG (City University of Hong Kong & CityU Shenzhen Research Institute Shenzhen)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Regular Session: RS26** **Software Defined/Cognitive/Smart Radio/ Digital Broadcasting Systems**
Date/ Time	Thursday, December 10, 2020 / 11:00 – 12:40 (GMT+8)
Chair(s)	Jian Ren (Xidian University)
Zoom link	Room 8 (Zoom Conference ID: **820 1894 5335** / Password: **12345678**) https://us02web.zoom.us/j/82018945335?pwd=TUQydGJZUnpzcFd0MVBiSS9FNldYdz09

11:00	A Study on Forecasting of Available Spectrum Resources for Sharing Using Envelope Extraction *Tatsuya Nagao, Takahiro Hayashi and Yoshiaki Amano (KDDI Research, Inc.,)*
11:20	Development of Single Measurement Setup to Test S-Parameters and Distortions of Microwave Devices *Raja Usman Tariq, Ming Ye and Yongning He (Xi'an Jiaotong University)*
11:40	FiLoc: Fine-Grained Indoor Localization Using a Single Access Point *Kaikai Liu, Zengshan Tian, Ze Li, Jiacheng Wang and Mu Zhou (Chongqing University of Posts and Telecommunications)*
12:00	Testing System of Integer Frequency Offset Compensation Based on DRM *Cui Wen, Li Bo and Bai Zhongyuan (Xi'an University of Posts and Telecommunications)*
12:20	Investigation of the Angle Dependency of Self-Calibration in Multiple-Input-Multiple-Output Radars *Alua Musralina, Rakesh Yadav Kodari and Marlene Harter (University of Applied Sciences Offenburg)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Regular Session: RS27** **Wireless and Cellular Communication Systems**
Date/ Time	Thursday, December 10, 2020 / 11:00 – 12:40 (GMT+8)
Chair(s)	Chen Ding (City University of Hong Kong)
Zoom link	Room 9 (Zoom Conference ID: **864 0869 1275** / Password: **12345678**) https://us02web.zoom.us/j/86408691275?pwd=a2xPcFNTZzM1dEcwMVJ3WENraTdlQT09

11:00	A Hybrid Coupler Based Load-Modulated Digital Power Amplifier *Gavin Watkins (Toshiba Research Europe Ltd.)*
11:20	Integrated Positioning Error Bound Analysis and AP Motion State Detection for Indoor Wi-Fi Localization *Xinyue Li, Wei Nie, Mu Zhou and Liangbo Xie (Chongqing University of Posts and Telecommunications)*
11:40	Supply-Modulated PA Performance Enhancement by Joint Optimization of RF Input and Supply Control *Mattia Mengozzi, Gian Piero Gibiino, Alberto Maria Angelotti, Corrado Florian and Alberto Santarelli (University of Bologna)*
12:00	Indoor NLOS Localization Based on Collaboration of Multiple Base Stations *LiangBo Xie, Sheng Li, Zengshan Tian, Ze Li, Ya Wang, Wei Nie and Mu Zhou (Chongqing University of Posts and Telecommunications)*
12:20	Frontend Module for 5G Millimeter Wave Application Made by Ceramic Multilayer Substrate *Yamashita Daisuke, Hiroyuki Takahashi and Satoshi Hirano (NGK SPARK PLUG CO., LTD.)*

Technical Program — December 10, 2020 (Thursday)

Session	**Special Session: SS11** **Recent Advances in Dielectric Resonator Antenna for 5G-Related Applications**
Date/ Time	Thursday, December 10, 2020 / 13:30 – 15:35 (GMT+8)
Organizer(s) & Chair(s):	Lei Guo (Dalian University of Technology) Jian Ren (Xidian University)
Zoom link	Room 10 (Zoom Conference ID: **833 4755 7654** / Password: **12345678**) https://us02web.zoom.us/j/83347557654?pwd=Z1BlaC92L1dSRnhEWmhpU3VHaHJMZz09

13:30	[*Invited*] Millimeter-Wave Dielectric Resonator Antenna Array for 5G Smartphone *Zhe Chen (Shenzhen University)*
13:55	Millimeter-Wave Dual Rectangular Dielectric Resonator Antenna with Bidirectional Radiation Pattern *Ji Ke Xu (Tianjin University of Technology and Education);Li Ying Feng (Tianjin University of Technology and Education & Innetech (Tianjin) Electronic Co., Ltd); Meng Wang (Innetech (Tianjin) Electronic Co., Ltd,); Mohammed Jajere Adamu (Tianjin University of Technology and Education & Tianjin University); Ying Liu (Tianjin University of Technology and Education); Wu Sheng Ji (Tianjin University of Technology and Education & Innetech (Tianjin) Electronic Co., Ltd)*
14:15	A Single-Element Beam-Steering Dielectric Resonator Antenna Based on Metal via Decoupling *Wenhui Deng, Yiyi Tan and Shaoyong Zheng (Sun Yat-sen University)*
14:35	A Compact Dual Polarized Dual Wideband Base Station Antenna *Changfei Zhou, Shanshan Yuan, Lei Guo and Hui Li (Dalian University of Technology)*
14:55	A ±45 Degree Polarization Reconfigurable Antenna Based on Dielectric Liquid *Hao Ming Ren, Jian Ren and Yingzeng Yin (Xidian University)*
15:15	A Low-Profile Wideband Dielectric Resonator Antenna Suitable for Beam-Forming Applications *Yang Yu, Wenwen Yang and Jianxin Chen (Nantong University)*

Technical Program — December 10, 2020 (Thursday)

Session	**Special Session: SS12** **Advances in Microwave Filter and Multiplexers**
Date/Time	Thursday, December 10, 2020 / 13:30 – 15:20 (GMT+8)
Organizer(s) & Chair(s)	Ming Yu (The Chinese University of Hong Kong; Southern University of Science and Technology, China); Roberto Gómez-García (University of Alcal´a)
Zoom link	Room 2 (Zoom Conference ID: **813 4173 6109** / Password: **12345678**) https://us02web.zoom.us/j/81341736109?pwd=WTVLYmUvUFp1VWczTVpuWFlLQVBidz09

13:30	A Miniaturized Bandpass Filter with Wideband and High Stopband Rejection Using LTCC Technology *Shuangxu Li, Kaixue Ma, Xiong Chen, Ningning Yan and Haipeng Fu (Tianjin University)*
13:50	Design of Ku-Band Multiplexer with High Power Dielectric Resonator Filters Using Neural Networks *Shuqi Li (Honeywell International Inc.,), Ying Wang (Ontario Tech University), Ming Yu (The Chinese University of Hong Kong); Antonio Panariello (Honeywell International Inc.)*
14:10	Novel Triple-Mode Dielectric Cavity Filter Using Grooved Dielectric Resonator *Yun Liu (Nanjing University of Aeronautics and Astronautics); Cristiano Tomassoni (University of Perugia); Shuai Jiang (Nanjing University of Aeronautics and Astronautics)*
14:30	[*Invited*] 3-D Metal Printed High-Q Folded Waveguide Filter with Folded Antenna *Jiayu Rao (Heriot-Watt University); Kenneth Nai (Renishaw PLC); Povilas Vaitukaitis and Jia-Sheng Hong (Heriot-Watt University)*
14:55	[*Invited*] Design of Ka-Band Tunable Filters in Rectangular Waveguide with Constant Bandwidth *Giuseppe Macchiarella (Politecnico di Milano); Luciano Accatino (AC Consulting); Andrea Malagoli (DTM Technologies)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Regular Session: RS28** **Reconfigurable Antennas**
Date/ Time	Thursday, December 10, 2020 / 13:30 – 15:30 (GMT+8)
Chair(s)	Xiao Yu (Sun Yat-sen University)
Zoom link	Room 3 (Zoom Conference ID: **889 7772 9141** / Password: **12345678**) https://us02web.zoom.us/j/88977729141?pwd=RHdxTU1TT04vZW9JVzJxVXppYi90UT09

