



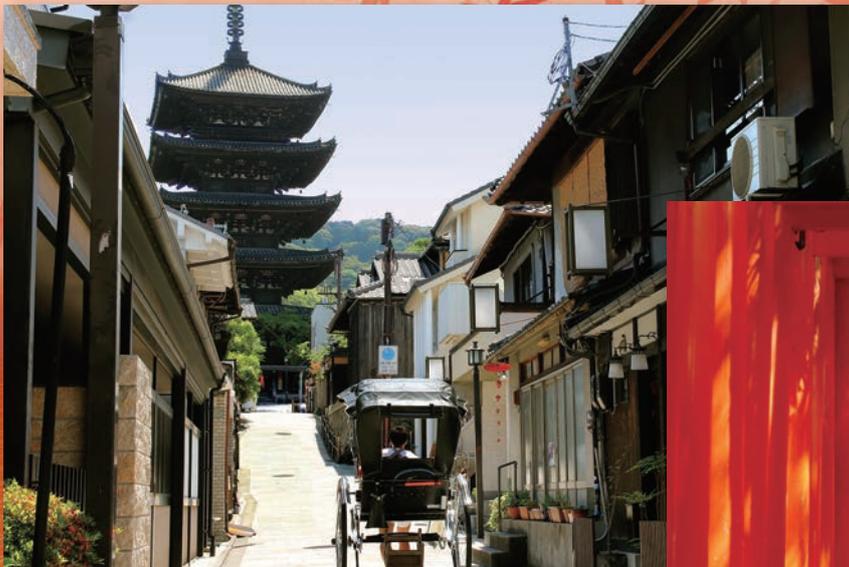
2018 Asia-Pacific Microwave Conference

APMC 2018

November 6-9, 2018, Kyoto International Conference Center, Kyoto, Japan

<http://www.apmc2018.org/>

PROGRAM BOOK



Harmonious World Connected by Microwaves

Organizer and Sponsor

The Institute of Electronics Information and Communication Engineers (IEICE) of Japan

Supporter

Ministry of Internal Affairs and Communications

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Ministry of Internal Affairs
and Communications

CONFERENCE AT A GLANCE

11/6 (Tue)	Room B1	Room B2	Room C1	Room C2	Room D
	10:00 WS-B1 RF Front End Modules for 4G/5G Applications	WS1-B2 mm-Wave GaN for 5G Applications	WS1-C1 Advances in RF Wireless Power Transfer and Energy Harvesting Techniques	WS-C2 Wireless Power Transfer in Asia	WS-D Proof of Concepts of 5G Radio Access Technologies and 5G System Trials
	13:00 14:00	Lunch			
17:00	WS2-B2 Recent Progress of Terahertz Sources for Advanced Applications	WS2-C1 Industrial Wireless Applications, Standardizations and Technologies			
10:00	Room J	Room 104	Room E	Room K	Room 103
	WS-J Trends of State-of-the-Art Measurement Technology		SC1-E Reconfigurable Synthesized Transmission Line – Ultra-Low-Cost Phase Control Unit for Phased Arrays	SC-K Practical Evaluation of MIMO Antenna	SC-103 Bits2Waves – Building a 16 QAM Radio by Hand in One Day
	13:00 14:00	Lunch			
	17:00	WS2-104 An Example of Bilateral Collaborative Workshop from Grassroots Activity (Thailand-Japan Microwave, TJMW)	SC2-E Ultra High Resolution Millimeterwave and Microwave Photonics Radars		
Welcome Reception (Banquet Hall Sakura) (17:30-19:30)					

11/7 (Wed)	Room A	Room B1	Room B2	Room C1	Room C2	Room D	Room K	Room 103
	8:30	WE1-B1 Printed Antennas and Arrays	WE1-B2 Innovative Filter Banks, Multiplexers, and Multiband Filters	WE1-C1 Special Session: Micromachined Terahertz Systems - A New Heterogeneous Integration Platform enabling the commercialization of the THz frequency spectrum (M3TERA)	WE1-C2 Transmitting and Receiving Elements for WPT and RFID systems	WE1-D Advances in Power Amplifier Design Techniques	WE1-K Special Session: Research and Development of Space and Satellite Communication System	WE1-103 Special Session: Trends of 5G Technologies in Asia-Pacific Region
	10:10	WE1-IF Interactive Forum I (10:00-11:30)	Break					
	10:30		WE2-B1 Antennas for Wireless Application	WE2-B2 Advances in Theory and Design for Filters and Group Delay Circuits	WE2-C1 Metastructures and Microstructures for Terahertz and Microwave Applications	WE2-C2 Rectifiers and Rectennas	WE2-D Power Amplifiers and Signal Generator	WE2-K Adaptive Techniques for Improved Spectrum Efficiency
	12:10 13:30	Lunch						
15:30	APMC 2018 Opening - Special Talk & Keynote Address (Annex Hall)							
15:50	Break							
17:30	WE4-B1 5G/Millimeter Wave Antenna Technologies	WE4-B2 Special Session: Connected Vehicles for Advanced Safety and Comfort Mobility in 4G/5G and Beyond	WE4-C1 Metamaterials, EMBGs and FSSs I	WE4-C2 WPT and RFID Applications	WE4-D Low Noise Amplifiers	WE4-K Terahertz, Millimeter-wave and Microwave Photonics Applications	WE4-103 Special Session: EuMA Special Session	
Young Professionals and Women in Engineering/Microwaves Reception (Banquet Hall Swan) (18:00-19:30)								

11/8 (Thu)	Room A	Room B1	Room B2	Room C1	Room C2	Room D	Room K	Room 103	
	8:30	TH1-B1 Antennas for Sensing Applications	TH1-B2 Advanced Design of Filtering Power Dividers and Balanced Filters	TH1-C1 Special Session: Terahertz Technologies for Beyond 5G Mobile Communications	TH1-C2 Special Session: Solar Power Satellite and Related Microwave Technologies	TH1-D Advances in Power Amplifiers I	TH1-K Special Session: New Developments and Technologies for Space Applications	TH1-103 Microwave Frequency/Signal Control Circuits	
	10:10	TH1-IF Interactive Forum II (10:00-11:30)	Break						
	10:30		TH2-B1 Antenna Arrays and Beam-forming I	TH2-B2 Novel Filter Design Techniques Based on Coupling Matrix	TH2-C1 Terahertz Active Devices	TH2-C2 Design and Characterization of Microwave Components	TH2-D Advances in Power Amplifiers II	TH2-K Microwave Biomedical Applications	TH2-103 JSPS 188 Committee/ JEMEA Special Session: Innovative Microwave Heating and Chemistry
	12:10 13:30	Lunch							
	15:10	TH3-IF Interactive Forum III (14:00-15:30)	TH3-B1 Antenna Arrays and Beam-forming II	TH3-B2 Novel Tunable Technologies and Structures	TH3-C1 Millimeter-wave Devices and Circuits	TH3-C2 EM Analysis and Scattering Problems	TH3-D mmW Low Noise Amplifiers	TH3-K Beam Controlled Communication Techniques and Radar/Communication Systems	TH3-103 Electromagnetic Compatibility (EMC) I
15:30	Break								
17:10	TH4-B1 Applications of Metasurfaces	TH4-B2 Novel Active Structures and Components	TH4-C1 High-speed and Broadband Millimeter and THz Wave Systems	TH4-C2 Novel Wireless Systems and Propagation	TH4-D Monolithic Receivers and Transmitters	TH4-K System Techniques - Material, Component, Circuit, and Evaluation Aspects	TH4-103 Electromagnetic Compatibility (EMC) II		
APMC 2018 Banquet (The SODOH Higashiyama Kyoto) (18:40-21:00)									

11/9 (Fri)	Room A	Room B1	Room B2	Room D	Room J	Room K	Room 103
	8:30	FR1-B1 Millimeter-wave Antenna Technologies	FR1-B2 Couplers and Dividers I	FR1-D Special Session: Recent Advances in Metamaterial and Metasurfaces for Antenna Applications	FR1-J Special Session: Silicon-Based mmW/THz Technologies	FR1-K High Frequency Oscillators	FR1-103 Microwave Heating and Chemistry
	10:10	FR1-IF Interactive Forum IV (10:00-11:30)	Break				
	10:30		FR2-B1 Broadband and Multi-band Antennas	FR2-B2 Couplers and Dividers II	FR2-D Metamaterials, EMBGs and FSSs II	FR2-J Radar Architectures, Signal Processing, and Systems	FR2-K Emerging III-V Devices/ Circuits
	12:10 13:30	Lunch					
15:10	FR3-IF Interactive Forum V (14:00-15:30)	FR3-B1 Smart and Reconfigurable Antennas	FR3-B2 Novel Technologies for Wireless Communication Systems	FR3-D Metamaterials, EMBGs and FSSs III	FR3-J Radar Applications and Remote Sensing	FR3-K Special Session: Advance in Numerical Simulation Technology Does Not Stop ! - Technological Collaboration Brings a New World	FR3-103 Microwave Measurement and Sensing
15:30		Break					
APMC 2018 Closing and Award Ceremony (Room D) (15:30-17:10)							

FLOOR PLAN

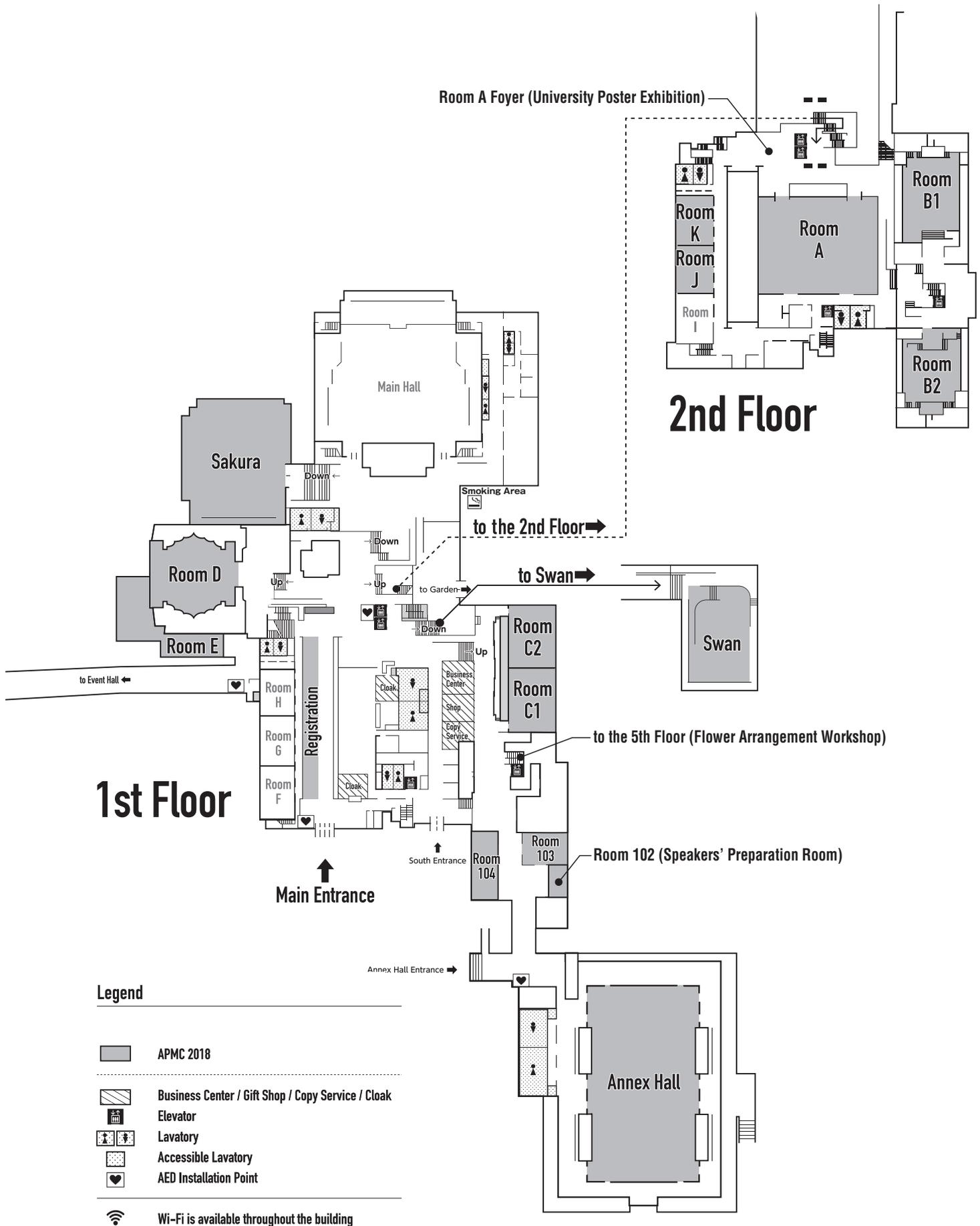


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GREETINGS FROM THE ORGANIZING COMMITTEE CHAIR

It is my pleasure and honor to welcome all delegates from many countries and regions to the commemorative 30th Asia-Pacific Microwave Conference (APMC 2018) to be held in Kyoto, which is the 1000 year old capital of Japan and one of the most suitable cities to celebrate the long lasting APMC. After the start in India at 1986, the conference has made a substantial contribution to the exchange of the latest scientific and technological knowledge in microwave related fields.

The APMC is dedicated to a broad range of high frequency related topics, from materials and technologies to integrated circuits, and systems, with emphasis on hardware development, and measurement. The recent topics of information technologies such as IoT (Internet of Things), AI (Artificial Intelligence) and 5G (Fifth Generation) will also influence the embodiment of the

microwave technology. I sincerely hope that the technologies presented here will contribute to the field of microwave industry for realizing the affluent society.

As the Organizing Committee Chair, I would like to express my sincere appreciation to all the authors, speakers, and reviewers over the world together with the committee members for great efforts to substantiate the conference.



Ikuo Awai
APMC 2018 Organizing Committee Chair

GREETINGS FROM THE STEERING COMMITTEE CHAIR

It is my great honor to welcome all of you to the 2018 Asia-Pacific Microwave Conference (APMC 2018), which will be held at Kyoto International Conference Center (ICC Kyoto), Kyoto, Japan, on November 6-9, 2018. The series of APMC began in 1986 and APMC 2018 is going to be the commemorative 30th conference. Celebrating its 30th conference, Professor Tatsuo Itoh will give us a special talk titled "Birth and Growth of APMC."

The key concept of APMC 2018 is "Harmonious World Connected by Microwaves." It expresses our deep wishes that not only countries but also various academic fields and their applications are connected by microwave technology, to sympathize and harmonize each other for creating happiness and prosperity of human society.

At the APMC 2018 Opening, Mr. Takehiro Nakamura, Senior Vice President of NTT DOCOMO, INC., will give a keynote address on "The future outlook and applications opened up by 5G." For the Workshops and Short Courses, 13 programs are prepared. They cover the cutting-edge microwave technologies and provide us up-to-date topics, such as RF front end modules and mm-Wave GaN for 5G applications, advanced WPT systems, Ultra high resolution radar systems. Also, we have prepared special sessions on silicon-based mm-Wave technologies, new developments for space applications, recent advances in metamaterial for antenna applications, connected vehicles for advanced safety and comfort mobility. Furthermore, 4 tracks of "Student and Young Engineer Design Competition" are planned to encourage young engineers.