13:30	Circularly Polarized Pattern Reconfigurable Flexible Antenna for 5G-Sub-6-GHz Applications *Adnan Ghaffar, Xue Jun Li and Tanveer Ahmad (Auckland University of Technology); Niamat Hussain (Chungbuk National University); Mohammad Alibakhshikenari and Ernesto Limiti (University of Rome "Tor Vergata")*
13:50	A Compact Frequency Reconfigurable PIFA Antenna for Heterogeneous Applications *Adnan Ghaffar, Xue Jun Li and Tanveer Ahmad (Auckland University of Technology)*
14:10	A Liquid Crystal Based Dynamic Metasurface for Beam Steering and Computational Imaging *Peng-Yuan Wang, Andreas Rennings and Daniel Erni (University of Duisburg-Essen)*
14:30	Beam-Steering Surface Wave Fluid Antennas *Yuanjun Shen, Kin-Fai Tong and Kai Kit Wong (University College London)*
14:50	Flexible Dual-Chip Folded Patch for Polarization-Diversity Metal-Mountable Tag Design *Shao-Ming Chiang, Eng-Hock Lim, Pei-Song Chee, Yong-Hong Lee (Universiti Tunku Abdul Rahman); Fwee-Leong Bong (Tunku Abdul Rahman University College)*
15:10	1 BIT Wide-Band Hexagonal Electronically Reconfigurable Unit Cell for Ka-Band Transmit-Array *Qasim Ali (Beijing Institute of Technology China); Xiao Yu (Sun Yat-sen University); Houjun Sun (Beijing Institute of Technology)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Regular Session: RS29** **Millimeter and THz Wave Devices and Circuits (1)**
Date/ Time	Thursday, December 10, 2020 / 13:30 – 15:30 (GMT+8)
Chair(s)	Xidong Wu (Zhejiang University)
Zoom link	Room 4 (Zoom Conference ID: **885 4189 3669** / Password: **12345678**) https://us02web.zoom.us/j/88541893669?pwd=UzNzKzN4c0lCWTNDMUlFSkxXZkhGUT09

13:30	Transmission Line to Waveguide Transition at 220 GHz for Vacuum Photodiode *Jun Dai, Cunjun Ruan, Yikun Ding and Xingyun Zhang (Beihang University)*
13:50	Design of a 220GHz TE20 Higher Order Mode SDV-SWS TWT Amplifier *Zheng Zhang and Cunjun Ruan (Beihang University)*
14:10	A Transformer Based VCO with X4 Frequency Multiplier for 77GHZ FMCW Radar in ADAS Cars *Yan Dan Lei, M. Kumarasamy Raja and Zhong Zhi Gang (Institute of microelectronics of singapore)*
14:30	A Switchable Linear-To-Circular Polarizer Based on Varactor-Loaded Metasurface at 30 GHz *Li Tong, Qian Jiang, Jieyun Shen, Xidong Wu and Jinfang Zhou (Zhejiang University)*
14:50	High-Speed Millimeter-Wave 5G/6G Image Transmission via Artificial Intelligence *Shaolin Liao (Illinois Institute of Technology); Lu Ou (Hunan University)*
15:10	An Electrically Reconfigurable Plasmonic Lens Using Graphene *Chenglong Wang and Xidong Wu (Zhejiang University); Xiang Guo (Zhejiang University of Science & Technology)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Regular Session:RS30** **Low-Noise Device and Circuits (2)**
Date/ Time	Thursday, December 10, 2020 / 13:30 – 15:15 (GMT+8)
Chair(s)	Wenxin Liu (AIRCAS); Liang Wu (The Chinese University of Hong Kong, Shenzhen)
Zoom link	Room 5 (Zoom Conference ID: **811 0088 4407** / Password: **12345678**) https://us02web.zoom.us/j/81100884407?pwd=QVdNejMzckVpVG5FK3RidEVUcDdjQT09

13:30	[*Invited*] Development of G-Band Traveling Wave Tube for Terahertz ViSAR *Wenxin Liu (AIRCAS); Zhaochuan Zhang (Aerospace Information of Research Institute, Chinese Academy of Sciences); Kedong Zhao and Zhihao Jing (AIRCAS); Xin Guo and Chao Zhao (Aerospace Information of Research Institute, Chinese Academy of Sciences)*
13:55	A Wideband 7.5-29.5 GHz LNA with Constant NF by Using Multistage Noise Matching at High Frequencies *Hongchen Chen and Haoshen Zhu (South China University of Technology); Liang Wu (The Chinese University of Hong Kong, Shenzhen); Wenquan Che and Quan Xue (South China University of Technology)*
14:15	A CMOS Colpitts Voltage-Controlled Oscillator with Bias-Free pMOSFET Tails *Wen-Cheng Lai (National Yunlin University of Science and Technology and National Taiwan University of Science and Technology); Sheng-Lyang Jang (National Taiwan University of Science and Technology)*
14:35	A 405-MHz 850-μW Low-Noise Amplifier with 53.5-dB Voltage Gain and 100-Ns Settling Time *Rui Ma, Naglaa El Agroudy, Niko Joram and Frank Ellinger (Technische Universität Dresden)*
14:55	Performance Enhanced 6-Bit Phase Shifter in 65-nmCMOS Technology *Arthi. R (IIITDM); S. Christopher (IIT Madras); K. Selvajyothi (IIITDM)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Regular Session: RS31** **EM Field Theory (1)**
Date/ Time	Thursday, December 10, 2020 / 13:30 – 15:35 (GMT+8)
Chair(s)	Ke-Li Wu (The Chinese University of Hong Kong); Rahul Singhal (BITS Pilani)
Zoom link	Room 6 (Zoom Conference ID: **867 9704 5369** / Password: **12345678**) https://us02web.zoom.us/j/86797045369?pwd=cnQwUEZJbWxqeGhvQlpxY0hPYnFPQT09

13:30	[*Invited*] Nature of Antenna Radiation Revealed by Physical Circuit Model *Ke-Li Wu (The Chinese University of Hong Kong)*
13:55	The Impact of the Resonator Shape of a Combline Travelling Wave Antenna on Its RF and Thermal Performance *Jayesh Ganji (BITS Pilani, Hyderabad Campus); Kapil Ram Gavali (BITS Pilani, Hyderabad Campus & Universal College of Engineering, Mumbai); Harish V. Dixit (BITS Pilani, Hyderabad Campus); Promod Sharma (Institute for Plasma Research, India & Homi Bhabha National Institute, India)*
14:15	A Novel Circular Polarization Series-Fed Endfire Array *Weihua Zhou and Lin Zha (East China Research Institute of Electrics Engineering)*
14:35	UWB Antenna for Application in Impulse Radio Regime *Bahare Mohamadzade, Roy B. V. B. Simorangkir, Raheel M Hashmi and Ali Lalbakhsh (Macquarie University)*
14:55	A Conformal OAM Metasurface Antenna Based on Holographic Principle *Xiaokui Ren, Li Deng and Chen Zhang (Beijing University of Posts and Telecommunications); Botao Feng (Shenzhen University)*
15:15	Comparative Study of Translated Cross Dipole and Square Loop Frequency Selective Surfaces for Band Stop Characteristics in X-Band *Ashish Kumar Verma and Rahul Singhal (Birla Institute of Technology and Science, Pilani)*

Technical Program — December 10, 2020 (Thursday)

Session	**Regular Session: RS32** **Millimeter-Wave/THz and Optical Antennas (1)**
Date/ Time	Thursday, December 10, 2020 / 13:30 – 15:30 (GMT+8)
Chair(s)	Qing-Yi Guo (City University of Hong Kong); Debasis Mitra (Indian Institute of Engineering Science & Technology, Shibpur)
Zoom link	Room 7 (Zoom Conference ID: **870 1980 2348** / Password: **12345678**) https://us02web.zoom.us/j/87019802348?pwd=b1NVeDcxUVFubEJSMVVrZGlZTFhCQT09

13:30	A 400-GHz Octagonal-Slotted Dielectric Resonator Antenna with 10 dBi Gain in 0.13-μm CMOS SOI *He Ji (University of Electronic Science and Technology of China); Fanyi Meng, Kaixue Ma (Tianjin University); Shouxian Mou (University of Electronic Science and Technology of China)*
13:50	160 GHz Dual-Polarized LTCC Based Antenna with Enhanced Bandwidth and Gain *Qing-Yi Guo, King-Tung Lo, Jing Yang and Hang Wong (City University of Hong Kong)*
14:10	Wideband and Low Profile Miniaturized Magneto- Electric Dipole Antenna for 5G mmWave Applications *Yin Chen Chang, Ching-Cheng Hsu, M. Idrees Magray and Yung-Chuang Hsu, Jenn-Hwan Tarng (National Chaio Tung University)*
14:30	Transmitarray Antenna for Generating Multiple OAM Modes *Geng-Bo Wu, Ka Fai Chan, Kam Man Shum and Chi Hou Chan (City University of Hong Kong)*
14:50	Fractal Loaded Planar Super Wide Band MIMO Antenna in THz Frequency Range *Swarup Das, Debasis Mitra and Sekhar Ranjan Bhadra Chaudhuri (IIEST,Shibpur)*
15:10	Wideband Substrate Integrated Waveguide Fed Circularly Polarized End-Fire Antenna with Tilted Beam *Peiwen Tang and Hang Wong (City University of Hong Kong)*

Technical Program — December 10, 2020 (Thursday)

Session	Regular Session: RS33 5G Systems
Date/ Time	Thursday, December 10, 2020 / 13:30 – 15:30 (GMT+8)
Chair(s)	Sukomal Dey (Indian Institute of Technology Palakkad); Fei You (University of Electronic Science and Technology of China)
Zoom link	Room 8 (Zoom Conference ID: **869 4896 9185** / Password: **12345678**) https://us02web.zoom.us/j/86948969185?pwd=NFljSnlZeUFzM3ZuNTFvV2hSdDg3Zz09

13:30	SIW Butler Matrix Driven Beam Scanning Array for Millimeter Wave 5G Communication *Soumik Dey, Nandipati Sai Kiran and Sukomal Dey (Indian Institute of Technology Palakkad)*
13:50	Design of Inverse Continuous High-Efficiency Multi-Octave Power Amplifier Using Novel Distributed Matching Structure *Cheng Zhong, Songbai He and Jiayan Wu (University of Electronic Science and Technology of China)*
14:10	Design of an Autonomous IoT Wireless Sensor Node for Industrial Environments *S. Mohamed Rabeek, M. Kumarasamy Raja (IME, A*STAR)*
14:30	A Compact Linearizer for Independently Tuning the Gain Characteristic at C-Band *Zehua Xiao, Fei You, Peng Hao, Caoyu Li and Songbai He (University of Electronic Science and Technology of China)*
14:50	Applying Sparse Array in Massive MIMO via Convex Optimization *Mengting Lou, Jing Jin, Hanning Wang, Liang Xia, Qixing Wang and Yifei Yuan (China Mobile Research Institute)*
15:10	System Impacts of User Scheduling with Minimal Angular Separation Constraints in Radio Resource Management for 5G and Beyond *Yanki Aslan, Antoine Roederer and Alexander Yarovoy (Delft University of Technology)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Regular Session: RS34** **Microwave Photonics, Radar and Sensor Systems**
Date/ Time	Thursday, December 10, 2020 / 13:30 – 15:35 (GMT+8)
Chair(s)	Yilong Lu (Nanyang Technological University)
Zoom link	Room 9 (Zoom Conference ID: **864 1809 9019** / Password: **12345678**) https://us02web.zoom.us/j/86418099019?pwd=RjJvZUMrUXYrYXRRL1ZrWmxGZ0VZQT09

13:30	[*Invited*] Smart Sensing With Low-Cost Millimetre-Wave Radar and Machine Learning *Yilong Lu (Nanyang Technological University)*
13:55	Automotive Radar Interference Mitigation Based on a Generative Adversarial Network *Shengyi Chen (Ruhr-Universität Bochum & HELLA GmbH & Co. KGaA); Wangyi Shangguan (University of Stuttgart); Jalal Taghia (Ruhr-Universitaet Bochum); Uwe Kühnau (HELLA GmbH & Co. KGaA); Rainer Martin (Ruhr-University Bochum)*
14:15	Estimation of Scattering and Transfer Parameters in Stratified Dispersive Tissues of the Human Torso *Ashay Sathe, Amit Kumar Rawat and Marlene Harter (University of Applied Sciences)*
14:35	Extracting Individual Respiratory Signatures from Combined Multi-Subject Mixtures with Varied Breathing Pattern Using Independent Component Analysis with the JADE Algorithm *Shekh M. M. Islam and Victor M. Lubecke (University of Hawaii at Manoa)*
14:55	UAV Radar Sensing of Respiratory Variations for COVID-Type Disorders *Christian R Grado, Shekh Md Mahmudul Islam (University of Hawaii at Manoa); Lana Lubecke (Kalani High School); Victor Lubecke (University of Hawaii at Manoa)*
15:15	HTS Dual-Filters for WLAN and 4G Applications *Laoufi Mohamed Karim, Mekaoui Slimane and Tounsi Lamine Mohamed (LCPTS Laboratory, USTHB University);*

Technical Program — December 10, 2020 (Thursday)

Session	**Special Session: SS13** **Advanced Power Amplifier Design and Linearization Techniques for Future Wireless Communication Systems/All-spectrum-access Base Station/Smart Terminal Antennas**
Date/Time	Thursday, December 10, 2020 / 15:50 – 17:30 (GMT+8)
Organizer(s)	Jing Xia (Jiangsu University) Shichang Chen (Hangzhou Dianzi University) Yejun He (Shenzhen University) Amir Boag (Tel Aviv University)
Chair(s)	Shichang Chen (Hangzhou Dianzi University) Yejun He (Shenzhen University)
Zoom link	Room 10 (Zoom Conference ID: **833 4755 7654** / Password: **12345678**) https://us02web.zoom.us/j/83347557654?pwd=Z1BlaC92L1dSRnhEWmhpU3VHaHJMZz09

15:50	Operation Modes Switchable Doherty Power Amplifier with Back-Off Efficiency Reconfiguration *Rui-Jia Liu and Xiao-Wei Zhu (Southeast University); Jing Xia (Jiangsu University); Chao Yu, Hao-Tian Li and Dan-Dan Teng (Southeast University)*
16:10	High Efficiency, Extended Back-Off Range Doherty Power Amplifier Using A Three Port Harmonic Injection Network *Xinyu Zhou, Wing-Shing Chan (City University of Hong Kong); Tushar Sharma (University of Calgary); Jing Xia (Jiangsu University); Zheng Liu (Princeton University); Shichang Chen (Hangzhou Dianzi University); Wenjie Feng (Nanjing University of Science and Technology)*
16:30	Two-Way Concurrent Dual-Band Power Amplifier at 0.9/1.8 GHz with Low Second Harmonic and Intermodulation *Zhijiang Dai, Ruimin Peng, Mingyu Li (Chongqing University); Songbai He (University of Electronic Science and Technology of China)*
16:50	A Dual-Polarized Compact Patch Antenna for Sub-6 GHz 5G Base Stations *Xiaobing Gao, Li Zhang, Yejun He, Long Zhang, Wenting Li and Sai-Wai Wong (Shenzhen University); Chao-Hsiang Liao (Lunghwa University of Science and Technology)*
17:10	A Multi-Band Metal-Rimmed Antenna for 5G Smartphones *Hancheng Tu, Yejun He, Wenting Li and Wei He (Shenzhen University); Amir Boag (Tel Aviv University)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Special Session: SS14** **Advanced Filter Design**
Date/Time	Thursday, December 10, 2020 / 15:50 – 17:10 (GMT+8)
Organizer(s) & Chair(s)	Pei-Ling Chi (National Chiao Tung University) Tzong-Lin Wu (National Taiwan University)
Zoom link	Room 2 (Zoom Conference ID: **813 4173 6109** / Password: **12345678**) https://us02web.zoom.us/j/81341736109?pwd=WTVLYmUvUFp1VWczTVpuWFlLQVBidz09

15:50	Dual-Band Bandpass Filter Based on Frequency Transformations with Enhanced Inter-Band Isolation *Shao-Chan Tang (National Chiao Tung University); Pei-Cheng Chu and Jen-Tsai Kuo (Chang Gung University); Lin-Kun Wu (National Chiao Tung University)*
16:10	A Microstrip Two-State Switchable Dual-Band Bandpass Filter *Hsin-Ya Tseng, Chi-Feng Chen, Yi-Hua He, Kai-Wei Zhou and Ruei-Yi Chen (Tunghai University)*
16:30	Design of the Switchable Planar Bandstop Filter with Single/Dual Stopbands *Ching-Wen Tang, Yang-Hsin Fan, You-Ding Tsai (National Chung Cheng University)*
16:50	Compact Hybrid Bandpass Filter Using SIW and CSRRs with Wide Stopband Rejection *Yan Zheng, Yilong Zhu and Yuandan Dong (University of Electronic Science and Technology of China)*

Technical Program — December 10, 2020 (Thursday)

Session	**Regular Session: RS35** **Millimeter and THz Wave Devices and Circuits (2)**
Date/ Time	Thursday, December 10, 2020 / 15:50 – 17:30 (GMT+8)
Chair(s)	Haoshen Zhu (South China University of Technology)
Zoom link	Room 3 (Zoom Conference ID: **889 7772 9141** / Password: **12345678**) https://us02web.zoom.us/j/88977729141?pwd=RHdxTU1TT04vZW9JVzJxVXppYi90UT09