As you may know, Kyoto flourished as a Japanese ancient capital and center of Japan for a long time. Kyoto is one of the most famous tourist spots, where many people from home and abroad visit. Here in Kyoto, Japanese classic culture has been succeeded until today. We have deepened our cultures by harmonizing with other Asian cultures. And many famous electronic component manufacturers in Kyoto incorporate the latest technologies from Europe and America and harmonize them with their own original technologies. Thus, I believe the historical city "Kyoto" is the most suitable place to connect microwave technology to various applications, such as energy transfer, microwave heating, production of chemicals and medical applications.

APMC 2018 is organized and sponsored by the Institute of Electronics, Information and Communication Engineers (IEICE). It is technically sponsored by IEEE MTT-S and AP-S, EuMA, URSI, and many other organizations. Also, it is supported by the Ministry of Internal Affairs and Communications of Japanese Government. I would like to express my gratitude to the authors, the attendees, and the sponsors for their contributions to APMC 2018.



It is our supreme pleasure to invite you to APMC 2018 in Kyoto to have useful discussions. I sincerely request you to come to Kyoto at this occasion.

Toshio Ishizaki
APMC 2018 Steering Committee Chair

MESSAGE FROM THE TECHNICAL PROGRAM COMMITTEE CHAIR

On behalf of the Technical Program Committee, I would like to proudly announce the technical program for APMC 2018. APMC 2018 has attracted 862 paper submissions from 47 countries all over the world and has accepted 585 papers, which is the record in the history of APMCs in Japan. APMC 2018 offers 71 quality technical sessions in 7 tracks, focusing on topical

areas of microwave science and technologies including 5G, intelligent mobility, wireless power transfer, Terahertz waves, and microwave heating and chemistry.

On the first day, APMC 2018 offers 9 cutting-edge workshops and 4 intensive short courses in the focused areas. Following three days provide 12 special sessions, 54 oral sessions, and 5

interactive forums including 9 invited talks by distinguished speakers in the field. An opening session is scheduled in the afternoon on the second day. The APMC 2018 Opening includes a special talk entitled “Birth and Growth of APMC” celebrating 30th APMC by Dr. Tatsuo Itoh, Professor at UCLA, and a plenary talk entitled “The future outlook and applications opened up by 5G” by Mr. Takehiro Nakamura, NTT DOCOMO, INC., Japan, envisioning frontiers in upcoming 5G technologies. Special activities on Women in Engineering/Women in Microwaves and Young Professionals are also scheduled on the second day in collaboration with IEEE MTT-S including a social get-together event in the evening. Those who are taking part in and/or are interested in these activities are welcome to participate. A collaborative special session with EuMA is scheduled on the second day as well to introduce leading activities in Europe.

On the third day, student and young engineer design competitions are held at Room A in conjunction with Exhibitions and Interactive Forums to encourage future microwave engineers. The competitions consist of four design tracks of a microwave active circuit design, a filter design, a wireless power transfer

system design, and a transmission line challenge. The competitions are supported by some of the leading microwave test and measurement companies. A special session on microwave heating and chemistry is also scheduled in collaboration with the JSPS 188 Committee/JEMEA.

The APMC 2018 Closing and Award Ceremony is held on the last day after all the technical sessions. The ceremony starts with a series of omnibus talks on unique microwave activities from Kansai area in microwave meteorological astronomy radar technologies, microwave medical applications, and microwave heating and chemistry, followed by the award ceremony of APMC 2018 Prize and APMC 2018 Student Prize.

We hope you enjoy the APMC 2018 program and looking forward to meeting you in Kyoto.



Atsushi Sanada
APMC 2018 Technical Program
Committee Chair

SPONSORS

Organizer and Sponsor

- The Institute of Electronics Information and Communication Engineers (IEICE) of Japan

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- Ministry of Internal Affairs and Communications

Technical Sponsors

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- URSI
- IEEE MTT-S Japan/Kansai/Nagoya Chapters
- IEEE AP-S Kansai Joint Chapter
- IEICE Technical Committee on Microwaves
- IEICE Technical Committee on Electronics Simulation Technology
- IEICE Technical Committee on Microwave Photonics
- IEICE Technical Committee on Integrated Circuits and Devices
- IEICE Technical Committee on Electron Devices
- IEICE Technical Committee on Antennas and Propagation
- IEICE Technical Committee on Wireless Power Transfer
- IEICE Technical Committee on Short Range Wireless Communications
- IEICE Technical Committee on Intelligent Transport Systems Technology
- IEICE Technical Group on Terahertz Application Systems
- Japan Institute of Electronics Packaging
- Japan Society of Electromagnetic Wave Energy Applications
- The Radiation Science Society of Japan
- IEEJ Investigating R&D Committee on Advanced Technology for Progress the Electromagnetic Wave Application

- IEEJ Investigating R&D Committee on Highly Secure-Reliable Wireless Networks
- Japan Society for the Promotion of Science, 188th Committee on Electromagnetic-Field-Excited Reaction Fields

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- IMST GmbH
- MPI Corp.
- Tokyo Instruments, Inc./Terasense Group Inc.

Subsidizing Institutions

- Research Foundation for the Electrotechnology of Chubu
- Support Center for Advanced Telecommunications Technology Research, Foundation
- The Murata Science Foundation
- The Telecommunication Advancement Foundation

GENERAL INFORMATION

CONFERENCE SITE

The conference venue, Kyoto International Conference Center (ICC Kyoto), is located in the north of Kyoto City. ICC Kyoto is the largest conference complex in Kyoto with its good location and surroundings, and has 50 years of experience in holding large-scale international events. It boasts its attractive architectural design, ample lobby space, and a beautiful Japanese garden, providing good networking opportunities for visitors. For more information, please refer to the website: <http://www.icckyo.or.jp/en/>

KYOTO

Kyoto is one of the best cities in the world to travel according to some influential travel magazines. It served as the capital of Japan from 794 to 1868 and has been nurturing its unique culture for over 1200 years. Today, Kyoto has 17 UNESCO World Cultural Heritage Sites and over 2000 temples and shrines. Kyoto is famous for its historic sceneries, wonderful architectures, traditional cultures and hospitality of the local Japanese. People from all over the world will feel comfortable in the city. In 2016, Kyoto attracted more than three million international visitors. Particularly in November, many tourists come to Kyoto to enjoy the autumn and colorful trees, such as maples.

Kyoto is located near the center of Japan, and has a very convenient public transportation. It takes about 75 minutes from Kansai International Airport to Kyoto's central railway station by the JR Airport Express "Haruka" train, or 90 minutes by limousine bus.

REGISTRATION

Pre-Registration (Early Bird & Advance) and On-Site Registration

Those who intend to participate in APMC 2018, including the presenters, session chairs, committee members, etc., are requested to register for the "Conference" (from November 7 to 9, 2018) and/or the "Workshops/Short Courses" (on November 6, 2018).

Pre-Registration (Early Bird & Advance) is available on the APMC 2018 website from August 1 to October 23, 2018.

For those who cannot register beforehand, On-Site Registration is available at the Registration Desk at the Conference venue from November 5 to 9, 2018.

Registration Fees

The registration fees are separated for the "Conference" and "Workshops/Short Courses," but you can take advantage of a better deal by selecting "Superpass," which covers both the "Conference" and "Workshops/Short Courses."

Those who registered for the "Conference" will get admission to the Welcome Reception (on November 6, 2018), the APMC 2018 Opening with the Special Talk and the Keynote Address (on November 7, 2018), and the Technical Sessions (from November 7 to 9, 2018).

Those who registered for the "Workshops and Short Courses" will get admission to the Workshops/Short Courses on November 6, 2018.

There are also privileges of membership of the APMC 2018 sponsoring organizations; "IEICE," "IEEE MTT-S," "IEEE AP-

• Presenter (Presenting Author)

◇ 1: Regular (Member), 2: Regular (Non-Member), 3: Student/Retiree (Member), 4: Student/Retiree (Non-Member)

	Superpass				Conference			
	PS1	PS2	PS3	PS4	PC1	PC2	PC3	PC4
Early Bird (OPEN - 8/31)	¥53,000	¥73,000	¥31,000	¥51,000	¥50,000	¥70,000	¥29,000	¥49,000

* Presenter can present ONE paper. A single presenter can give multiple presentations by paying an additional presentation fee of 20,000 JPY per paper for the second and subsequent papers.

* "Superpass" covers both the "Conference" and "Workshops/Short Courses."

• Audience

	Superpass				Conference				Workshops/Short Courses	
	AS1	AS2	AS3	AS4	AC1	AC2	AC3	AC4	AW1	AW2
Early Bird (OPEN - 9/15)	¥33,000	¥53,000	¥11,000	¥31,000	¥30,000	¥50,000	¥9,000	¥29,000	¥6,000	¥16,000
Advance (9/16 - 10/23)	¥38,000	¥58,000	¥16,000	¥36,000	¥35,000	¥55,000	¥14,000	¥34,000	¥8,000	¥18,000
On Site (11/5 - 11/9)	¥48,000	¥68,000	¥26,000	¥46,000	¥45,000	¥65,000	¥24,000	¥44,000	¥10,000	¥20,000

GENERAL INFORMATION

S,” “EuMA,” “URSI,” “JIEP,” “JEMEA,” or “IEEJ.” Please visit the sponsoring organizations’ websites for membership application, only if you like.

The Registration Fee differs depending on:

- a. the application date for registration
- b. whether the registrant is a student/retiree or not
- c. whether the registrant is a member of any of the APMC 2018 Sponsoring Organizations above or not

*Those who selected “Student” will be required to show their student ID on their arrival at the Registration Desk at the Conference venue. In case you are a student now and if you are graduating from school before the date of APMC 2018 (November 5, 2018), please bring a copy of your student ID to the Registration Desk. The student ID must be written either in English or Japanese.

*The definition of “Retiree” is as follows: a person who is attaining the age of 60 years as of November 5, 2018, and not gainfully employed. Those who selected “Retiree” will be required to show a legal ID on their birthday on their arrival at the Registration Desk at the Conference venue. The ID must be written either in English or Japanese.

*Please note that, from October 24 to November 4, 2018, the Pre-Registration will NOT be accepted. Those who could not complete registration by October 23, 2018, should register during the conference period.

Registrant’s Kit

Those who pre-registered for the “Conference” (or “Superpass”) will each receive a set of the Conference Registrant’s Kit, which includes a digital copy of the Conference Proceedings, a printed name tag, a Conference Bag, tickets for lunch boxes, etc.

The kit will also include a souvenir gift for those who pre-registered early; the number of the gifts is limited and they will be provided on a first-come-first-served basis.

Those who pre-registered for the “Workshops/Short Courses” (or “Superpass”) will each receive a digital copy of the Workshops/Short Courses Digest.

The registration fees (“Superpass,” “Conference,” and “Workshops/Short Courses”) do NOT include the Banquet fee.

Accompanying Family Members

Those who pre-registered for the “Conference” (or “Superpass”) can register their family members for APMC 2018. Accompanying Family Members should be the registrant’s family or relative, such as his/her spouse (husband or wife), sibling (brother or sister), child, etc., who will not attend the conference sessions, but will participate in the conference’s official events, such as the “Welcome Reception” (free of charge), and the “APMC 2018 Banquet” (10,000 or 15,000 Japanese yen (JPY) per person).”

Please note that Accompanying Family Members cannot attend

the technical sessions of the Conference or Workshops/Short Courses, and will not be provided with a copy of the Conference Proceedings or Workshops/Short Courses Digest.

Those who are interested in participating in the Conference sessions should register individually.

APMC 2018 Banquet

The APMC 2018 Banquet is scheduled to be held on the evening of Thursday, November 8, 2018 for the registrants of the “Conference” (or “Superpass”).

The price of a Banquet Ticket for one person differs depending on the registration date:

- From August 1 to October 23, 2018 : 10,000 JPY per person
- From November 5 to 9, 2018 : 15,000 JPY per person

The number of banquet tickets is limited, and the tickets will be sold on a first-come-first-served basis.

Payment Method

For Pre-Registration, the payment should be done using the on-line Credit Card Settlement System, which will be available in the “Personal Account Page.”

If you have difficulty in paying by credit card, you can select another way, “Bank Transfer,” by clicking the button in the Registration System. Payment by bank transfer must be completed within 10 days from the registration date. If we find the payment not completed by then, the registration will become invalid.

For On-Site Registration, the payment should be done in cash (JPY only), or by credit card.

Acceptable Card Types:

- Pre-Registration: VISA, Master, Amex, Diners, JCB
- On-site Registration: VISA, Master, Amex, Diners (JCB is not acceptable)

Cancellation

In the event of cancellation, no refund will be made after the completion of payment, no matter what the reason may be.

Registration Desk

The Registration and Information Desk will be located on the 1st floor of the Conference venue, ICC Kyoto, and will be open during the following hours:

- November 5, 2018 : 16:00-19:00
- November 6, 2018 : 09:00-18:00
- November 7, 2018 : 08:00-17:00
- November 8, 2018 : 08:00-17:00
- November 9, 2018 : 08:00-14:30

HOTEL ACCOMMODATIONS

Rooms at ten hotels in Kyoto, which are accessible from/to ICC Kyoto, are available through the official travel agent of APMC 2018. Reservations can be made through the website for the hotel accommodations.

<http://www.apmc2018.org/accommodation.html>

GENERAL INFORMATION

OFFICIAL TRAVEL AGENT

JTB Global Marketing & Travel Inc., the official travel agent of APMC 2018, has reserved a sufficient number of rooms at several hotels in Kyoto, Otsu, and Osaka for APMC 2018. Reservations will be processed according to the application.

Please contact JTB Global Marketing & Travel Inc. for information on sightseeing tours as well.

JTB Global Marketing & Travel Inc.