15:50	Gain Improvement of a 130 GHz CMOS Amplifier by Using Radial Stub as AC Ground *Taiki Machii, Mizuki Motoyoshi, Suguru Kameda and Noriharu Suematsu (Tohoku University)*
16:10	A 24-30GHz Asymmetric SPDT Switch for 5G Millimeter-Wave Front-End *Dingyuan Zeng and Haoshen Zhu (South China University of Technology); Wenjie Feng (South China University of Technology & Nanjing University of Science and Technology); Linping Feng, Wenquan Che and Quan Xue (South China University of Technology)*
16:30	Transmission Line Loss Properties of Dielectric Loss Tangent and Conductive Surface Roughness in 5G Millimeter Wave Band *Yasuo Morimoto, Takeshi Motegi, Wataru Kasai and Kazuhiko Niwano (AGC Inc.)*
16:50	A Flip-Chip Packaged Design of Planar Antenna Array Based on Dual-Feed Network for 77-GHz Automotive Radar *Chuanming Zhu, Zongming Duan and Yuefei Dai (Anhui Province Engineering Laboratory for Antennas and Microwave, The 38th Research Institute of China Electronic Technology Group Corporation)*
17:10	A Novel Miniature Rectenna Integrating Rectifier in Antenna Element for Large-Scale Rectenna Arrays *Kento Saito, Hiroshi Satow, Eisuke Nishiyama and Ichihiko Toyoda (Saga University)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Regular Session: RS36** **Waveguides and Transmission Lines (2)**
Date/ Time	Thursday, December 10, 2020 / 15:50 – 17:30 (GMT+8)
Chair(s)	Justin B. King (Trinity College Dublin); Bo Wang (City University of Hong Kong)
Zoom link	Room 4 (Zoom Conference ID: **885 4189 3669** / Password: **12345678**) https://us02web.zoom.us/j/88541893669?pwd=UzNzKzN4c0lCWTNDMUlFSkxXZkhGUT09

15:50	Application of Generalized Finite Difference Method in Analysis of Transmission Characteristics of Waveguide *Hui Xu, Yu-Chao Mei and Yang Bao (Nanjing University of Posts and Telecommunications)*
16:10	Broadband Substrate Integrated Waveguide to Rectangular Waveguide Transition at V-Band *Bo Wang and Hang Wong (City University of Hong Kong)*
16:30	Time-Domain Representation of Passband Scattering Parameters *Justin B. King (Trinity College Dublin)*
16:50	Electromagnetic Bottom-Up Optimization for Automated Antenna Designs *Farzad Mir (Politecnico di Torino); Lida Kouhalvandi (Istanbul Technical University); Ladislau Matekovits (Politecnico di Torino, National Research Council of Italy and Politehnica University Timisoara); Ece Olcay Gunes (Istanbul Technical University)*
17:10	Pulse Transmission Performance of Goubau Lines and Spoof Surface Plasmon Polaritons Transmission Lines *Jinlun Li, Qiuyi Zhang, Shunli Li, Hongxin Zhao and Xiaoxing Yin (State Key Laboratory of Millimeter Waves, Southeast University)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Regular Session: RS37** **EM Field Theory (2)**
Date/ Time	Thursday, December 10, 2020 / 15:50 – 17:50 (GMT+8)
Chair(s)	Juhua Liu (Sun Yat-Sen University)
Zoom link	Room 5 (Zoom Conference ID: **811 0088 4407** / Password: **12345678**) https://us02web.zoom.us/j/81100884407?pwd=QVdNejMzckVpVG5FK3RidEVUcDdjQT09

15:50	A Wideband Squintless Traveling-Wave Antenna *Shuangqi Cai and Juhua Liu (Sun Yat-Sen University)*
16:10	Cosecant-Squared Radiation Pattern Surface Wave Antenna for Millimeter-Wave FMCW Vertical-Looking Radar System *Jiashu Yang and Kin-Fai Tong (University College London)*
16:30	A Helical Dipole Antenna for Microwave Ablation Based on Substrate Integrated Coaxial Line Technology *Zhang Wen, Xianqi Lin, Chennan Li, Yuheng Yan and Dongyi Liu (University of Electronic Science and Technology of China)*
16:50	Dispersive Divergence-Free Vector Meshless Method for Time-Domain Analysis of Frequency-Dependent Media *Sheyda Shams (Shiraz University); Masoud Movahhedi (Yazd University)*
17:10	Analysis and Design of X-Shaped Slot Antenna on Metal Box Using Characteristic Mode Theory *Sichao Wen and Yuandan Dong (University of Electronic Science and Technology of China)*
17:30	Iterative Physical Optics (IPO) for Fast and Accurate Simulation of Reflector Antennas *Shaolin Liao (Illinois Institute of Technology); Lu Ou (Hunan University)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Regular Session: RS38** **Broadband and Multi-Band Antennas**
Date/ Time	Thursday, December 10, 2020 / 15:50 – 17:55 (GMT+8)
Chair(s)	Dongya Shen (Yunnan University); Lei Ge (Shenzhen University)
Zoom link	Room 6 (Zoom Conference ID: **867 9704 5369** / Password: **12345678**) https://us02web.zoom.us/j/86797045369?pwd=cnQwUEZJbWxqeGhvQlpxY0hPYnFPQT09

15:50	[*Invited*] Wide Stopband Filtering Antenna with High Gain for Ka Band *Jianpei Chen, Dongya Shen (Yunnan University); Xiupu Zhang (Concordia University)*
16:15	Low Profile Vertically Polarized Antenna with Endfire Radiation for 28 GHz Application *Lishun Ke, Shaowei Liao, Wenhai Zhang, Quan Xue and Wenquan Che (South China University of Technology)*
16:35	A H-Shaped Dual-Band Microstrip Patch Antenna with Large Frequency Ratio Under Dual Modes *Chao Li, Xiao-Qiang Wu and Shu Wang (Jiangsu Automation Research Institute)*
16:55	Symmetrically Slotted Ground Defected UWB Antenna Configurations for Microwave Imaging Techniques *Zere Iman, Kassen Dautov and Mohammad Hashmi (Nazarbayev University); Muhammad A. Chaudhary (Ajman University)*
17:15	A Wideband Cylindrical Dielectric Resonator Antenna Using Inserted Metallic Ring *Hongjia Huang and Lei Ge (Shenzhen University)*
17:35	Millimeter-Wave Planar Wideband Circularly Polarized Antenna with End-Fire Radiation *Hengfei Xu, Zichao Zheng, Jie Yang and Chuanqing Liu (Nanjing Institute of Technology)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Regular Session: RS39** **Small Antennas (2)**
Date/ Time	Thursday, December 10, 2020 / 15:50 – 17:35 (GMT+8)
Chair(s)	Wenquan Che (South China University of Technology)
Zoom link	Room 7 (Zoom Conference ID: **870 1980 2348** / Password: **12345678**) https://us02web.zoom.us/j/87019802348?pwd=b1NVeDcxUVFubEJSMVVrZGlZTFhCQT09

15:50	[*Invited*] A Wideband Miniaturized Dual-Polarized Dipole Antenna for Base-Station Applications *Yongzheng Li, Wanchen Yang, Wenquan Che and Quan Xue (South China University of Technology)*
16:15	Low-Profile Bi-Directional Circularly Polarized Antenna *Kosuke Hamasaki, Ryuji Kuse and Takeshi Fukusako (Kumamoto University)*
16:35	A Ping-Pong Algorithm for Computational Electromagnetics of 2D Antennas/Metasurfaces *Lu Ou (Hunan University); Shaolin Liao (Illinois Institute of Technology)*
16:55	Miniaturized UHF Near-Field RFID Reader Antenna Inspired by Meta-Resonator *Yinwan Ning, Yuandan Dong and Yong Fan (University of Electronic Science and Technology of China)*
17:15	Ultra-Wideband High-Gain Millimeter Wave Antenna-In-Package with Small Gain Ripple *Hong-Lin Zhang, Jiaobo Shao, Zhijian Chen and Binjie Hu (South China University of Technology)*
17:35	Small Size Dual Polarization Antenna Array for 5G(28GHz) User Equipment Made by LTCC Technology *Daisuke Yamashita, Hiroyuki Takahashi, Satoshi Hirano (NGK SPARK PLUG CO., LTD.)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Regular Session: RS40** **EMC**
Date/ Time	Thursday, December 10, 2020 / 15:50 – 17:50 (GMT+8)
Chair(s)	Xiong Chen (Tianjin University); Shinobu Ishigami (Tohoku Gakuin University)
Zoom link	Room 8 (Zoom Conference ID: **869 4896 9185** / Password: **12345678**) https://us02web.zoom.us/j/86948969185?pwd=NFljSnlZeUFzM3ZuNTFvV2hSdDg3Zz09