Convention Center

2-3-14 Higashi-Shinagawa, Shinagawa-ku, Tokyo 140-8604

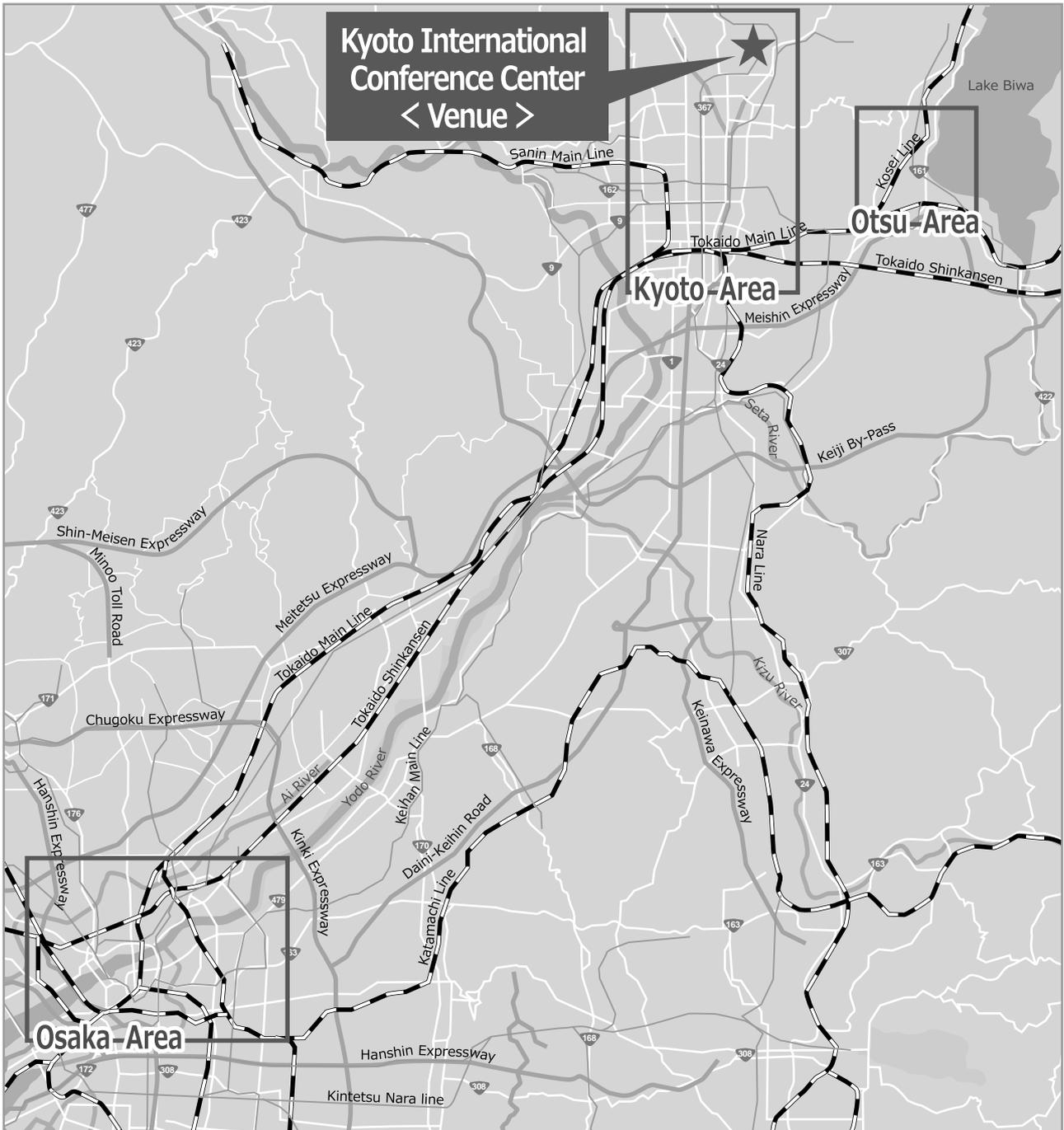
Japan

Business hours: 10:00-17:00

Fax: +81-3-5495-0685

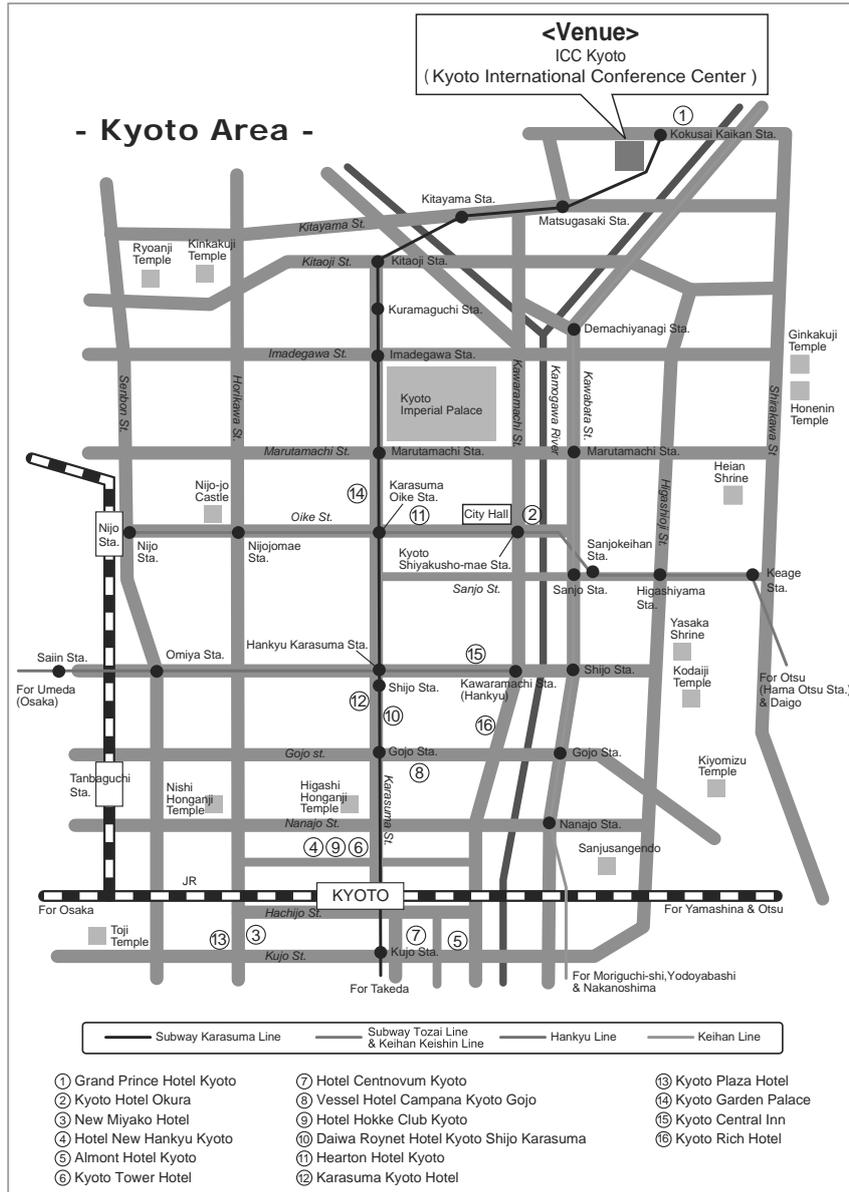
HOTEL LOCATION

- Whole Area -

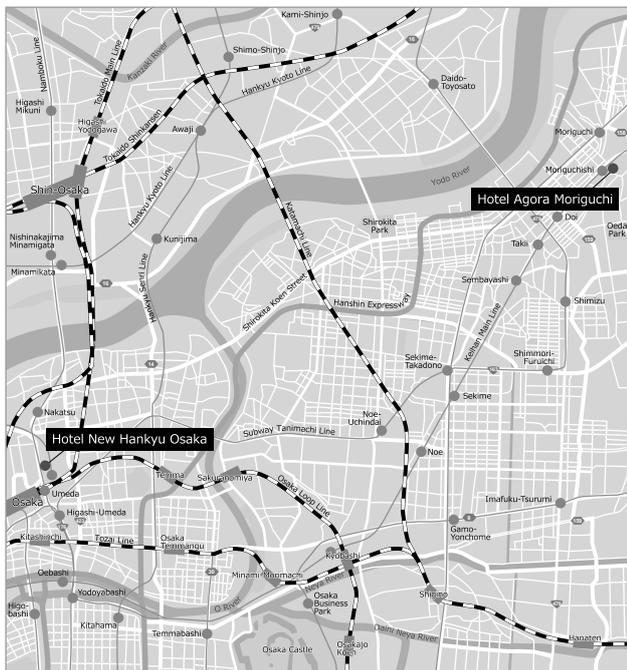


GENERAL INFORMATION

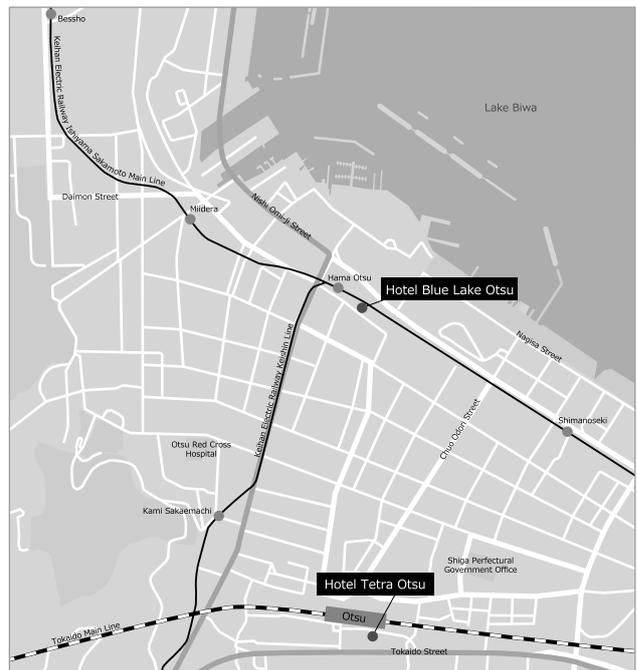
HOTEL LOCATION



- Osaka Area -



- Otsu Area -



GENERAL INFORMATION

YOUTH HOSTEL INFORMATION

Those who wish to save the budget may prefer the following youth hostels:

- Utano Youth Hostel (about one hour to the Conference site by train and bus)

https://www.yh-kyoto.or.jp/utano_en/

- Kiyomizu Youth Hostel (about one hour to the Conference site by train)

<http://www.jyh.or.jp/e/i.php?jyhno=5214>

TRANSPORTATION

From JR Kyoto Station to Conference Site by Subway:

From JR Kyoto Station to Conference Site by Subway Take the Karasuma Subway Line from JR Kyoto Station to Kokusaikaikan Station (K01), which takes about 20 minutes, and the one-way fare is 290 JPY per person. Once you get off at Kokusaikaikan Station, you should follow the signs written in English, which will lead you to ICC Kyoto in about five minutes. There is a roofed walkway all the way from the station to ICC Kyoto, so that you will never get wet even on a rainy day.

From JR Kyoto Station to Conference Site by taxi:

It takes about 30 minutes from Kyoto Station in normal traffic. The fare is about 3,500 JPY for one way.

Detailed information is available at the following website:

Access to Kyoto and Conference site (ICC Kyoto):

http://www.icckyo.or.jp/en/visitor-2/access/getting_here/

OTHER INFORMATION

Electricity

Electricity supply is 100 Volts/60 Hz in the western Japan including the Osaka-Kyoto area, and 100 Volts/50 Hz in the eastern Japan.

Weather

Kyoto lies in the temperate zone and has four distinct seasons. November is the end of autumn, when Kyoto gradually gets colder. The temperature ranges between 7°C (45°F) and 17°C (63°F). This will be the best season for colorful autumn leaves.

Non-Smoking Policy

Smoking is prohibited in the whole building of ICC Kyoto, except in designated outdoor smoking areas.

Currency

Japanese yen (JPY) is the only currency that is used at stores and restaurants. You can exchange foreign currencies for Japanese yen at foreign exchange banks and other authorized money exchangers by showing your passport. The exchange rate

fluctuates daily.

Traveler's Checks and Credit Cards

As traveler's checks are not common in Japan, you should use them only at major hotels and leading banks. Major credit cards, such as VISA, Master, AMEX, and JCB, can be used at restaurants, hotels, souvenir shops, etc. Union Pay card is also available at many restaurants, hotels, shops, etc.

Tipping

Tipping is not customary in Japan. For example, you do not need to tip servers at restaurants.

Japanese Traffic

There are usually heavy traffic jams in the downtown area of Kyoto. Bus is convenient but mostly late. Subway is preferred. From Otsu to Kyoto, or from Osaka to Kyoto, train is a good option.

Internet connection

Wi-Fi is available for free in the building of ICC Kyoto. Please select the network "APMC2018" on your electronic device. For further settings, please refer to the sheet distributed to the APMC 2018 registrants at the venue.

SOCIAL PROGRAM

APMC 2018 offers you original and fascinating events; The Welcome Reception, the Opening Ceremony, the Banquet, the Flower Arrangement Workshop, and the Closing Session and Award Ceremony.

Welcome Reception

All the participants in the Conference are invited to the Welcome Reception to be held from 17:30 to 19:30 on Tuesday, November 6, at the Banquet Hall "Sakura" in ICC Kyoto. A splendid Japanese drum performance by Kyoto Tachibana High School Taiko Club, the "Kagamiwari" ceremony - cracking the top of a large barrel of sake (Japanese rice-wine) with wooden hammers to celebrate the success of the conference -, and beautiful and gorgeous maiko/geiko performance will entertain all the participants. The Welcome Reception Tickets will be distributed to the registrants of the Conference and their accompanying family members (free of charge).

APMC 2018 Opening

The APMC 2018 Opening will be held from 13:30 to 15:30 on Wednesday, November 7, at the Annex Hall of ICC Kyoto.

The ceremony starts with a welcome address from the APMC 2018 Organizing Committee Chair and a brief introduction of the event by the APMC 2018 Steering Committee Chair, followed by congratulatory addresses from invited representatives of IEICE, IEEE MTT-S, IEEE AP-S, EuMA, and URSI. Then, a brief report

GENERAL INFORMATION

on paper review results of APMC 2018 is provided by APMC 2018 Technical Program Committee Chair.

Subsequently, the Special Talk by Prof. Tatsuo Itoh, Distinguished Professor of Electrical Engineering, University of California, Los Angeles, USA, and the Keynote Speech by Mr. Takehiro Nakamura, Senior Vice President and General Manager of the 5G Laboratories, NTT DOCOMO, Japan will be given.

Young Professionals and Women in Engineering/Microwaves Reception

Students, participants and volunteers in APMC 2018 who have graduated from their first professional degree within the past 15 years are cordially invited to the Young Professionals Reception held in Banquet Hall Swan during 18:00-19:30 on November 7. The Reception is jointly held with Women in Engineering/Microwaves and every woman is invited as well.

The reception includes a special talk by Prof. Sungtek Kahng, Incheon National University, Korea, introducing potential carrier plans and professional networks in the microwave community to Young Professionals. Also, Prof. Ke Wu from Ecole Polytechnique University of Montreal will provide insightful talk for women in engineering and microwaves.

The admission is free of charge and no pre-registration is required.

Special Speakers:

- Prof. Sungtek Kahng, Incheon National University, Korea
- Prof. Ke Wu, Ecole Polytechnique University of Montreal, Canada

Sponsors:

IEEE MTT-S MGA Young Professionals Committee, IEEE WIE Sendai, IEEE MTT-S MGA Committee, IEEE WIE JC, IEEE WIE Kansai, IEEE WIE Nagoya

Flower Arrangement Workshop

Participate in a hands-on workshop for a glimpse into "Ikebana," the Japanese art of flower arrangement, on November 8, 2018. Ms. Tomoyo Wells, a Master of Ohara School of Ikebana, will lead you to a fascinating Ikebana world.

The workshop will be held from 10:00 to 11:30 in the morning and from 14:00 to 15:30 in the afternoon at Room 510 (the 5th floor) in ICC Kyoto. Both men and women are welcome. Let's appreciate the beauty of arranged flowers with Japanese Tea and sweets! You can take those flowers home after the workshop. Each round of the workshop accepts 16 people, and the tickets are available at the registration desk with free of charge on a first-come-first-served basis.

APMC 2018 Banquet

We hope you enjoy "Omotenashi" - the spirit of Japanese hospitality - and the breathtaking autumn scene in Kyoto at the Banquet!

The Banquet will be held from 18:40 to 21:00 on Thursday, November 8, at the "SODOH Higashiyama Kyoto" in the Higashiyama district of Kyoto. The SODOH Higashiyama Kyoto offers you the best of Kyoto-style Italian cuisine in the vicinity of Kodaiji Temple - the prominent autumn leaves spot -, Ninenzaka, Sannenzaka streets - full of traditional shops and cute boutiques -, and Kiyomizudera Temple - a UNESCO World Heritage site -. Vegetarian meals and halal meals are available as well.

After savoring every mouthful at the Banquet, we will proceed to Kodaiji Temple and admire the beautiful garden and the autumn foliage with evening illumination.

The buses will take the Banquet participants to the Banquet venue, and back to JR Kyoto Station or ICC Kyoto after the Banquet. The buses will depart at 17:30 in front of the entrance of ICC Kyoto. Do not miss the bus.