15:50	C-Band Transmit Receive Calibration Module for Radar Applications with High Power Handling *Asmita Singhal, Harikrishna M V, Neeraj Kumar (Bharat Electronics Limited)*
16:10	Compact Passive Intermodulation Mitigation Method Using Planar Nonlinearity Injection *Xiong Chen and Peng Zhang (Tianjin University); Ming Yu (The Chinese University of Hong Kong); David Pommerenke (Graz University of Technology)*
16:30	Thermal Effect Impact to Coaxial Connector in Microwave Connection Applications *Xiong Chen and Ling Wang (Tianjin University); Ming Yu (The Chinese University of Hong Kong)*
16:50	Study on Measurement Method of Electromagnetic Interference From Large-Scale Electric Equipment/System *Tatsuru Itsukaichi and Koji Igari, Shinobu Ishigami, Ken Kawamata (Tohoku Gakuin University); Yasutoshi Yoshioka (Fuji Electric Co. Ltd.)*
17:10	Power Scalable Behavioral Model in Digital Predistortion for Power Amplifiers *Jiayan Wu, Songbai He, Jun Peng, Caoyu Li and Fei You (University of Electronic Science and Technology of China)*
17:30	A Paper-Based Lightweight Absorber with Ultra-Wide Absorption Band *Xin Xiu (South China University of Technology & Nanjing University of Science and Technology); Wenquan Che, Shaowei Liao, Quan Xue, Haidong Chen and Wanchen Yang (South China University of Technology)*

Technical Program — December 10, 2020 (Thursday)	
Session	**Regular Session: RS41** **MIMO Systems**
Date/ Time	Thursday, December 10, 2020 / 15:50 – 17:50 (GMT+8)
Chair(s)	Eng Hock Lim (Universiti Tunku Abdul Rahman); Qian Zhu (Huawei Technologies Co Ltd)
Zoom link	Room 9 (Zoom Conference ID: **864 1809 9019** / Password: **12345678**) https://us02web.zoom.us/j/86418099019?pwd=RjJvZUMrUXYrYXRRL1ZrWmxGZ0VZQT09

15:50	FFT-SAR Algorithm for MIMO System Based on Stationary Phase Method *Xinyi Nie, Chuan Lin and Anyong Qing (Southwest Jiaotong University)*
16:10	Feeding-Line-Based Decoupling Method for MIMO Patch Antenna Arrays *Hang Qi and Lei Ge (Shenzhen University)*
16:30	Applying Power Dividers to Decoupling of MIMO Antennas with Wideband, Dual-Band or Adjacent-Band Operations *Min Li, Lijun Jiang and Kwan Lawrence Yeung (The University of Hong Kong)*
16:50	Cross-Polarization Discrimination of a Colocated Quad-Polarized MIMO Antenna in a Room *Yijue Wang and Dazhi Piao (Communication University of China)*
17:10	Analysis of Triple-Polarized Antenna Systems Using Electromagnetic Information Theory *Qian Zhu and Rui Ni and Yi Lv (Huawei Technologies Co Ltd)*
17:30	Coupled-PILAs for Miniature On-Metal RFID Tag Design *Yong-Hong Lee, Eng-Hock Lim (Universiti Tunku Abdul Rahman); Fwee-Leong Bong (Tunku Abdul Rahman University College); Pei-Song Chee (Universiti Tunku Abdul Rahman)*

Technical Program — December 11, 2020 (Friday)	
Session	**Closing Ceremony and Prize Presentation**
Date/ Time	Friday, December 11, 2020 / 09:00 – 09:30 (GMT+8)
Zoom link	Room 1 (Zoom Conference ID: **831 4817 8419** / Password: **12345678**) https://us02web.zoom.us/j/83148178419?pwd=VWFuY1dqdHBsNlkwZllXSVlQVG0wUT09

Session	**Plenary Talk 3**
Date/ Time	Friday, December 11, 2020 / 09:30 – 10:30 (GMT+8)
Title	Emerging Deep Integration and Topological Cohabitation of Front-End Circuit and Antenna for Future Wireless Systems
Speaker	Ke Wu *Fellow of the Royal Society of Canada, University of Montreal*
Chair	Alex Man Hon Wong *City University of Hong Kong*
Zoom Link	Room 1 (Zoom Conference ID: **831 4817 8419** / Password: **12345678**) https://us02web.zoom.us/j/83148178419?pwd=VWFuY1dqdHBsNlkwZllXSVlQVG0wUT09
10:30-10:40	Break
Session	**Plenary Talk 4**
Date/ Time	Friday, December 11, 2020 / 10:40 – 11:40 (GMT+8)
Title	Extreme Metastructures
Speaker	Nader Engheta *H. Nedwill Ramsey Professor, University of Pennsylvania*
Chair	Alex Man Hon Wong *City University of Hong Kong*
Zoom Link	Room 1 (Zoom Conference ID: **831 4817 8419** / Password: **12345678**) https://us02web.zoom.us/j/83148178419?pwd=VWFuY1dqdHBsNlkwZllXSVlQVG0wUT09

Technical Program — December 11, 2020 (Friday)	
Session	**Industrial Talk 2**
Date/ Time	Friday, December 11, 2020 / 12:00 – 13:00 (GMT+8)
Chair	Kam Man Shum *City University of Hong Kong*
Zoom link	Room 11 (Zoom Conference ID: **840 5617 3053** / Password: **12345678**) https://us02web.zoom.us/j/84056173053?pwd=VTlzRk54VUJ2SzV4eTdFRU9RbjVKdz09
12:00	ANTWave
12:15	R&S
12:30	Antritsu
12:45	VDI

Technical Program — December 11, 2020 (Friday)	
Session	**Special Session: SS15** **Recent Advances in High Performance Passive Filter Design**
Date/Time	Friday, December 11, 2020 / 13:30 – 15:10 (GMT+8)
Organizer(s) & Chair(s)	Xiaolong Wang (Jilin University) Chun-Ping Chen (Kanagawa University)
Zoom link	Room 1 (Zoom Conference ID: **872 2463 5879** / Password: **12345678**) https://us02web.zoom.us/j/87224635879?pwd=cTJSSWM5WEo2T1A0clRreHdXZHJTdz09

13:30	Miniaturized Horst-Type Wilkinson Power Divider with Harmonic Suppression *Zhuang Wang, Nan Zhang and Xiaolong Wang (Jilin University); Zhewang Ma (Saitama University); Chun-Ping Chen (Kanagawa University)*
13:50	Wideband Bandpass Filter Using Coupled Lines with Multiple Transmission Poles and Good Outband Performance *Nan Zhang and Xiaolong Wang (Jilin University); Zhewang Ma (Saitama University); Chun-Ping Chen (Kanagawa University)*
14:10	A CMOS 60-GHz Asymmetrical SPDT Switch with Enhanced Power Handling Capability *YuPing Tang, Ling Wang, Ying Jiang, Xuwei Fei (State Grid Zhejiang Electric Power Co., Ltd); Feng Sun (Jilin University)*
14:30	Design of Compact Millimeter-Wave Bandpass Filter with Multiple Transmission Zeros Using Edge-Coupled Resonators in Silicon Technology *YuPing Tang, Xuwei Fei, Chenyang Yao, Bo Dai (State Grid Zhejiang Electric Power Co., Ltd); Feng Sun (Jilin University)*
14:50	Modified Metallic Photonic Crystal Structure for Planar Microwave Devices *Chun-Ping Chen, Erika Katsuno, Hang Sun and Tetsuo Anada (Kanagawa University); Xiaolong Wang (Jilin University)*

Technical Program — December 11, 2020 (Friday)	
Session	**Regular Session: RS42** **Control Circuits (2)**
Date/ Time	Friday, December 11, 2020 / 13:30 – 15:30 (GMT+8)
Chair(s)	Sho Ikeda (Mitsubishi Electric Corporation)
Zoom link	Room 2 (Zoom Conference ID: **841 5220 9741** / Password: **12345678**) https://us02web.zoom.us/j/84152209741?pwd=dDBGalFia1FIY25YT0Zpekc5WXZWZz09