APMC 2018 Closing and Award Ceremony

The APMC 2018 Closing and Award Ceremony will be held from 15:30 to 17:10 on Friday, November 9, at Room D in ICC Kyoto. The winners of APMC 2018 Prize and APMC 2018 Student Prize will be awarded.

MEETING INFORMATION

APMC ISC Meeting

The APMC International Steering Committee (ISC) Meeting will be held on Wednesday, November 7, 2018 at Room 555, ICC Kyoto. The APMC ISC members representing the APMC countries are invited.

Date: Wednesday, November 7, 2018

Time: 10:30-12:30

Place: Room 555, ICC Kyoto

IEEE MTT-S Chapter Chairs Meeting and Workshop

The Chapter Chair Meeting and Workshop will be held on Wednesday, November 7, 2018 at Room E, ICC Kyoto to provide an opportunity to share important and useful information for chapter operations. All the chairs of the IEEE Microwave Theory and Techniques Society (MTT-S) Chapters and Joint Chapters are invited.

Date: Wednesday, November 7, 2018

Time: 15:50-20:00

Place: Room E, ICC Kyoto

APMC 2018 PRIZE AND APMC 2018 STUDENT PRIZE

The APMC 2018 Prize will be awarded to the authors of outstanding papers submitted to APMC 2018. In addition, the APMC 2018 Student Prize will be given to outstanding student papers presented at APMC 2018. These prizes will be judged by

the APMC 2018 Award Committee, and the certificates and rewards will be given to the awardees at the APMC 2018 Closing and Award Ceremony, which is scheduled at 15:30 on Friday, November 9, 2018 at Room D, ICC Kyoto.

APMC 2018 Prize Finalists

Compact and High Isolation Microstrip Six-Channel Diplexer Using Multi-Mode Stepped-Impedance Resonators

Chi-Feng Chen

Compact Quasi-Lumped Element Bandpass Filters for Single-ended High-Purity Frequency Multipliers Applications

Feng-Jun Chen

High-output-power and Reverse-isolation G-band Power Amplifier Module Based on 80-nm InP HEMT Technology

Hiroshi Hamada

Measurements of Interface Conductivity of Copper-clad Dielectric Substrates at Millimeter Wave Frequencies Using TE_{02δ} Mode Dielectric Rod Resonator Excited by NRD Guide

Naoki Hirayama

A Novel Concept for 2D Butler Matrix with Multi-Layers Technology

Cheng-Hung Hsieh

An Empirical Performance Evaluation of Time Synchronization Using GNSS Signal Simultaneously Transmitted with 10 Gbps Optical On-Off Keying

Yuya Kaneko

Evaluation of >140-GHz Band Filter Bank Prototype

Takashi Kawamura

Via-less Waveguide to Microstrip Line Transition with Tolerance to Misalignment of Circuit Patterns

Takashi Maruyama

Prototype of 12/21GHz-band Dual-circularly Polarized Receiving Antenna for Satellite Broadcasting

Masafumi Nagasaka

Development of rapid heating and cooling technology by single-mode microwave cavity applied for nanoparticle synthesis

Masateru Nishioka

A Novel Multi-Band Look-Up Table Based Digital Predistorter with a Single Common Feedback Loop

Tomoya Ota

A 28GHz 4-Channel Transmit/Receive RF Core-Chip with Highly-Accurate Phase Shifter for High SHF Wide-band Massive MIMO in 5G

Wataru Yamamoto

APMC 2018 Student Prize Finalists

Studies on a Frequency-Stabilized Power-Adjustable Magnetron Based on Equivalent Model

Xiaojie Chen

Realization of Cross-Coupled X- and Y-Shaped Dual-Mode Dielectric Resonator Filters

Daniel Miek

Performance Evaluation of an IEEE 802.11af Prototype in a Suburban Environment

Antonio III Montejo

A 60 GHz Frequency Doubler with Differential Output in 130 nm SiGe BiCMOS Technology

Vincent Rieß

An X-Band Flat Broadband Transformation-Optics-Driven Luneburg Lens Antenna for Synthetic Aperture Radar

Yuanyan Su

Constant Permeability Design of Cylindrical Invisibility Cloaks with Hyperbolic Coordinate Transformation Based on Transformation Electromagnetics

Yuma Takano

Advanced Mode Unity Using Loop Antennas Proximate to Reflector for Orbital Angular Momentum Communication

Ryohei Yamagishi

Unit Cell Block for 3-D Isotropic Negative-Index Metamaterials Impedance-Matched to Free Space by Using Dielectric Cubes and Metallic Mesh

Takuya Yamaguchi

Highly Stable Terahertz Resonant Tunneling Diode Oscillator Coupled to Photonic-Crystal Cavity

Xiongbin Yu

A 26GHz-band Image Enhancement Type 1-Bit DAC for Direct Digital RF 1-bit Modulator

Junhao Zhang

Dual-channel 56 Gb/s PAM-4 Electro-Absorption Modulator Driver for 3D Wafer Scale Packaging

Xi Zhang

Mm-Wave High Gain Substrate Integrated Cavity Excited Patch Antenna Array

Jianfeng Zhu

TECHNICAL SESSIONS (Special Sessions)

All the presentations at the Special Sessions have been invited by the APMC 2018 Technical Program Committee. The details of each Special Session are written in the Program of the "TECHNICAL SESSIONS (Oral Sessions)" (See pages 14–33).

Wednesday Special Sessions

8:30-10:10

WE1-C1: Micromachined Terahertz Systems - A New Heterogeneous Integration Platform enabling the commercialization of the THz frequency spectrum (M3TERA)

Chairs: Yinggang Li (Ericsson AB, Sweden), Joachim Oberhammer (KTH Royal Institute of Technology, Sweden)

This special session reports on the results of the 2015-2018 European initiative M3TERA, a EUR 4.26 million project in the H2020 framework programme. M3TERA envisions the widespread usage of low-cost THz technology in our society, enabled by a micromachined heterogeneous integration platform. This THz-system concept provides an unprecedented way to highly-integrated, volume-manufacturable, cost- and energy-efficient, reconfigurable millimeter-wave and submillimeter-wave systems, with the potential to finally enable the large-scale commercialization of the heavily sought-after frequency spectrum between 100 GHz and 1 THz. The primary demonstrator of this project is a highly-miniaturized point-to-point communication links using the 129-134 and 141-148.5 GHz bands, and comprises a micromachined-waveguide platform including a micromachined low-loss diplexer, with broadband SiGe Rx and Tx active circuits which are heterogeneously integrated directly into the waveguides, a horn-antenna feeding system with a micromachined-waveguide interface, and a dielectric-lens antenna with an overall gain of 42 dBi. The secondary demonstrator is a 122 GHz ISM-band radar system for medical applications, primarily vital-sign detection (both heard-beat and breathing monitoring successfully demonstrated). The project partners are Technikon (Austria), KTH Royal Institute of Technology (Sweden), Chalmers University of Technology (Sweden), Ericsson (Sweden), Infineon (Austria), CSEM (Switzerland), Anteral (Spain).

8:30-10:10

WE1-K: Research and Development of Space and Satellite Communication System

Chairs: Takana Kaho (NTT, Japan), Shigeo Kawasaki (Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan)

Aerospace research and development has become active globally in recent years. The proposed session introduces the latest efforts of space development in the world. First, development and inflight status of the JAXA's asteroid sample return mission Hayabusa2 is presented. Some up-to-date interplanetary communication technologies aboard Hayabusa2 such as Ka-band system are also covered in this talk. Next, research and development of space development and satellite communication systems and onboard equipment in USA, Europa, and Japan. We are considering NASA, ESA, Mitsubishi Electric, SKY Perfect JSAT, and some companies as candidates for other lecturers.

8:30-10:10

WE1-103: Trends of 5G Technologies in Asia-Pacific Region
Chair: Hiroshi Okazaki (NTT DOCOMO, Japan)

This session focuses on trends of 5G technologies in Asia-Pacific region in terms of technical and strategic aspects in microwave technologies. The session is overviewed by Dr. Hiroshi Okazaki, NTT DOCOMO, Japan, and followed by special talks by Mr. Tim Lee, the Co-Chair of the IEEE 5G Initiative, and a special talk Prof. Arokiaswami Alphones, the General Chair of APMC 2019 in Singapore.

15:50-17:10

WE4-B2: Connected Vehicles for Advanced Safety and Comfort Mobility in 4G/5G and beyond

Chairs: Kei Sakaguchi (Tokyo Institute of Technology & Fraunhofer HHI, Japan), Kazuaki Takahashi (Panasonic Corporation, Japan)

As represented by autonomous driving, major evolutions are taking place in our transportation environment and mobility. Under these circumstances, it is said that multi-gigabit and/or ultra-low-latency communication technology based on 5G communication is indispensable for achieving more advanced safety and more efficient mobility. In the connected car society realized by such communication technology, V2X (Vehicle to everything), effective utilization of huge amount of data gathered by in-vehicle sensors and infrastructure sensors is expected. In this session, we will discuss advanced V2X technologies and social evolutions that V2X brings from the viewpoint of various industries such as car manufacturers, in-vehicle equipment suppliers, mobile communication operators, communication equipment suppliers.

15:50-17:30

WE4-103: EuMA Special Session

Chair: Itziar Maestrojuán (Anteral, Spain)

The EuMA Special Session presents several significant European advances in different aspects of microwave research, including terminal antennas for Ka-band satellite communication with beam steering agility, effective solutions for the miniaturization of substrate integrated waveguide components and D-band MMIC design for high data rate communications.

TECHNICAL SESSIONS (Special Sessions)

Thursday Special Sessions

8:30-10:10

TH1-C1: Terahertz Technologies for Beyond 5G Mobile Communications

Chairs: Akihiko Hirata (Chiba Institute of Technology, Japan), Ho-Jin Song (POSTECH, Korea)

The fifth generation (5G) in mobile communications is currently under active investigation by industry, and targets of cutting edge research are moving to beyond 5G mobile communications, such as terahertz wireless communications. Terahertz wireless systems enable much more simultaneous wireless connections, with much higher capacity than the 5G systems. The objective of this workshop is to provide a current snap shot on this exciting topic to APMC attendees by reviewing the state-of-the-art recent progress in the terahertz technologies for wireless communications beyond 5G, ranging from the terahertz transceivers, passive devices, antenna, channel modeling, and the standardization activities.

8:30-10:10

TH1-C2: Solar Power Satellite and Related Microwave Technologies

Chairs: Young-Jin Park (KERI & UST, Korea), Naoki Shinohara (Kyoto University, Japan)

A Solar Power Satellite (SPS) is one of important allocations of a Microwave Power Transfer (MPT). The MPT, which is one of a Wireless Power Transfer (WPT) technologies, are originally started to develop toward the SPS from 1970. The SPS can cover weak points of the MPT, e.g. low beam efficiency, and can improve a value of the MPT, e.g. improvement and stabilization of power generation by solar cells in space. Recently, many Asian countries are interested in the SPS and the MPT and have already designed new SPS. In this session, we organize the 'SPS and related microwave power transfer technologies' and show recent activities of feasibility studies in Asian countries.

9:10-10:10

TH1-K: New Developments and Technologies for Space Applications

Chairs: Guillaume Callet (UMS, France), Kenjiro Nishikawa (Kagoshima University, Japan)

Recent developments of technologies and space qualification of industrialized processes allow preparing the next generation of devices for space applications. High frequencies radars (THz), sub millimeter arrays, high integration of GaN based diodes are challenging topics under development that are taking benefits of the last technologies improvement. These topics should be developed in this session and the requirements for future space systems will be discussed.

10:30-12:10

TH2-103: JSPS 188 Committee/JEMEA Special Session: Innovative Microwave Heating and Chemistry

Chairs: Jun Fukushima (Tohoku University, Japan), Shuntaro Tsubaki (Tokyo Institute of Technology, Japan)

This special session focuses on the application of microwave energy for chemical processes, material processing, medical devices, as well as food and agricultural industries. Microwave heating process is expected to contribute to form green and sustainable industries due to significant energy reduction enabled by a microwave rapid heating. In addition, recent advances in high power semiconductor amplifier provides a new heating technology by taking advantage of precise control of microwave frequency, phase and power. In this session, invited talks will be given by frontier researchers in this field under support from Japan Society of Electromagnetic Wave Energy Applications (JEMEA) and the 188 Committee (Electromagnetic Field- Excited Reaction Fields) of the University-Industry Research Committees, Japan Society for Promotion of Science (JSPS).

TECHNICAL SESSIONS (Special Sessions)

Friday Special Sessions

8:30-10:10

FR1-D: Recent Advances in Metamaterial and Metasurfaces for Antenna Applications

Chairs: Toru Uno (Tokyo University of Agricultural Technology, Japan), Naobumi Michishita (National Defense Academy, Japan)

This special session covers recent advances in metamaterials and metasurfaces for antenna applications. The nonreciprocal metamaterials have been developed for enhancement of gain and reduction of beam squint in leaky wave antennas. The metaline antennas with loop, helical and spiral configurations have been proposed for circular polarized antennas. The planar CRLH leaky wave antenna has been developed with the asymmetry unit cell structure. The carpet and illusion cloaking by using reflectarray have simple and very thin structure. The negative refractive index material composed of multi-layer ceramic capacitors has been also proposed.

8:30-10:10

FR1-J: Silicon-Based mmW/THz Technologies

Chairs: Shuhei Amakawa (Hiroshima University, Japan), Davide Guermandi (IMEC, Belgium)

This special session will focus on silicon-based (Si CMOS and SiGe HBT/BiCMOS) millimeter-wave and terahertz integrated circuits operating in the W-band (75 to 110 GHz) or above. Applications of these frequencies include (but not limited to) radars, imaging, and ultrahigh-speed communications. The special session will consist of invited talks by leading experts from Asia-Pacific, the Americas and Europe, and possibly a few contributed papers. The invited talks will cover new concepts and possible use cases of these extremely high frequencies, advances in circuit design techniques, and state-of-the-art silicon results.

13:30-15:10

FR3-K: Advance in Numerical Simulation Technology does not stop ! - Technological Collaboration brings a New World -

Chairs: Hideaki Kimura (NTT Network Service Systems Laboratories, Japan), Yasuhide Tsuji (Muroran Institute of Technology, Japan)

The advance of numerical simulation technology has been remarkable due to improvement of computer performance. In design systems, technological progress is changing the role of simulation, that is, from 'designer's support' to 'leader'. In this special session, we introduce the recent simulation technology about automatic design and topology optimization by cooperated with other technologies such as neural network (NN), artificial Intelligence (AI) and so on. Furthermore, we predict that the future academia, industry and society which will be created by further evolution of numerical simulation technology.

APMC 2018 OPENING - Special Talk & Keynote Address

13:30 - 15:30

Wednesday, November 7

Annex Hall

APMC 2018 Opening

The APMC 2018 Opening will be held from 13:30 to 15:30 on Wednesday, November 7, at the Annex Hall of ICC Kyoto.

(Please see P.7 for further details.)

Special Talk

Special Talk: Birth and Growth of APMC

Speaker: Tatsuo Itoh, Distinguished Professor of Electrical Engineering, Univ. of California, Los Angeles, U.S.A.

Abstract:

The birth of the APMC and its progress to date will be presented. Starting from heroic effort of Indian scholars who provided the foundation, there were Chinese scholars with a futuristic vision which has eventually formed the starting point of APMC in the present format. The competitiveness of the APMC has been grown when Japanese scholastic fathers responded to Chinese suggestion to make the APMC one of three most important international microwave science and engineering events. This talk will be used for soliciting historical and unique experiences from each of all organizing committees. The unique aspects of the APMC distinct from IEEE IMS and EuMC are that the organization and operation are chosen to be most efficient for each organizer. Operations and organization vary from country to country and city to city. Cultural difference is advantageously exploited except in the area of technical contents. After several rounds of execution, it was decided that the technical contents of each APMC should not allow any compromise. This type of operation has contributed to nurture the capability of generation after generation of microwave engineers and scientists.

Biography:

Tatsuo Itoh received Ph.D. in Electrical Engineering from the University of Illinois, Urbana in 1969. From 1976 to 1977, he was with SRI International, Menlo Park, CA. From 1977 to 1978, 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 of Engineering.



In 1991, he joined the University of California, Los Angeles as Distinguished Professor of Electrical Engineering and holder of the TRW Endowed Chair in Microwave Electronics (currently Northrop Grumman Endowed Chair).

He received several awards including IEEE Third Millennium Medal (2000), IEEE MTT Distinguished Educator Award (2000), and Microwave Career Award

from IEEE MTT Society (2011). He was elected to a member of National Academy of Engineering in 2003. In 2009, he received Outstanding Career Award from European Microwave Association. He received Alumni Award for Distinguished Service from College of Engineering, University of Illinois in 2012. In 2018, he received IEEE Electromagnetics Award.

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 Autònoma 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.

Keynote Address

Keynote Address: The Future Outlook and Applications Opened up by 5G

Speaker: Takehiro Nakamura, Senior Vice President and General Manager of the 5G Laboratories, NTT DOCOMO, JAPAN

Abstract:

In this presentation, DOCOMO's views on time plan, NW deployment & migration scenarios, spectrum deployment scenarios for 5G deployment in 2020 will be provided. And updates on DOCOMO's 5G trial activities with variety of vertical industry players will be presented, also.

Biography:

Mr. Takehiro Nakamura joined NTT Laboratories in 1990. He is now SVP and General Manager of the 5G Laboratories in NTT DOCOMO, Inc.

Mr. Nakamura has been engaged in the standardization



activities for the W-CDMA, HSPA, LTE/LTE-Advanced and 5G at ARIB in Japan since 1997. He has been the Acting Chairman of Strategy & Planning Committee of 5G Mobile Communications Promotion Forum(5GMF) in Japan since October 2014.

Mr. Nakamura has also been contributing to standardization activities in 3GPP since 1999, including as a contributor to 3GPP TSG-RAN as chairman from April 2009 to March 2013.

He is also very active in standardization of C-V2X/Connected Car in ARIB and ITS Info-communications Forum in Japan. He is now a leader of Cellular System Application Task Group of ITS Info-communications Forum.

TECHNICAL SESSIONS (Oral Sessions)

Wednesday, November 7

8:30 - 10:10

Room B1

Session WE1-B1

Printed Antennas and Arrays

Chairs: Haruichi Kanaya (Kyushu University, Japan), Manabu Yamamoto (Hokkaido University, Japan)

WE1-B1-1

A Compact Dual Notched Bands CPW-Fed Slot Antenna

Chu-Huan Lin (National Chiao Tung University, Taiwan); Wen-Chi Cheng (National Chiao-Tung University, Taiwan); Sung-Jung Wu (National Chiao Tung University, Taiwan); Jenn-Hwan Tarn (National Chiao Tung University, Taiwan)

WE1-B1-2

Microstrip Leaky-Wave Antennas with Longitudinally Uniform and Non-Uniform Periodical Loadings of Shorting Pins

Danpeng Xie (University of Macau, Macao); Lei Zhu (University of Macau, Macao)

WE1-B1-3

A Wideband High-gain

Transmitarray Based on Quasi-Yagi Antenna Element

Fan Qin (Xidian University, P.R. China); Lulan Wan (Xidian University, P.R. China); Lihong Li (Xidian University, P.R. China); Jia Xie (Xidian University, P.R. China); Yi Liu (Xidian University, P.R. China); Wenchi Cheng (Xidian University, P.R. China); Hailin Zhang (Xidian University, P.R. China)

WE1-B1-4

A Substrate Integrated Waveguide Based Antenna-Triplexer

Divya Chaturvedi (NIT Trichy, India); Arvind Kumar (National Institute of Technology, Trichy India & National Institute of Technology, Trichy India, India); Raghavan S (NIT, India)

Room B2

Session WE1-B2

Innovative Filter Banks, Multiplexers, and Multiband Filters

Chairs: Hiroyuki Kayano (Toshiba Corporation, Japan), Ching-Wen Tang (National Chung Cheng University, Taiwan)

WE1-B2-1

Evaluation of >140-GHz Band Filter Bank Prototype

Takashi Kawamura (Anritsu Corporation, Japan); Masaaki Fuse (Anritsu Corporation, Japan); Shigenori Mattori (Anritsu Corporation, Japan)

WE1-B2-2

Compact and High Isolation Microstrip Six-Channel Diplexer Using Multi-Mode Stepped-Impedance Resonators

Chi-Feng Chen (Tunghai University, Taiwan); Tseng Bo-Hao (Tunghai University, Taiwan); Bo-Yan Su (Tunghai University, Taiwan); Xin-Ling Li (Tunghai University, Taiwan); Guo-Yun Wang (Tunghai University, Taiwan); Jhong-Jhen Li (Tunghai University, Taiwan)

WE1-B2-3

Duplexer Based on Spoof Surface Plasmon Polaritons Transmission Lines

Chu Qi (City University of Hong Kong, Hong Kong)

WE1-B2-4

Novel Compact Dual-band BPF Using Stub-Loaded Shorted Stepped-Impedance Resonators

Pin Wen (Saitama University, Japan); ZheWang Ma (Saitama University, Japan); Haiwen Liu (Xi'an Jiaotong University, P.R. China); Shuangshuang Zhu (Xi'an Jiaotong University, P.R. China); Masataka Ohira (Saitama University, Japan); Chuanyun Wang (East China Jiaotong University, P.R. China); Xuehui Guan (East China Jiaotong University, P.R. China); Baoping Ren (Saitama University, Japan)

Room C1

Session WE1-C1

Special Session: Micromachined Terahertz Systems - A New Heterogeneous Integration Platform enabling the commercialization of the THz frequency spectrum (M3TERA)

Chairs: Yinggang Li (Ericsson AB, Sweden), Joachim Oberhammer (KTH Royal Institute of Technology, Sweden)

WE1-C1-1

Micromachined THz Systems - enabling the large scale exploitation of the THz frequency spectrum

Joachim Oberhammer (KTH Royal Institute of Technology, Sweden)

WE1-C1-2

A 140 GHz Transmitter with an Integrated Chip-to-Waveguide Transition using 130nm SiGe BiCMOS Process

Zhongxia Simon He (Chalmers University of Technology & Microwave Electronic Lab, Sweden); Mingquan Bao (Ericsson AB, Sweden); Yinggang Li (Ericsson AB, Sweden); Ahmed Hassona (Chalmers University of Technology, Sweden); James Campion (KTH Royal Institute of Technology, Sweden); Joachim Oberhammer (KTH Royal Institute of Technology, Sweden); Herbert Zirath (Chalmers University of Technology, Sweden)

WE1-C1-3

Fixed Wireless Links beyond 100 GHz

Yinggang Li (Ericsson AB, Sweden); Jonas Hansryd (Ericsson AB, Sweden)

WE1-C1-4

High volume silicon based technologies for heterogeneous THz platforms: from the silicon to the board

Chiara Mariotti (Infineon Technologies Austria AG, Austria); Dielacher Franz (Infineon, Germany)

WE1-C1-5

Reflector and Lens Antennas for Industrial Applications in the sub-THz Frequency Spectrum

Itziar Maestrojuán (Anteral, Spain); Victor Torres (Anteral, Spain); Mikel Goni (Anteral, Spain)

Room C2

Session WE1-C2

Transmitting and Receiving Elements for WPT and RFID systems

Chairs: Qiang Chen (Tohoku University, Japan), Ramesh K. Pokharel (Kyushu University, Japan)

WE1-C2-1

Influence of Lossy Objects for Resonator-Coupled Type Wireless Power Transfer System with Coplanar Dual-Spiral Resonators

Masashi Hotta (Yamaguchi University, Japan); Nur Syafiera Azreen Norodin (Yamaguchi University, Japan); Nadia Natasya Muhammad Zakaria (Meidensha Corporation, Japan); Hiroyuki Onari (Yamaguchi University, Japan); Takuma Takegami (Yamaguchi University, Japan)

WE1-C2-2

Optimization of Multi-Carrier Frequency Diverse Array for Wireless Power Transmission

Yu-Qian Yang (Nanjing University of Science & Technology, P.R. China); Hao Wang (Nanjing University of Science & Technology, P.R. China); Si-Qi Gu (Nanjing University of Science & Technology, P.R. China)

WE1-C2-3

WPT Area Expansion Technique Utilizing Magnetic MISO Beamformer

Ayako Suzuki (Kagoshima University, Japan); Koshi Hamano (Kagoshima University, Japan); Kenjiro Nishikawa (Kagoshima University, Japan); Shigeo Kawasaki (Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan)

WE1-C2-4

A Novel Magnetic Field Resonance Wireless Power Transfer System Using Power Management by Power Communication Techniques

Takahiro Nagai (Murata Manufacturing Co., Ltd., Japan); Tatsuya Hosotani (Murata Manufacturing Co., Ltd., Japan)

WE1-C2-5

New Single-Feed-Dual-Polarized Antenna for Electromagnetic Radiation Energy Harvesting in ISM Band

Edouard Rochefeuille (LE2P - University Of Reunion Island & IMEP-LAHC - Grenoble INP, France); Alexandre Douyère (University of La Reunion, France); Erika Vandelle (Universite Grenoble Alpes, France); Frederic Alicalapa (University of La Reunion, France); Tan Phu Vuong (Grenoble INP, France)

TECHNICAL SESSIONS (Oral Sessions)

8:30 - 10:10

Wednesday, November 7

Room D

Session WE1-D

Advances in Power Amplifier Design Techniques

Chairs: Donald Kimball (University of California San Diego, USA & pSemi a MuRata Company, Japan), Tomoya Kaneko (NEC Corporation, Japan)

WE1-D-1 [Invited]

Analog & Digital Envelope Tracking Power Amplifier Reduced Bandwidth Techniques for 5G NR

Donald Kimball (University of California San Diego, USA & pSemi a MuRata Company, Japan); Toshifumi Nakatani (Maxentric Technologies, LLC, USA); Jonmei J. Yan (MaXentric Technologies, LLC, USA); Kenji Mukai (Murata Manufacturing Co., Ltd., Japan)

WE1-D-2

Analysis of Optimal Outphasing Load Trajectories for GaN PAs

Paolo Enrico de Falco (University of Bristol & Toshiba Research Europe, United Kingdom (Great Britain)); Gavin Watkins (Toshiba Research Europe Ltd., United Kingdom (Great Britain)); Konstantinos Mimis (University of Bristol, United Kingdom (Great Britain)); Souheil BenSmida (University of Bristol, United Kingdom (Great Britain)); Kevin A Morris (University of Bristol, United Kingdom (Great Britain))

WE1-D-3

A Ka-Band Power Amplifier with Phase Compensation Technique Applied to 5G Phased Array

Hung-Yu Lin (Industry Technology Research Institute, Taiwan); Wei-Tsung Li (Industry Technology Research Institute, Taiwan)

WE1-D-4

A Highly Efficient Pulse-Modulation Polar Transmitter Using Broadband Class E Power Amplifier For Femtocell Base Stations

Shu-Chen Lin (National Taiwan University, Taiwan); Yang-Chih Hsieh (National Taiwan University, Taiwan); Shuo-Heng Xu (National Taiwan University, Taiwan); Jau-Horn Chen (National Taiwan University, Taiwan)

Room K

Session WE1-K

Special Session: Research and Development of Space and Satellite Communication System

Chairs: Shigeo Kawasaki (Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan), Takana Kaho (NTT, Japan)

WE1-K-1

Pulse Operation Characteristics of X-band High Power GaN Amplifiers for the Hayabusa2 Re-entry Capsule Tracking Radar

Daisuke Hayashi (Koden Electronics Co., Ltd. & SOKENDAI (The Graduate University for Advanced Studies), Japan); Yuichi Tsuda (Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan); Shigeo Kawasaki (Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan)

WE1-K-2

Microwave and Millimeter-wave GaN Amplifiers for Satellite Communications

Masatake Hangai (Mitsubishi Electric Corporation, Japan)

WE1-K-3

Terahertz Communications for Space Applications

Tadao Nagatsuma (Osaka University, Japan); Akifumi Kasamatsu (National Institute of Information and Communications Technology, Japan)

WE1-K-4

THz Technology for Space Communications

Imran Mehdi (JPL, USA); Jose V Siles (NASA Jet Propulsion Laboratory, USA); Christine Chen (Jet Propulsion Laboratory, USA); Josep M Jornet (University at Buffalo, USA)

WE1-K-5

IoT/WPT Developments in Space Exploration

Ricardo Correia (Instituto de Telecomunicações & University of Aveiro, Portugal); Nuno Borges Carvalho (University of Aveiro/IT Aveiro, Portugal)

Room 103

Session WE1-103

Special Session: Trends of 5G Technologies in Asia-Pacific Region

Chair: Hiroshi Okazaki (NTT DOCOMO, Japan)

WE1-103-1

Introduction

Hiroshi Okazaki (NTT DOCOMO, Japan)

WE1-103-2

The Role of Technology Roadmaps for 5G and Beyond

Tim Lee (IEEE MTT-S, USA)

WE1-103-3

5G Technologies Roadmap in Singapore

Arokiaswami Alphones (Nanyang Technological University, Singapore)

TECHNICAL SESSIONS (Oral Sessions)

Wednesday, November 7

10:30 - 12:10

Room B1

Session WE2-B1

Antennas for Wireless Application

Chairs: Nobuyoshi Kikuma (Nagoya Institute of Technology, Japan), Keisuke Konno (Tohoku University, Japan)

WE2-B1-1

Circularly Polarization Loop Antenna

Wenting Wu (University Of Science And Technology Of China, P.R. China); Cun Wang (University of Science and Technology of China, P.R. China)

WE2-B1-2

Quasi-isotropic radiation by coupled loop antennas without a quadrature phase shifter

Jaechun Lee (Samsung Advanced Institute of Technology, Korea); Sang Joon Kim (Samsung Advanced Institute of Technology, Korea)

WE2-B1-3

Sensitivity Analysis of Input Impedance of a Large Loop Antenna in a Waveguide to Tilt Angle

Nedime Pelin M. H. Salem (New Jersey Institute of Technology, USA); Edip Niver (NJIT, USA); Mohamed A Salem (Sonoma State University, USA)

WE2-B1-4

Realization of Structured Electromagnetic Waves based on Plane Spiral Orbital Angular Momentum Waves using Circular Cylindrical Conformal Microstrip Antenna Array

Qing Ma (Zhejiang University, P.R. China)

WE2-B1-5

Flat Half Maxwell Fish-Eye Lens for High Directivity Applications

Cun Wang (University of Science and Technology of China, P.R. China); Qi Zhu (University of Science and Technology of China, P.R. China)

Room B2

Session WE2-B2

Advances in Theory and Design for Filters and Group Delay Circuits

Chairs: Masataka Ohira (Saitama University, Japan), Yongchae Jeong (Chonbuk National University, Korea)