13:30	Linearity Trade-Offs in High-Voltage RF Switches for Antenna Tuning Applications *Oguzhan Oezdamar and Robert Weigel (University of Erlangen-Nuremberg); Amelie Hagelauer (University of Bayreuth); Valentyn Solomko (Infineon Technologies)*
13:50	Design of a Self-Oscillating Mixer for Millimeter-Wave Applications *Min Fan and Minghua Zhao (University of Electronic Science and Technology of China)*
14:10	A Wideband Switchable Absorber/Reflector Based on Active Frequency Selective Surface *Hongwei Chen, Qunsheng Cao and Yi Wang (Nanjing University of Aeronautics and Astronautics)*
14:30	Phase Synchronization Technique Between Fractional-N PLLs by Correcting Phase Error Due to Cycle Slip Using Reference Delta-Sigma Modulator *Sho Ikeda, Akihito Hirai, Koji Tsutsumi and Masaomi Tsuru (Mitsubishi Electric Corporation)*
14:50	A Wide Locking Range Bleed-Current Injection-Enhanced Miller Divider in V-Band *Girish Tiwari, Mohammed U. Shaikh, Sivaramakrishna Rudrapati and Shalabh Gupta (Indian Institute of Technology Bombay)*
15:10	A Low-Power Low-Voltage Down-Conversion Mixer for 5G Applications at 28 GHz in 22-Nm FD-SOI CMOS Technology *Paolo Valerio Testa, Laszlo Szilagyi, Xin Xu, Corrado Carta, and Frank Ellinger (TU Dresden)*

Technical Program — December 11, 2020 (Friday)

Session	Regular Session: RS43 Waveguides and Transmission Lines (3)
Date/ Time	Friday, December 11, 2020 / 13:30 – 15:30 (GMT+8)
Chair(s)	Sheng Li (National Key Laboratory of Science and Technology on Space Microwave, China Academy of Space Technology); Jingxue Wang (Hohai University)
Zoom link	Room 3 (Zoom Conference ID: **898 9429 2674** / Password**: 12345678**) https://us02web.zoom.us/j/89894292674?pwd=MXc1V21Mc1BQdUNOL0VaYVdINWNyUT09

13:30	A Compact Multi-Layer Silicon Platelets Rectangular to Circular Waveguide Transition *Sheng Li (National Key Laboratory of Science and Technology on Space Microwave, China Academy of Space Technology); Jinping Yang (Shanghaitech University); Zhongbo Zhu (National Key Laboratory of Science and Technology on Space Microwave, China Academy of Space Technology); Wentao Wu (CAS Center for Excellence in Superconducting Electronics (CENSE) Shanghai Institute of Microsystem and Information Technology, CAS); Shicheng Yang and Xiaojun Li (National Key Laboratory of Science and Technology on Space Microwave, China)*
13:50	A Study on Design of Microstrip Linear Tapered Line Impedance Transformer Using FFT *Taisei Urakami (National Institute of Technology, Kagawa College); Yusuke Kusama (Toyo University)*
14:10	Silicon-On-Insulator Based Micromachining Technology for Sub-Terahertz Waveguide Devices *Xinghai Zhao, Oleksandr Glubokov, Joachim Oberhammer (KTH Royal Institute of Technology)*
14:30	Dual-Frequency Out-Of-Phase Power Divider with Integrated Impedance Transformation *Rahul Gupta (IIIT Delhi); Muhammad A. Chaudhary (Ajman University, Ajman); Mohammad S. Hashmi (IIIT Delhi)*
14:50	Prediction of Transmission Loss by Considering Uncertainties of Dielectric Properties in Millimeter Waveband *Yuanfeng She and Yuto Kato (National Institute of Advanced Industrial Science and Technology, Japan); Jiro Hirokawa (Tokyo Institute of Technology)*
15:10	A K/Ka-Band Substrate Integrated Coaxial Line Power Divider for 4-Input and 16-Output Beamforming Multi-Layer Feeding Network *Yifang Wei (Heriot-Watt University); Christian Arnold (Tesat-Spacecom GmbH & Co. KG); Jia-Sheng Hong (Heriot-Watt University)*

Technical Program — December 11, 2020 (Friday)	
Session	**Regular Session: RS44** **Multi-Band, Broadband, Tunable, and Reconfigurable Filters (3)**
Date/ Time	Friday, December 11, 2020 / 13:30 – 15:10 (GMT+8)
Chair(s)	Yingjiang Guo (China Academy of Engineering Physics)
Zoom link	Room 4 (Zoom Conference ID: **820 0553 8701** / Password: **12345678**) https://us02web.zoom.us/j/82005538701?pwd=TVVnTmVvb0hqb0JlK1NIaHN3eFR4dz09

13:30	Extending the Upper-Passband Range in Planar Bandstop-Type Transversal Filtering Sections *Roberto Gómez-García and Li Yang (University of Alcalá)*
13:50	Compact Balanced Bandpass Filter with Wideband Common Mode Suppression *Bosang Pan and Haoshen Zhu (South China University of Technology); Wenjie Feng (Nanjing University of Science and Technology & South China University of Technology); Wenquan Che and Quan Xue (South China University of Technology)*
14:10	Fully Reconfigurable Bandpass Filter with Coupling Resonators and Arbitrary Transmission Zero Position *Fynn Kamrath, Daniel Miek, Patrick Boe and Michael Höft (Kiel University)*
14:30	Design of Compact Low-Pass Filter Utilizing Off-Axis Suspened Stripline Resonator *Junsong Ning, Shirong Bu, Zhanping Wang, Cheng Zeng and Liu Chen (University of Electronic Science and Technology of China)*
14:50	Design of Quasi-Reflectionless Filters with Simple Topologies *Sen Lu (Xiamen University); Kai-Da Xu (Xi'an Jiaotong University & Tohoku University); Yingjiang Guo (China Academy of Engineering Physics); Qiang Chen (Tohoku University)*

Technical Program — December 11, 2020 (Friday)	
Session	**Regular Session: RS45** **Antenna Theory and Design (4)**
Date/ Time	Friday, December 11, 2020 / 13:30 – 15:30 (GMT+8)
Chair(s)	Jenn-Hwan Tarng (National Chaio Tung University)
Zoom link	Room 5 (Zoom Conference ID: **896 9694 3159** / Password: **12345678**) https://us02web.zoom.us/j/89696943159?pwd=NFVKU1cwVHpYbGp4UUpkdUtRbUdBQT09

13:30	A Conductor-Backed Coplanar Waveguide Leaky-Wave Antenna with Metasurface *Jiarong Liang and Juhua Liu (Sun Yat-sen University)*
13:50	Improvement of Null Steering Antenna Using Two Parasitic Elements *Jo Tamura and Hiroyuki Arai (Yokohama National University)*
14:10	A Stratified Radome Design for Millimeter Wave Antennas *Wentao He, Qinnan Xie, Chunsheng Liu, Qiang Ding and Yan Zhang (Southeast University)*
14:30	Tapered Fork-Shape Antenna Having Small Ground for Ultra Wide Band Applications *Girish Awadhwal (Electronics Engineering Department UIT Bhopal India); Bostani Ali (American University of Kuwait)*
14:50	Modelling and Analysis of Two-Dimensional Beam Scanning Antenna Array Using Cylindrical Wave Excitation *Yuchen Ma and Jun Hong Wang (Beijing Jiaotong University)*
15:10	A Corrugated Wideband Ground Shared Vivaldi Antenna for Symmetrical Dual-Beam mmWave 5G Applications *M. Idrees Magray, Yin Chen Chang and Jenn-Hwan Tarng (National Chaio Tung University)*

Technical Program — December 11, 2020 (Friday)

Session	**Regular Session: RS46** **Microwave Medical and Biomedical Applications Systems**
Date/ Time	Friday, December 11, 2020 / 13:30 – 15:10 (GMT+8)
Chair(s)	Mahesh P. Abegaonkar (Indian Institute of Technology Delhi (IITD)); Fan Wu (Southeast University)
Zoom link	Room 6 (Zoom Conference ID: **837 3101 1227** / Password: **12345678**) https://us02web.zoom.us/j/83731011227?pwd=cnIvSnBYL3hLNXBVOXpLVDJwZE5Idz09