WE2-B2-1

Compact Quasi-Lumped Element Bandpass Filters for Single-ended High-Purity Frequency Multipliers Applications

Feng-Jun Chen (Microsystem and Terahertz Research Center of CAEP, P.R. China); Liang Zhang (Microsystem and Terahertz Research Center, China Academy of Engineering Physics & Institute of Electronic Engineering, China Academy of Engineering Physics, P.R. China); Xu Cheng (Microsystem and Terahertz Research Centre of CAEP, P.R. China); Xin-lin Xia (Microsystem and Terahertz Research Centre of CAEP, P.R. China); Jiang-An Han (China Academy of Engineering Physics, P.R. China); Xian-jin Deng (Microsystem and Terahertz Research Centre of CAEP, P.R. China)

WE2-B2-2

Notes on Determination of Frequency-Variant Coupling for High Selectivity In-Line Filters

Yuxing He (Yokohama National University, Japan); Nobuyuki Yoshikawa (Yokohama National University, Japan)

WE2-B2-3

Coupling Matrix Synthesis and Design of a Chained-Function Waveguide Filter

Yuan Ping Lim (Universiti Teknologi PETRONAS, Malaysia); Yew Leong Toh (Universiti Teknologi PETRONAS, Malaysia); Sovuthy Cheab (Universiti Teknologi PETRONAS, Malaysia); Stepan Lucyszyn (Imperial College London, United Kingdom (Great Britain)); Peng Wen Wong (Universiti Teknologi PETRONAS, Malaysia)

WE2-B2-4

Arbitrary Prescribed Wideband Flat Group Delay Circuit for Self-Interference Cancellation Circuits

Girdhari Chaudhary (Chonbuk National University, Korea); Phanam Pech (Chonbuk National University, Korea); Junhyung Jeong (Chonbuk National University, Korea); Phirun Kim (Chonbuk National University, Korea); Yongchae Jeong (Chonbuk National University, Korea)

WE2-B2-5

Modified Vector Fitting and Its Application to Simultaneous Characteristics Approximation of Attenuation and Group Delay

Toshikazu Sekine (Gifu University, Japan); Yasuhiro Takahashi (Gifu University, Japan)

Room C1

Session WE2-C1

Metastructures and Microstructures for Terahertz and Microwave Applications

Chairs: Withawat Withayachumnankul (The University of Adelaide, Australia), Jaeyoung Kim (Rohm Co, Ltd., Japan)

WE2-C1-1 [Invited]

Terahertz Metasurfaces for Beamforming and Polarization Conversion

Withawat Withayachumnankul (The University of Adelaide, Australia)

WE2-C1-2

Highly Stable Terahertz Resonant Tunneling Diode Oscillator Coupled to Photonic-Crystal Cavity

Xiongbin Yu (Osaka University, Japan); Jaeyoung Kim (Rohm Co, Ltd., Japan); Masayuki Fujita (Osaka University, Japan); Tadao Nagatsuma (Osaka University, Japan)

WE2-C1-3

An Equidistantly Stepped Waveguide TE₁₁-TE₀₁-Mode Converter for Millimeter Wave Radar Applications

Birk Hattenhorst (Ruhr-University Bochum, Germany); Christian Schulz (Ruhr-Universität Bochum, Germany); Christoph Baer (Ruhr-Universität Bochum & Institute of Electronic Circuits, Germany); Thomas Musch (Ruhr-Universität Bochum, Germany)

WE2-C1-4

Transformation of OAM waves to Plane Spiral OAM waves Based on Gradient-index Meta-surface

Lin Hua (Zhejiang University, P.R. China)

Room: C2

Session WE2-C2

Rectifiers and Rectennas

Chairs: Tsunayuki Yamamoto (Yamaguchi University, Japan), Jiafeng Zhou (University of Liverpool, United Kingdom (Great Britain))

WE2-C2-1

SOI-CMOS high power rectifier IC with the cross coupled CMOS pair

Shunya Tsuchimoto (Kanazawa Institute of Technology, Japan)

WE2-C2-2

Waveform-Based Design of a 2.8-GHz Self Synchronous Class-E RF-DC Rectifier with GaN Transistor

Fei You (University of Electronic Science and Technology of China, P.R. China); Ying Wang (China Academy of Space Technology(Xi'an), P.R. China); Shi-Wei Dong (National Key Laboratory of Space Microwave Technology, P.R. China); Xumin Yu (National Key Laboratory of Space Microwave Technology, P.R. China); Chuan Li (University of Electronic Science and Technology of China, P.R. China)

WE2-C2-3

Development of Sub-Terahertz Rectenna using Gyrotron

Sei Mizojiri (University of Tsukuba, Japan)

WE2-C2-4

A High Efficiency Differential Rectenna Employing Two-Parasitic-Element Stacked Antenna

Kenta Yasuda (Saga University, Japan); Eisuke Nishiyama (Saga University, Japan); Ichihiko Toyoda (Saga University, Japan)

WE2-C2-5

A 2.5D Wafer-level CMOS-IPD Rectenna Using Wide-Range Efficiency and Self-biasing Topology for a RF Wireless Power Harvesting System

Kuei-Cheng Lin (National Applied Research Laboratories, Taiwan)

TECHNICAL SESSIONS (Oral Sessions)

10:30 - 12:10

Wednesday, November 7

Room D

Session WE2-D

Power Amplifiers and Signal Generator

Chairs: Kazuya Yamamoto (Mitsubishi Electric Corporation & High Frequency and Optical Device Works, Japan), Keisuke Shinohara (Teledyne Scientific, USA)

WE2-D-1

Dual-Band 60-/24-GHz Signal Generator Using A Regenerative Miller Frequency Dividing System

Chung-Hsien Shieh (National Cheng Kung University, Taiwan); Kuan-Chi Tseng (National Cheng Kung University, Taiwan); Tzuen-Hsi Huang (National Cheng Kung University, Taiwan)

WE2-D-2

Experiments on a 80 kW Power Combiner Using RF LDMOS Power Transistors

Suyeon Park (Kwangwoon University, Korea)

WE2-D-3

Two-Way Current Combining Power Amplifier with Multi-Stage Adaptive Bias Control

Tai-Yi Chen (National Tsing Hua University, Taiwan); Yi-Chun Lee (National Tsing Hua University, Taiwan); Tse-Hung Chen (National Tsing Hua University, Taiwan); Hong-Shen Chen (National Tsing Hua University, Taiwan); Jenny Yi-Chun Liu (National Tsing Hua University, Taiwan)

WE2-D-4

5G mm-Wave Stacked Class AB Power Amplifier in 45 nm PD-SOI CMOS

Radu Ciocoveanu (Infineon Technologies AG / Friedrich-Alexander University Erlangen-Nuremberg (FAU), Germany); Robert Weigel (Friedrich-Alexander Universität Erlangen-Nürnberg, Germany); Amelie Hagelauer (University of Erlangen-Nuremberg, Germany); Angelika Geiselbrechtinger (Infineon Technologies AG, Germany); Vadim Issakov (Infineon Technologies AG, Germany)

WE2-D-5

Co-design of wideband High efficient power amplifier using suspended substrate stripline filter as the Output Matching Network

Sheng Fang (South China University of Technology, P.R. China); Zheming Xie (South China University of Technology, P.R. China); Xi Wen Peng (South China University of Technology, P.R. China)

Room K

Session WE2-K

Adaptive Techniques for Improved Spectrum Efficiency

Chairs: Arne F Jacob (Technische Universität Hamburg, Germany), Kunihiro Kawai (NTT DOCOMO, Japan)

WE2-K-1

Adaptive multi radio interface control based on 802.11ax WLANs

Toshiro Nakahira (NTT Access Network Service Systems Laboratories, Japan)

WE2-K-2

Adaptive Sideband Selection for Periodic Interference Cancellation

Yuya Kimura (Okayama University, Japan); Satoshi Denno (Okayama University, Japan); Yafei Hou (Okayama University, Japan)

WE2-K-3

Countering Eavesdropping Using Cognitive Radio - A New Perspective on Spectrum Sharing

Yee Loo Foo (Multimedia University, Malaysia)

WE2-K-4

Millimeter Wave Multi-hop Mobility and Trial Activities

Liang Gu (Huawei Technologies Co., Ltd, P.R. China); Tingjian Tian (Huawei Technologies Co., Ltd, P.R. China); Yunfu Dou (Huawei Technologies Co., Ltd., P.R. China); Guangmei Ren (Huawei Technologies Co., Ltd, P.R. China); Masashi Iwabuchi (NTT DOCOMO, INC., Japan); Jun Tsuboi (NTT DOCOMO, INC., Japan); Yoshihisa Kishiyama (NTT DOCOMO, INC., Japan)

WE2-K-5

Transmission Standby based on Channel Conditions for Efficient Use of Radio Resources in WLAN Systems

Yukio Kojima (Wakayama University, Japan); Shinichi Miyamoto (Wakayama University, Japan)

Room 103

Session WE2-103

Special Panel Session: Women's Excellent Talent in Engineering

Chair: QiaoWei Yuan (National Institute of Technology, Sendai College, Japan)

WE2-103-1

Open Address

Wenquan Che (Nanjing University of Science and Technology, P.R. China)

WE2-103-2

An Integration of Satellite Communication and Navigation

Guanyi Ma (National Astronomical Observatories, Chinese Academy of Sciences, P.R. China)

WE2-103-3

Research on Exposure Assessment for Human Protection from Electromagnetic Fields

Kanako Wake (National Institute of Information and Communications Technology, Japan)

WE2-103-4

Design and Measurement of A Compact Tri-polarized MIMO Antenna Based on Multimode Theory

Dazhi Piao (Communication University of China, P.R. China)

WE2-103-5

Dual-Polarized Rectenna Array at X-Band

Xuexia Yang (Shanghai University, P.R. China)

WE2-103-6

Discussion

TECHNICAL SESSIONS (Oral Sessions)

Wednesday, November 7

15:50 - 17:30

Room B1

Session WE4-B1

5G/Millimeter Wave Antenna Technologies

Chairs: Yasuhiro Tsunemitsu (Takushoku University, Japan), Yasushi Iitsuka (Waka Manufacturing Co., Ltd., Japan)

WE4-B1-1

Radiation Characteristics of Optically Transparent Dipole Antenna Fabricated using CVD Monolayer Graphene

Shohei Kosuga (Aoyama Gakuin University, Japan); Keisuke Suga (Aoyama Gakuin University, Japan); Ryosuke Suga (Aoyama Gakuin University, Japan); Takeshi Watanabe (Aoyama Gakuin University, Japan); Osamu Hashimoto (Aoyama Gakuin University, Japan); Shinji Koh (Aoyama Gakuin University, Japan)

WE4-B1-2

L-Probe Fed Patch Antenna with Single layer for 28-GHz Applications

Yasushi Iitsuka (Waka Manufacturing Co., Ltd., Japan); Kazuo Saitoh (Waka Manufacturing Co., Ltd., Japan); Takayuki Ogoshi (Shinjuku-ku Tokyo & Waka, Japan)

WE4-B1-3

A High Gain Cavity-backed Antenna Array Based on the SICL Structure for Q-band Application

Yajing Hou (Beijing University of Posts and Telecommunications, P.R. China); Hua Zhu (School of Electronic Engineering, University of Posts and Telecommunications, Beijing, P.R. China); Xiuping Li (Beijing University of Post Telecommunications, P.R. China)

Room B2

Session WE4-B2

Special Session: Connected Vehicles for Advanced Safety and Comfort Mobility in 4G/5G and beyond

Chairs: Kei Sakaguchi (Tokyo Institute of Technology & Fraunhofer HHI, Japan), Kazuaki Takahashi (Panasonic Corporation, Japan)

WE4-B2-1

LTE/5G Cellular V2X Standardization

Satoshi Nagata (NTT DoCoMo, Inc., Japan); Riichi Kudo (NTT, Japan); Shinpei Yasukawa (NTT DOCOMO, INC., Japan); Takehiro Nakamura (NTT DOCOMO, INC., Japan); Ryosuke Osawa (NTT DOCOMO, INC., Japan); Huan Wang (DOCOMO Beijing Communications Laboratories Co., Ltd., P.R. China); Mikio Iwamura (NTT DOCOMO, INC., Japan)

WE4-B2-2

Cooperative Perception realized by Millimeter-wave V2V for Safe Automated Driving

Kei Sakaguchi (Tokyo Institute of Technology & Fraunhofer HHI, Japan); Ryuichi Fukatsu (Tokyo Institute of Technology, Japan)

WE4-B2-3

Millimeter Wave V2X Communications: Use Cases and Design Considerations of Beam Management

Takayuki Shimizu (TOYOTA InfoTechnology Center USA, USA); Vutha Va (University of Texas at Austin, USA); Gaurav Bansal (Toyota InfoTechnology Center, USA); Robert Heath (The University of Texas at Austin, USA)

WE4-B2-4

Bulk Sensor Data Sharing Using Millimeter Wave V2X for Enhanced Safety and Comfort in Mobility

Masataka Irie (Panasonic Corporation, Japan); Gaius Yao Huang Wee (Panasonic Corporation, Singapore); Michael Sim (Panasonic Corporation, Singapore); Kazuaki Takahashi (Panasonic Corporation, Japan)

Room C1

Session WE4-C1

Metamaterials, EMBGs and FSSs I

Chairs: Shih-Yuan Chen (National Taiwan University, Taiwan), Constant Manouan Aka Niamien (Normandie Univ, UNIROUEN, ESIGELEC/IRSEEM, Rouen, France)

WE4-C1-1

Cylindrical Distributed Immittance Shells for Microwave Invisibility Cloak

Takaya Nishizawa (1-3 Machikaneyama, Toyonaka & Osaka University, Japan); Atsushi Sanada (Osaka University, Japan)

WE4-C1-2

Constant Permeability Design of Cylindrical Invisibility Cloaks with Hyperbolic Coordinate Transformation Based on Transformation Electromagnetics

Yuma Takano (Osaka University, Japan); Tsutomu Nagayama (Kagoshima University, Japan); Atsushi Sanada (Osaka University, Japan)

WE4-C1-3

Zero Phase Delay Transmission in Parity-time Photonic Crystal

Wenjin Pei (Nanjing University, P.R. China); Feifei Li (Nanjing University, P.R. China); Yin Poo (Nanjing University, P.R. China); Rui-Xin Wu (Nanjing University, P.R. China)

WE4-C1-4

On-chip Terahertz Surface-wave Transmission Line Based on Folded Strips

Yuan Liang (Nanyang Technological University, Singapore); Chirn Chye Boon (Nanyang Technological University, Singapore); Hao Yu (Southern University of Science and Technology, Singapore); Chaojun Ma (Southern University of Science and Technology, P.R. China); Dietmar Kissinger (IHP, Germany); Yong Wang (Innovations for High Performance Microelectronics, Germany)

WE4-C1-5

Topological Estimation of Resonant Frequencies by Equivalent Circuit for Star Meta-Atoms

Akira Hasegawa (Kyoto University, Japan); Takashi Hisakado (Kyoto University, Japan); Tohlu Matsushima (Kyushu Institute of Technology, Japan); Osami Wada (Kyoto University & Graduate School of Engineering, Japan)

Room C2

Session WE4-C2

WPT and RFID Applications

Chairs: Qiaowei Yuan (National Institute of Technology, Sendai College, Japan), Heng-Ming Hsu (National Chung-Hsing University, Taiwan)

WE4-C2-1 [Invited]

Enabling far-field ambient energy harvesting through multi-physical sources

Xiaoqiang Gu (Polytechnique Montreal, Canada); Simon Hemour (University of Bordeaux, France); Ke Wu (Ecole Polytechnique (University of Montreal) & Center for Radiofrequency Electronics Research of Quebec, Canada)

WE4-C2-2

WPT Link with Relay Elements for Recharging a Pacemaker

Giuseppina Monti (University of Salento, Italy); Laura Corchia (University of Salento, Italy); Beatrice Risolo (University of Salento, Italy); Luciano Tarricone (University of Salento, Italy)

WE4-C2-3

Flexible Energy Harvesting System for Wearable IoT Sensor Device Applications

Jung Ouk Kim (Soonchunhyang University, Korea); Yongwan Lee (Soonchunhyang University, Korea); Jongsik Lim (Soonchunhyang University, Korea); Dal Ahn (Soonchunhyang University, Korea); Won-Sang Yoon (Hoseo University, Korea); Sang-Min Han (Soonchunhyang University, Korea)

WE4-C2-4

Study on the security camera loading to the glass window with the wireless power transmission technology

Ryota Ohata (Tokyo City University, Japan); Yoshinobu Okano (Tokyo City University, Japan)

TECHNICAL SESSIONS (Oral Sessions)

15:50 - 17:30

Wednesday, November 7

Room D

Session WE4-D

Low Noise Amplifiers

Chairs: Ilcho Angelov (Chalmers University of Technology & GOTMIC AB, Sweden), Toshihiko Yoshimasu (Waseda University, Japan)

WE4-D-1

23-31GHz Low Noise Amplifier with 2.5dB NF using 100 nm GaN on Silicon Technology

Shiyong Zhang (Microsystem & Terahertz Research Center, China Academy of Engineering Physics, P.R. China); Jianxing Xu (China Academy of Engineering Physics, P.R. China); Penghui Zheng (Microsystem & Terahertz Research Center, China Academy of Engineering Physics, P.R. China); Huang Yang (Sichuan YiFeng Electronic Science & Technology Co., LTD & LIAO SHU Co., LTD, P.R. China); Xiaodong Tong (Microsystem & Terahertz Research Center, China Academy of Engineering Physics, P.R. China)

WE4-D-2

A 67-dB Harmonic-Rejecting CMOS LNA with Area-Efficient Stacked-Inductor Self-Resonance

Kenji Tanaka (NTT Device Technology Labs, NTT Corporation, Japan); Shinsuke Nakano (NTT Device Innovation Center, NTT Corporation, Japan); Naoki Miura (NTT Device Technology Labs, NTT Corporation, Japan); Hideyuki Nosaka (NTT Corporation, Japan)

WE4-D-3

A SiGe BiCMOS Bypass Low-Noise Amplifier for X-Band Phased Array RADARs

Esref Turkmen (Sabanci University, Turkey); Abdurrahman Burak (Sabanci University, Turkey); Can Caliskan (Sabanci University, Turkey); Ilker Kalyoncu (Sabanci University, Turkey); Yasar Gurbuz (Sabanci University, Turkey)

WE4-D-4

Co-design of a 140 MHz to 5.4 GHz Inductorless LNA Chip and PCB for Software Defined Radio

Kuan-Hsiu Chien (ITRI, Taiwan); Feng-Hsu Chung (Industrial Technology Research Institute, Taiwan); Jian-Yu Li (Yuan Ze University, Taiwan)

WE4-D-5

A 2.5-31-GHz High Gain LNA in 0.15- μ m GaAs pHEMT for Radio Astronomical Application

Hoi Wong Lei (National Taiwan University, Taiwan); Yunshan Wang (National Taiwan University, Taiwan); Chau-Ching Chiong (Institute of Astronomy and Astrophysics, Academia Sinica, Taiwan); Huei Wang (National Taiwan University, Taiwan)

Room K

Session WE4-K

Terahertz, Millimeter-wave and Microwave Photonics Applications

Chairs: Zeshan Ahmad (Texas Instruments, USA), Julian L Webber (Osaka University & Advanced Telecommunications Research Institute International, Japan)

WE4-K-1

An Empirical Performance Evaluation of Time Synchronization Using GNSS Signal Simultaneously Transmitted with 10 Gbps Optical On-Off Keying

Yuya Kaneko (National Institute of Technology, Numazu College, Japan); Takeshi Higashino (Nara Institute of Science and Technology & Graduate School of Information Science, Japan); Minoru Okada (Nara Institute of Science and Technology, Japan)

WE4-K-2

A 143 GHz InP-based radio link characterized in long-term outdoor measurement

Mikael Hörberg (Ericsson Research, Sweden); Yinggang Li (Ericsson AB, Sweden); Vessen Vassilev (Chalmers University of Technology, Sweden); Herbert Zirath (Chalmers University of Technology, Sweden); Jonas Hansryd (Ericsson AB, Sweden)

WE4-K-3

Dual-channel 56 Gb/s PAM-4 Electro-Absorption Modulator Driver for 3D Wafer Scale Packaging

Xi Zhang (Eindhoven University of Technology - TU/e, The Netherlands); Xiao Liu (Eindhoven University of Technology, The Netherlands); Rainier Van Dommele (Eindhoven University of Technology, The Netherlands); Marion Matters-Kammerer (Eindhoven University of Technology, The Netherlands)

WE4-K-4

On-chip Scalable Resonator-based Transducers for Terahertz Dielectric Sensing in SiGe BiCMOS Technology

Defu Wang (IHP, Germany); Klaus Schmalz (IHP, Germany); J. Borngräber (IHP, Germany); Dietmar Kissinger (IHP, Germany)

WE4-K-5

CMOS biosensor IC with 360-sensing elements using 63-GHz LC-oscillator and DEP for label-free single-cell detection

Takeshi Mitsunaka (Sharp Corporation, Japan)

Room 103

Session WE4-103

Special Session: EuMA Special Session

Chairs: Itziar Maestrojuán (Anteral, Spain)

WE4-103-1

D-band MMIC design for high data rate wireless and wire-bound communication based on state-of-the-art InP DHBT and SiGe BiCMOS processes

Herbert Zirath (Chalmers University of Technology, Sweden)

WE4-103-2

Miniaturized Substrate Integrated Components

Luca Perregri (University of Pavia, Italy); Maurizio Bozzi (University of Pavia, Italy)

WE4-103-3

Advanced Terminal Antenna Concepts for Mobile Satellite Communications

Arne F Jacob (Technische Universität Hamburg, Germany); Thomas Jaschke (Technische Universität Hamburg-Harburg & Institut für Hochfrequenztechnik, Germany); Benjamin Rohrdanz (Technische Universität Hamburg-Harburg, Germany)

TECHNICAL SESSIONS (Oral Sessions)

Thursday, November 8

8:30 - 10:10

Room B1

Session TH1-B1

Antennas for Sensing Applications

Chairs: Kazuhiro Honda (University of Toyama, Japan), Jae-Ho Lee (Electronics and Telecommunications Research Institute (ETRI), Korea)

TH1-B1-1

Sector-Beam Antennas for Wide Detection Area in 79 GHz Automotive Short Range Radar (SRR) Sensor

Jae-Ho Lee (Electronics and Telecommunications Research Institute (ETRI), Korea); Jong Min Lee (Sungkyunkwan University, Korea); Keum Cheol Hwang (Sungkyunkwan University, Korea)

TH1-B1-2

A Planar 24 GHz Switched-Beam Antenna Based on PIN Diodes for Remote Sensing Applications

Fabian Michler (Friedrich-Alexander University Erlangen-Nuremberg, Erlangen, Germany); Benedict Scheiner (Friedrich-Alexander University Erlangen-Nuremberg, Erlangen, Germany); Fabian Lurz (Friedrich-Alexander University Erlangen-Nuremberg, Erlangen, Germany); Robert Weigel (Friedrich-Alexander University Erlangen-Nuremberg, Erlangen, Germany); Alexander Koelpin (Brandenburg University of Technology, Cottbus, Germany)

TH1-B1-3

Design of 24-GHz Automotive Antenna Array With Wide Fan Beam

Chia-An Yu (Chang Gung University, Taiwan); Eric S. Li (National Taipei University of Technology, Taiwan); Chung-Yi Li (Chang Gung University, Taiwan); Kuo-Sheng Chin (Chang Gung University, Taiwan); Roger Lu (National Chung-Shan Institute of Science and Technology, Taiwan)

TH1-B1-4

Quadrilinear decomposition based two-dimensional DOA estimation for sparse MIMO array with velocity receive sensors

Jianfeng Li (Hohai University & Key Laboratory of Dynamic Cognitive System of Electromagnetic Spectrum Space (NUAA), Ministry of Industry and Information Technology, P.R. China); Mingwei Shen (Hohai University, P.R. China); Defu Jiang (Hohai University, P.R. China)

TH1-B1-5

Direction of Arrival Estimation of Physiological Signals of Multiple Subjects Using Phase Comparison Monopulse Radar

Shekh Md Mahmudul Islam (University of Hawaii at Manoa, USA); Ehsan Yavari (Adnoviv LLC, USA); Ashikur Rahman (University of Hawaii at Manoa & Aptiv, USA); Victor Lubecke (University of Hawaii at Manoa, USA); Olga Boric-Lubecke (University of Hawaii at Manoa, USA)

Room B2

Session TH1-B2

Advanced Design of Filtering Power Dividers and Balanced Filters

Chairs: Zhewang Ma (Saitama University, Japan), Wenquan Che (Nanjing University of Science and Technology, P.R. China)

TH1-B2-1

Ultra-Compact Power Divider Using Dual-Function Input External Quality Factor for Good Filtering Response and Isolation

Guangxu Shen (Nanjing University of Science and Technology, P.R. China); Wenquan Che (Nanjing University of Science and Technology, P.R. China)

TH1-B2-2

Wideband Out-of-Phase Filtering Power Divider with High Selectivity

Xuedao Wang (Nanjing University of Science and Technology & University of Macau, P.R. China); Wai Wa Choi (University of Macau, Macao); Jianpeng Wang (Nanjing University of Science and Technology, P.R. China); Wen Wu (Nanjing University of Science and Technology, P.R. China)

TH1-B2-3

High Selectivity Balanced-to-Unbalanced Filtering Power Divider

Wenjie Feng (Nanjing University of Science and Technology, P.R. China); Xueke Ma (Nanjing University of Science and Technology, P.R. China); Wenquan Che (Nanjing University of Science and Technology, P.R. China); Roberto Gómez-García (University of Alcalá, Spain); Wanchen Yang (Nanjing University of Science and Technology, P.R. China); Haidong Chen (Nanjing University of Science and Technology, P.R. China); Quan Xue (South China University of Technology, P.R. China)

TH1-B2-4

Design of Balanced Dual-Band Superconducting Bandpass Filter With High Selectivity and Deep Common-Mode Suppression

Baoping Ren (Saitama University, Japan)

Room C1

Session TH1-C1

Special Session: Terahertz Technologies for Beyond 5G Mobile Communications

Chairs: Akihiko Hirata (Chiba Institute of Technology, Japan), Ho-Jin Song (POSTECH, Korea)

TH1-C1-1 [Invited]

Progress of Plate-laminated Waveguide Slot Array Antennas by Diffusion Bonding in 60GHz, 120GHz and 350GHz Bands

Jiro Hirokawa (Tokyo Institute of Technology, Japan); Takashi Tomura (Tokyo Institute of Technology, Japan); Akihiko Hirata (Chiba Institute of Technology, Japan); Tadao Nagatsuma (Osaka University, Japan)

TH1-C1-2

300-GHz CMOS Transceiver for Terahertz Wireless Communication

Shinsuke Hara (National Institute of Information and Communications Technology, Japan); Kyoya Takano (Hiroshima University, Japan); Kosuke Katayama (Hiroshima University, Japan); Ruibing Dong (Hiroshima University, Japan); Sangyeop Lee (Hiroshima University, Japan); Issei Watanabe (National Institute of Information and Communications Technology, Japan); Norihiko Sekine (National Institute for Information and Communications Technology, Japan); Akifumi Kasamatsu (National Institute of Information and Communications Technology, Japan); Takeshi Yoshida (Hiroshima University, Japan); Shuhei Amakawa (Hiroshima University, Japan); Minoru Fujishima (Hiroshima University, Japan)

TH1-C1-3

Preliminary study on Terahertz channel response for wireless communications applications

Ho-Jin Song (POSTECH, Korea)

TH1-C1-4

Terahertz absorber technologies for close-proximity wireless system

Akihiko Hirata (Chiba Institute of Technology, Japan); Jiro Hirokawa (Tokyo Institute of Technology, Japan)

Room C2

Session TH1-C2

Special Session: Solar Power Satellite and Related Microwave Technologies

Chairs: Naoki Shinohara (Kyoto University, Japan), Young-Jin Park (KERI & UST, Korea)

TH1-C2-1

Evaluation of Constituent Technologies and R&D Strategy for Space Solar Power System

Tadashi Takano (Nihon University & JAXA, Japan)

TH1-C2-2

Rectenna array design for receiving high power in beam type wireless power transmission

Young-Jin Park (KERI & UST, Korea); Kwan Ho Kim (Korea ElectroTechnology Research Institute, Korea); Donggi Youn (REPLEX, Korea)

TH1-C2-3

The plan of Microwave Power Transmission development for SSPS and its industry application

Shoichiro Mihara (Japan Space Systems, Japan)

TH1-C2-4

A Proposed MPT Demonstration Mission in Space

Xinbin Hou (China Academy of Space Technology, P.R. China); Shiwei Dong (China Academy of Space Technology, P.R. China)

TH1-C2-5

Strategic development of Solar Power Satellite

Koji Tanaka (Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan)

TECHNICAL SESSIONS (Oral Sessions)

8:30 - 10:10

Thursday, November 8

Room D

Session TH1-D

Advances in Power Amplifiers I

Chairs: Kazutaka Inoue (SEL, Japan), Farid Medjdoub (Institute of Electronics, Microelectronics and Nanotechnology, France)

TH1-D-1

Design of Broadband Doherty Power Amplifier with Extended Efficiency Range Employing Asymmetric Structure

Chuan Li (University of Electronic Science and Technology of China, P.R. China); Fei You (University of Electronic Science and Technology of China, P.R. China); Xiaoyu Zhu (University of Electronic Science and Technology of China, P.R. China); Jinchen Wang (University of Electronic Science and Technology of China, P.R. China); Songbai He (University of Electronic Science and Technology of China, Chengdu, P.R. China)

TH1-D-2

High Efficiency Compact Doherty Power Amplifier with Novel Harmonics Termination for Handset Applications

Tsuyoshi Sugiura (Samsung R&D Institute Japan, Japan); Satoshi Furuta (Samsung R&D Institute Japan, Japan); Tadamasu Murakami (Samsung R&D Institute Japan, Japan); Koki Tanji (Samsung R&D Institute Japan, Japan); Norihisa Otani (Samsung R&D Institute Japan, Japan); Toshihiko Yoshimasu (Waseda University, Japan)

TH1-D-3

GaN HEMT Darlington Power Amplifier with Independent Biasing for High-Efficiency Low-Distortion Wide-Dynamic-Range Adjustment

Atsushi Kitamura (The University of Electro-Communications, Japan); Yoichiro Takayama (The University of Electro-Communications, Japan); Ryo Ishikawa (The University of Electro-Communications, Japan); Kazuhiko Honjo (The University of Electro-Communications, Japan)

TH1-D-4

Experimental Characterization of a Load Modulated Balanced Amplifier with Simplified Input Power Splitter