13:30	Early Detection of Neurological Degenerative Diseases Based on the Protein Chirality Detection with Microwaves *Wending Mai (The Pennsylvania State University); Yifan Chen and Xiaoyou Lin (The University of Waikato)*
13:50	Comparative Analysis of Phase-Comparison Monopulse and MUSIC Algorithm Methods for Direction of Arrival (DOA) Estimation of Multiple-Subject Respiration Measured with Doppler Radar *Shekh M. M. Islam, O. Boric-Lubecke and V. M. Lubecke (University of Hawaii at Manoa)*
14:10	Cardiopulmonary Effective Radar Cross Section (ERCS) for Orientation of Sedentary Subject Using Microwave Doppler Radar *Farjana Snigdha, Khaldoon Ishmael, Ryan Neville and Olga Boric-Lubecke (University of Hawaii)*
14:30	A Hybrid Microwave-Optical Applicator for Local Muscle Warming and Monitoring *Allann Al-Armaghany, Kin-Fai Tong and Terence Leung (University College London)*
14:50	Switched Beam Endfire Antenna for On-Body Links at V-Band *Shakti Singh Chauhan, Mahesh P. Abegaonkar and Ananjan Basu (IIT Delhi)*

Technical Program — December 11, 2020 (Friday)

Session	**Regular Session: RS47** **Satellite Systems**
Date/ Time	Friday, December 11, 2020 / 13:30 – 15:30 (GMT+8)
Chair(s)	Anyong Qing (Southwest Jiaotong University)
Zoom link	Room 7 (Zoom Conference ID: **816 5626 3461** / Password: **12345678**) https://us02web.zoom.us/j/81656263461?pwd=SUpjSnhBOWpCQUdmeUk5M3Yvam1Bdz09

13:30	Scattered Wave Deception Jamming Against Squint SAR Using Frequency Diverse Array *Jianfei Yu, Wei Nie, Mu Zhou and Zengshan Tian (Chongqing University of Posts and Telecommunications); Bang Huang (University of Electronic Science and Technology of China)*
13:50	A Two-Stage Fast Pseudo-Code Acquisition Algorithm Based on PMF-FFT *Bai Zhongyuan, Li Bo and Cui Wen (Xi 'an University of Posts and Telecommunications)*
14:10	A Switchable 256 Elements Ka Band Circularly Polarized Phased Array Using 45 Degree Linearly Polarized Element *Hao Liu (University of Electronic Science and Technology of China); Anyong Qing (University of Electronic Science and Technology of China & Southwest Jiaotong University); Tao Chen, Zhengdong Yu and Zhengsheng Zhang (RDW Technology Co., Ltd)*
14:30	A 19 GHz Vector-Sum Phase Shifter Using Active Current-Mode Coupler and Bi-Phase Modulator for Satellite Communication *Yu-Teng Chang, Wen-Yu Wang and Hsin-Chia Lu (National Taiwan University)*
14:50	A Flexible Element Antenna for Ka-Band Active Phased Array SATCOM Transceiver *Dongwon You (Tokyo Institute of Technology); Daisuke Awaji (Fujikura Ltd, Electronic Technologies R&D center, High-frequency Materials Research Department); Atsushi Shirane, Hiraku Sakamoto and Kenichi Okada (Tokyo Institute of Technology);*
15:10	An S-Band Solid-State Power Amplifier for Low Earth Orbit Satellite Telemetry Communications *Emrah Öncü, Rasit Tutgun and H. Doğan Kılıç (TÜBİTAK Space Technologies Research Institute)*

Technical Program — December 11, 2020 (Friday)

Session	Regular Session: RS48 RFICs
Date/ Time	Friday, December 11, 2020 / 15:50 – 17:50 (GMT+8)
Chair(s)	Tongde Huang (Nanjing University of Science and Technology)
Zoom link	Room 1 (Zoom Conference ID: **872 2463 5879** / Password: **12345678**) https://us02web.zoom.us/j/87224635879?pwd=cTJSSWM5WEo2T1A0clRreHdXZHJTdz09

15:50	A 17-48 GHz Wideband CMOS LNA for 5G Wireless Applications *Taotao Xu, Haoshen Zhu and Cao Wan (South China University of Technology); Liang Wu (The Chinese University of Hong Kong, Shenzhen); Wenquan Che and Quan Xue (South China University of Technology)*
16:10	A Concurrent MICS/ISM Dual-Band CMOS Low Noise Amplifier for an Integrated Body Sensor Network *Kendra Anderson, Farshid Tamjid and Nicole McFarlane (University of Tennessee)*
16:30	Octagonal On-Chip Wideband Bandpass Filter with a Tunable Transmission Zero in 0.18-Mm (Bi)-CMOS Technology *Yi Wang, Tongde Huang, Wen Wu and Yuehua Li (Ministerial Key Laboratory of JGMT, Nanjing University of Science and Technology)*
16:50	Dual-Band Concurrent LNA with Low Gain Deviation and Low Noise Figure *Yuito Sawayama, Takayuki Morishita, Kiyotaka Komoku and Nobuyuki Itoh (Okayama Prefectural University)*
17:10	A 14-91 GHz Distributed Amplifier in 65-Nm CMOS *Ching-Min Hsu, Yunshan Wang and Huei Wang (National Taiwan University)*
17:30	A Simultaneous Phase Shifter and Up-Converter for the 28/38/60-GHz Bands in 28-Nm CMOS *David del Río (CEIT- Basque Research and Technology Alliance (BRTA), Tecnun - University of Navarra and National Chiao Tung University); Chia-Jen Liang and Ching-Wen Chiang (National Chiao Tung University); Roc Berenguer (Tecnun - University of Navarra); Mau-Chung Frank Chang (University of California, Los Angeles,); Yen-Cheng Kuan (National Chiao Tung University)*

Technical Program — December 11, 2020 (Friday)	
Session	**Regular Session: RS49** **Resonators (2)**
Date/ Time	Friday, December 11, 2020 / 15:50 – 17:50 (GMT+8)
Chair(s)	Abhishek Sharma (City University of Hong Kong)
Zoom link	Room 2 (Zoom Conference ID: **841 5220 9741** / Password: **12345678**) https://us02web.zoom.us/j/84152209741?pwd=dDBGalFia1FIY25YT0Zpekc5WXZWZz09

15:50	Compact Triple-Mode Bandpass Filter Based on a Capacitive-Loaded Isosceles Right-Angled Triangular Patch Resonator *Huihui Fei, Qiao Zhang, Lingyun Zhou, Weidong Chen and Chang Chen (University of Science and Technology of China)*
16:10	Miniaturized Dual-Band Filter Utilizing Stacked Dual-Mode Patch-Loaded SIW Cavity *Huihui Fei, Qiao Zhang, Lingyun Zhou, Weidong Chen and Chang Chen (University of Science and Technology of China)*
16:30	A New and Simple Approach on Multi-Resonator Circuit Based Chipless RFID Tags for IoT Applications *Engin Dogan (Nigde Omer Halisdemir University); Ali Kursad Gorur (Nevsehir HBV University); Ceyhun Karpuz (Pamukkale University); Adnan Gorur (Nigde Omer Halisdemir University)*
16:50	Novel Design Concept for Microstrip Dual Band Bandpass Filter by Using Patch Loaded Resonator and Short-Circuited Stub *Ceyhun KARPUZ and Gülfem Balasu FIRAT UNUK (Pamukkale University); Pınar ÖZTÜRK ÖZDEMİR (National Defense University)*
17:10	Sparsely Discretized Refracting Dielectric Huygens' Metasurface at 28 GHz *Abhishek Sharma and Alex Wong (City University of Hong Kong)*
17:30	Eccentric Split Ring Resonator (ESRR) - an Approach Towards Realizing Dynamic Range Rotational Structures *Vaishnavi Bhope and A. R. Harish (Indian Institute of Technology, Kanpur)*

Technical Program — December 11, 2020 (Friday)

Session	**Regular Session: RS50** **Directional Couplers, Hybrids, Packaging and Others**
Date/ Time	Friday, December 11, 2020 / 15:50 – 17:50 (GMT+8)
Chair(s)	Wing Shing Chan (City University of Hong Kong)
Zoom link	Room 3 (Zoom Conference ID: **898 9429 2674** / Password**: 12345678**) https://us02web.zoom.us/j/89894292674?pwd=MXc1V21Mc1BQdUNOL0VaYVdINWNyUT09

15:50	A Highly Reconfigurable Coupler with Tunable Frequency, Phase Difference and Coupling Coefficient Based on Circular Patch *Yufei Pan and Wing Shing CHAN (City University of Hong Kong); Shao Yong ZHENG (Sun Yat-sen University)*
16:10	Design of a 3-dB LC Power Divider with a ±45° Phase Shift *Wentao Wu (Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences); Jinping Yang (ShanghaiTech University); Sheng Li (National Key Laboratory of Science and Technology on Space Microwave, China Academy of Space Technology); Zhen Wang (Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences)*
16:30	Supply Induced Jitter-Aware Method for SSO (Simultaneous Switching Noise) for Multiple IPs Integrated in Single Package Substrate *Michael Chang (HTC)*
16:50	Integration of RF Circuitry and Liquid Cooling Chamber on LTCC Substrate for Tile TR Module *Huaiqiang Yu, Lei Zhang, Yulong Liu and Lijun Yi (Sichuan Institute of Piezoelectric and Acousto-optic Technology)*
17:10	Fast Optimization of Hairpin Filters Using Model-Based Deviation Estimation *Xuan He, Xi-Qing Xu and Jian-Yi Zhou (Southeast University)*
17:30	Novel Design of an Anisotropic Dielectric Lens with Spatially Discontinuous Boundary Based on Quasi-Conformal Transformation Electromagnetics *Yuma Takano and Atsushi Sanada (Osaka University)*

Technical Program — December 11, 2020 (Friday)

Session	Regular Session: RS51 Scattering and Propagation (2)
Date/ Time	Friday, December 11, 2020 / 15:50 – 17:30 (GMT+8)
Chair(s)	Shen Shou Max Chung (National Penghu University of Science and Technology); Quen-Wei Lin (City University of Hong Kong)
Zoom link	Room 4 (Zoom Conference ID: **820 0553 8701** / Password: **12345678**) https://us02web.zoom.us/j/82005538701?pwd=TVVnTmVvb0hqb0JlK1NIaHN3eFR4dz09

15:50	Shadowing a Small Size but Large Radar Cross Section Object with a Large Size but Small Radar Cross Section Object *Shen Shou Max Chung (National Penghu University of Science and Technology); Shih-Chung Tuan (Oriental Institute of Technology)*
16:10	Through-The-Wall Microwave Imaging with Minimum Antennas and an Auxiliary Metallic Bar *Hadi Alidoustaghdam, Semih Dogu, Mehmet Akıncı and Mehmet Çayören (Istanbul Technical University)*
16:30	A Modified Newton Method Formulation for Microwave Imaging *Egemen Bilgin (MEF University); Semih Dogu, Sema Cosgun and Mehmet Çayören (Istanbul Technical University)*
16:50	Novel UWB Antipodal Vivaldi Antenna with Paddle Shaped Stubs and Frustum Shaped Dielectric Lens for Microwave Imaging Applications *Athul O Asok and Sukomal Dey (IIT Palakkad)*
17:10	A Dual-Polarized Lens Antenna Using Gradient Refractive Index (GRIN) Metasurface *Quen-Wei Lin, Yat-Sing To and Hang WONG (City University of Hong Kong)*

Technical Program — December 11, 2020 (Friday)	
Session	**Regular Session: RS52** **Millimeter-Wave/THz and Optical Antennas (2)**
Date/ Time	Friday, December 11, 2020 / 15:50 – 17:50 (GMT+8)
Chair(s)	Chuanming Zhu (The 38th Research Institute of China Electronic Technology Group Corporation);
Zoom link	Room 5 (Zoom Conference ID: **896 9694 3159** / Password: **12345678**) https://us02web.zoom.us/j/89696943159?pwd=NFVKU1cwVHpYbGp4UUpkdUtRbUdBQT09

15:50	Design of Patch Antenna in Embedded Glass Fan Out Package for 77-GHz Automotive Radar *Chuanming Zhu, Yan Wang, Zongming Duan, and Yuefei Dai (The 38th Research Institute of China Electronic Technology Group Corporation)*
16:10	A Magneto-Electric Dipole Antenna Using SISL for Millimeter-Wave Applications *Xiyao Wang (South China University of Technology & Nanjing University of Science and Technology); Wenquan Che, Wanchen Yang and Quan Xue (South China University of Technology); Kaixue Ma and Yu Luo (Tianjin University)*
16:30	Design of an Artificially Engineered All Metallic Lens Antenna *Basudev Majumder (Indian Institute of Space Science and Technology); Vinnakota Sarath Sankar (BITS Pilani, Hyderabad Campus); Himanshu Meena (Indian Institute of Space Science & Technology)*
16:50	Generating Large Depth-Of-Field Nondiffracting Beam by Low-Profile Reflectarray *Yue Teng Chen, Xian Qi Lin, Yong Fan, Shi Lin Liu and Lei Cao (University of Electronic Science and Technology of China)*
17:10	A Millimeter-Wave Aperture-Coupled Simple Low- Profile Magneto-Electric Antenna *Linyu Cai and Kin-Fai Tong (University College London)*
17:30	Compact Wideband Yagi Loop Antenna Array for 5G Millimeter-Wave Applications *Yang Cheng and Yuandan Dong (University of Electronic Science and Technology of China)*

Technical Program — December 11, 2020 (Friday)

Session	Regular Session: RS53 Measurement Techniques
Date/ Time	Friday, December 11, 2020 / 15:50 – 17:50 (GMT+8)
Chair(s)	Shaolin Liao (Illinois Institute of Technology) Wogong Zhang (Nanjing Chuhang Technology Co Ltd)
Zoom link	Room 6 (Zoom Conference ID: **837 3101 1227**/ Password: **12345678**) https://us02web.zoom.us/j/83731011227?pwd=cnIvSnBYL3hLNXBVOXpLVDJwZE5Idz09

15:50	Ultra-Sensitive Parity-Time Symmetry Based Graphene FET (PTS-GFET) Sensors *Lu Ou (Hunan University); Shaolin Liao (Illinois Institute of Technology)*
16:10	A Robust Millimeter Wave Imaging Algorithm for Personnel Screening *Yang Meng (University of Electronic Science and Technology of China); Chuan Lin (Southwest Jiaotong University); Anyong Qing (University of Electronic Science and Technology of China & Southwest Jiaotong University); Natalia K. Nikolova (McMaster University)*
16:30	Radar Concept to Monitor Space Without Scanning *A. E. Martirosyan, R. B. Kostanyan, P. H. Muzhikyan and H. H. Azizbekyan (Institute for Physical Research, National Academy of Sciences Ashtarak-2)*
16:50	Brain Stroke Classification Using a Microwave Transmission Line Approach *Xiaoyou Lin, Yifan Chen, Zheng Gong (University of Waikato); Hui Zhang (Beijing Institute of Collaborative Innovation)*
17:10	A Machine Learning Approach to Predict Yield with Thermal Variation on Silicon Based on CTS *Michael Chang, Simon Kao, Patrick Xue, Bryant Hsu, Andrew Chien, Kevin Chung, Robby Ho (HTC)*
17:30	A Compact Single-Board Solution for Commercializing Cost-Effective 77 GHz Automotive Front Radar *Wogong Zhang and Nannan Li (Nanjing Chuhang Technology Co Ltd); Jinzhong Yu (Institute of Semiconductors, Chinese Academy of Sciences); Erich Kasper (Nanjing Chuhang Technology Co Ltd & University of Stuttgart)*

Technical Program — December 11, 2020 (Friday)	
Session	**Regular Session: RS54** **Millimeter-Wave and THz Biomedical Applications (2)**
Date / Time	Friday, December 11, 2020 / 15:50 – 17:30 (GMT+8)
Chair(s)	Lin-Sheng Wu (Shanghai Jiao Tong University)
Zoom link	Room 7 (Zoom Conference ID: **816 5626 3461**/ Password: **12345678**) https://us02web.zoom.us/j/81656263461?pwd=SUpjSnhBOWpCQUdmeUk5M3Yvam1Bdz09

15:50	Classification of Biological Phenomenon-Of-Interest via Dielectric Information Probe *Zheng Gong, Yifan Chen, Xiaoyou Lin (The University of Waikato); Yahui Ding (University of Electronic Science and Technology of China)*
16:10	A Novel Vital Sign Sensing Algorithm for Multiple People Detection Based on FMCW Radar *Wen Wang, Yong Wang, Mu Zhou and Wei Nie (Chongqing University of Posts and Telecommunications)*
16:30	A 3-D Ray Tracing Model for Short-Range Radar Sensing of Hand Gestures *Yifan Lu, Changzhan Gu, Lin-Sheng Wu and Junfa Mao (Shanghai Jiao Tong University)*
16:50	K-Band Low Phase Noise Inductive Coupled VCO *Naoki Tajima, Kiyotaka Komoku, Takayuki Morishita and Nobuyuki Itoh (Okayama Prefectural University)*
17:10	D-Band Push-Push Coupled-Line Oscillator in 90-Nm CMOS *Surajit Kumar Nath and Daekeun Yoon (National Chiao Tung University);*

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