David Collins (Cardiff University, United Kingdom (Great Britain)); Roberto Quaglia (Cardiff University, United Kingdom (Great Britain)); Jeff Powell (Skyarna Ltd, United Kingdom (Great Britain)); Steve Cripps (Cardiff University, United Kingdom (Great Britain))

TH1-D-5

Design of Broadband High-Efficiency Doherty Power Amplifier Using Post-Matching Network

Ce Shen (University of Electronic Science and Technology of China, P.R. China); Songbai He (University of Electronic Science and Technology of China, Chengdu, P.R. China); Xiaoyu Zhu (University of Electronic Science and Technology of China, P.R. China)

Room K

Session TH1-K

Special Session: New Developments and Technologies for Space Applications

Chairs: Guillaume Callet (UMS, France), Kenjiro Nishikawa (Kagoshima University, Japan)

TH1-K-1

Compact 1.9 THz Multi-Pixel Local Oscillator Chain

Imran Mehdi (JPL, USA)

TH1-K-2

The C-band HsSiC Rectifier for RF Energy Harvesting in a Spacecraft

Ryoko Kishikawa (National Institute of Advanced Industrial Science and Technology & The Graduate University of Advanced Studies, Japan); Shigeo Kawasaki (Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan)

TH1-K-3

Industrial GaAs & GaN MMICs Technologies Evaluated for Space Applications

Lény Baczkowski (UMS, France); Guillaume Callet (UMS, France)

Room 103

Session TH1-103

Microwave Frequency/Signal Control Circuits

Chairs: Noriharu Suematsu (Tohoku University, Japan), Kunihiro Kawai (NTT DOCOMO, Japan)

TH1-103-1

Design of a Compact Dual-Wideband Bandpass Filter With the Dual Stepped-Impedance Rectangular-Rings Resonator

Yi-Yuan Lin (National Chung Cheng University, Taiwan); Guan-Yin Lin (National Chung Cheng University, Taiwan); Ching-Wen Tang (National Chung Cheng University, Taiwan)

TH1-103-2

A 26GHz-band Image Enhancement Type 1-Bit DAC for Direct Digital RF 1-bit Modulator

Junhao Zhang (University of Tohoku, Japan); Masafumi Kazuno (Tohoku University, Japan); Mizuki Motoyoshi (Tohoku University, Japan); Suguru Kameda (Tohoku University, Japan); Noriharu Suematsu (Tohoku University, Japan)

TH1-103-3

A CMOS Triple-Band 2:1 Injection-Locked Frequency Divider with Inductive Coupling Resonator

Sheng-Lyang Jang (National Taiwan University of Science and Technology, Taiwan); Wen-Cheng Lai (National Penghu University of Science and Technology, Taiwan); Jia-Wen Syu (National Taiwan University of Science and Technology, Taiwan); Bi-Sheng Shih (National Taiwan University of Science and Technology, Taiwan)

TH1-103-4

Ultrawideband Compact 50:200 Ohm Guanella Balun Using Asymmetric Broadside-Coupled Lines

Samuel Wagner (University of California, Davis, USA); Giap Le (University of California, Davis, USA); Anh-Vu Pham (University of California at Davis, USA)

TH1-103-5

A Ka-Band Sub-harmonically Pumped Mixer Using Diode-Connected MOSFET for 5G mm-Wave Transceivers

Tsung-Ching Tsai (National Taiwan University & Graduate Institute of Communication Engineering, Taiwan); Ian Huang (National Taiwan University, Taiwan); Jeng-Han Tsai (National Taiwan Normal University, Taiwan); Tian-Wei Huang (National Taiwan University, Taiwan)

TECHNICAL SESSIONS (Oral Sessions)

Thursday, November 8

10:30 - 12:10

Room B1

Session TH2-B1

Antenna Arrays and Beam-forming I

*Chairs:*Jianfeng Li (Hohai University & Key Laboratory of Dynamic Cognitive System of Electromagnetic Spectrum Space (NUAA), Ministry of Industry and Information Technology, P.R. China), Akira Saitou (The University of Electro-Communications, Japan)

TH2-B1-1

Advanced Mode Unity Using Loop Antennas Proximate to Reflector for Orbital Angular Momentum Communication

Ryohei Yamagishi (The University of Electro-Communications, Japan); Hiroto Otsuka (The University of Electro-Communications, Japan); Ryo Ishikawa (The University of Electro-Communications, Japan); Akira Saitou (The University of Electro-Communications, Japan); Hiroshi Suzuki (The University of Electro-Communications, Japan); Kazuhiko Honjo (The University of Electro-Communications, Japan)

TH2-B1-2

Double Multiplicity Exploiting Orthogonal Polarizations of OAM-Wave for OAM Communication with Loop Arrays

Akira Saitou (The University of Electro-Communications, Japan); Hiroto Otsuka (The University of Electro-Communications, Japan); Ryohei Yamagishi (The University of Electro-Communications, Japan); Ryo Ishikawa (The University of Electro-Communications, Japan); Hiroshi Suzuki (The University of Electro-Communications, Japan); Kazuhiko Honjo (The University of Electro-Communications, Japan)

TH2-B1-3

Design of a Low-Coupled Compact MIMO Antenna with Element Spacing Less than 0.1 λ

Lei Zhao (Communication University of China, P.R. China); Dazhi Piao (Communication University of China, P.R. China)

TH2-B1-4

A New Study to Suppress Mutual-Coupling between Waveguide Slot Array Antennas based on Metasurface Bulkhead for MIMO Systems

Mohammad Alibakhshikenari (Università degli Studi di Roma "Tor Vergata", Roma - ITALY, Italy); Bal Virdee (London Metropolitan University, United Kingdom (Great Britain)); Mohsen Khalily (University of Surrey & 5G Innovation Centre, Institute for Communication Systems (ICS), United Kingdom (Great Britain)); Chan See (University of Bolton, United Kingdom (Great Britain)); Raed A Abd-Elhameed (University of Bradford, United Kingdom (Great Britain)); Francisco Falcone (Universidad Publica de Navarra, Spain); Ernesto Limiti (University of Rome Tor Vergata, Italy)

TH2-B1-5

140 bps/Hz 16 \times 16 MIMO Whole Azimuth Beam Steering Array for Connected Car Applications

Taiki Fukushima (University of Toyama, Japan); Kazuhiro Honda (University of Toyama, Japan); Koichi Ogawa (University of Toyama & Faculty of Engineering, Japan)

Room B2

Session TH2-B2

Novel Filter Design Techniques Based on Coupling Matrix

*Chairs:*Chun-Ping Chen (Kanagawa University, Japan), Jen-Tsai Kuo (Chang Gung University, Taiwan)

TH2-B2-1

Realization of Cross-Coupled X- and Y-Shaped Dual-Mode Dielectric Resonator Filters

Daniel Miek (University of Kiel, Germany); Sebastian Salzer (University of Kiel, Germany); Michael Höft (Kiel University, Germany)

TH2-B2-2

Synthesis Trisection Filter With Improved Quasi-Elliptic Passband Flatness

Jen-Tsai Kuo (Chang Gung University, Taiwan); Jhe-Wei Kuo (Chang Gung University, Taiwan)

TH2-B2-3

A Flat-Passband Filter with Hybrid Structure of Substrate Integrated Waveguide and Microstrip Resonators Based on Predistorted Nonuniform-Q Method

Liang-Feng Qiu (Shanghai Jiao Tong University, P.R. China); Lin-Sheng Wu (Shanghai Jiao Tong University, P.R. China); Junfa Mao (Shanghai Jiao Tong University, P.R. China)

TH2-B2-4

Two-Layer Planar-Circuit Filters Based on the Cul-de-Sac Coupling Matrix under Consideration of Cross-Coupling Suppression

Kazuki Yamamura (University of Doshisha, Japan)

TH2-B2-5

Theoretical Design of M-PhC Bandpass Filter In THz Regime

Chenglong Xie (University of Kanagawa, Japan); Chun-Ping Chen (Kanagawa University, Japan); Zejun Zhang (Kanagawa University, Japan); Tetsuo Anada (Kanagawa University, Japan)

Room C1

Session TH2-C1

Terahertz Active Devices

*Chairs:*Masayuki Fujita (Osaka University, Japan), Michael Schlechtweg (Fraunhofer IAF, Germany)

TH2-C1-1 [Invited]

Terahertz Oscillators Using Resonant Tunneling Diodes

Masahiro Asada (Tokyo Institute of Technology, Japan); Safumi Suzuki (Tokyo Institute of Technology, Japan)

TH2-C1-2

A 300-GHz Integrated Transmitter based on InP HBT Technology

Heekang Son (Korea University, Korea); Doyoon Kim (Korea University, Korea); Kiryong Song (Korea University, Korea); Jai-Heon Cho (Korea University, Korea); Jae-Sung Rieh (Korea University, Korea)

TH2-C1-3

200 GHz Power-Efficient BiCMOS Phased-Array Receiver Frontend

Paolo Valerio Testa (Technische Universität Dresden, Germany); Vincent Rieß (Technische Universität Dresden, Germany); Songhui Li (TU Dresden, Germany); Corrado Carta (Dresden University of Technology, Germany); Frank Ellinger (Technische Universität Dresden, Germany)

TH2-C1-4

A 140-210 GHz Low-Power Vector-Modulator Phase Shifter in 130 nm SiGe BiCMOS Technology

Paolo Valerio Testa (Technische Universität Dresden, Germany); Corrado Carta (Dresden University of Technology, Germany); Frank Ellinger (Technische Universität Dresden, Germany)

Room C2

Session TH2-C2

Design and Characterization of Microwave Components

*Chairs:*Tsugumichi Shibata (Tokyo City University, Japan), He Zhu (University of Technology, Sydney & Global Big Data Technologies Centre, Australia)

TH2-C2-1

A Novel Concept for 2D Butler Matrix with Multi-Layers Technology

Cheng-Hung Hsieh (National Chung Cheng University, Taiwan); Yi-Ting Lin (National Chung Cheng University, Taiwan); Hsiang-Chieh Jhan (National Chung Cheng University, Taiwan); Tsai Zuo-Min (National Chung Cheng University, Taiwan)

TH2-C2-2

Broadband Characteristics of Multi-Layer Ceramic Chip Capacitors for High-Speed Digital Signal Coupling

Yoshito Kato (Tokyo City University, Japan); Tsugumichi Shibata (Tokyo City University, Japan)

TH2-C2-3

An Improved De-Embedding Technique for GaN High-Electron Mobility Transistors

Zhennan Wei (Southeast University, P.R. China); Fengyi Huang (Southeast University, P.R. China); Xusheng Tang (Southeast University, P.R. China); Youming Zhang (Southeast University, P.R. China); Nan Jiang (S-TEK (Shanghai)High-frequency Communication Technology Co., Ltd., P.R. China)

TH2-C2-4

Modified Wideband Tandem Couplers with Arbitrary Coupling Coefficient and Its Implementation in Beam-Forming Networks

He Zhu (University of Technology, Sydney & Global Big Data Technologies Centre, Australia); Y. Jay Guo (University of Technology, Sydney, Australia)

TH2-C2-5

Improved Harmonics in Metal Insulator Metal Capacitors Using Design Techniques

Praveen Arotha (Globalfoundries Engineering Private Limited, India); Ananth Sundaram (Globalfoundries Engineering Private Limited, India); Tamilmani Ethirajan (Globalfoundries Engineering Private Limited, India); Balaji Swaminathan (Globalfoundries Engineering Private Limited, India)

TECHNICAL SESSIONS (Oral Sessions)

10:30 - 12:10

Thursday, November 8

Room D

Session TH2-D

Advances in Power Amplifiers II

Chairs: Kenji Mukai (Murata Manufacturing Co., Ltd., Japan), Shintaro Shinjo (Mitsubishi Electric Corporation, Japan)

TH2-D-1

120-W Ku-band GaN SSPA with Diode Linearizer for Future Broadcasting Satellite

Masafumi Nagasaka (NHK, Japan); Masaaki Kojima (NHK (Japan Broadcasting Corporation), Japan); Susumu Nakazawa (NHK, Japan); Hisashi Sujikai (NHK Science and Technical Research Laboratories, Japan); Shoji Tanaka (NHK Science and Technical Research Laboratories, Japan); Takuma Torii (Mitsubishi Electric, Japan); Hiromitsu Utsumi (Mitsubishi Electric, Japan); Shintaro Shinjo (Mitsubishi Electric Corporation, Japan); Mitsuhiro Shimozawa (Mitsubishi Electric, Japan)

TH2-D-2

A Novel Multi-Band Look-Up Table Based Digital Predistorter with a Single Common Feedback Loop

Tomoya Ota (Fujitsu Limited, Japan); Toshio Kawasaki (Fujitsu Limited, Japan); Shigekazu Kimura (Fujitsu Limited, Japan); Ken Tamanoi (Fujitsu Limited, Japan); Hiroyoshi Ishikawa (Fujitsu Laboratories Limited, Japan); Masahiko Shimizu (Fujitsu Limited, Japan); Maniwa Toru (Fujitsu Limited, Japan)

TH2-D-3

An S-Band GaN MMIC High Power Amplifier With 50W Output Power and 55% Power Added Efficiency

Rocco Giorè (University of Roma Tor Vergata, Italy); Ferdinando Costanzo (University of Roma Tor Vergata, Italy); Sergio Colangeli (University of Roma Tor Vergata, Italy); Walter Ciccognani (Università of Roma Tor Vergata, Italy); Manuela Sotgia (Rheinmetall Italy, Italy); Maurizio Cirillo (Rheinmetall Italy, Italy); Ernesto Limiti (University of Roma Tor Vergata, Italy)

TH2-D-4

53% PAE 32W Miniaturized X-band GaN HEMT Power Amplifier MMICs

Naoko Ono (Toshiba Infrastructure Systems & Solutions Corporation, Japan); Tomohiro Senju (Toshiba Infrastructure Systems & Solutions Corporation, Japan); Kazutaka Takagi (Toshiba Infrastructure Systems & Solutions Corporation, Japan)

TH2-D-5

70W X-band GaN Internally Matched FET with 40% PAE and 800MHz bandwidth

Kwanjin Oh (Wavice, Inc, Korea); Sangmin Lee (Wavice, Inc, Korea); Heejae Yoon (Wavice, Inc, Korea); Heejun Kim (Wavice, Inc, Korea)

Room K

Session TH2-K

Microwave Biomedical Applications

Chairs: Basari Basari (Universitas Indonesia, Indonesia), Tomoaki Nagaoka (National Institute of Information and Communications Technology, Japan)

TH2-K-1

Preliminary Numerical Analysis of Monitoring Bone Density Using Microwave Tomography

Mohamad Alkhodari (American University of Sharjah, United Arab Emirates); Amer Zakaria (American University of Sharjah, United Arab Emirates); Nasser Qaddoumi (American University of Sharjah, United Arab Emirates)

TH2-K-2

Immunosensor using 250MHz shear horizontal surface acoustic wave delay line

Hiromi Yatsuda (Japan Radio Co. Ltd., Japan)

TH2-K-3

Contactless Carotid Pulse Measurement Using Continuous Wave Radar

Kilin Shi (Friedrich-Alexander University Erlangen-Nuremberg, Germany); Sven Schellenberger (Brandenburg University of Technology, Germany); Tobias Steigleder (University Hospital Erlangen, Germany); Fabian Michler (Friedrich-Alexander University Erlangen-Nuremberg, Germany); Fabian Lurz (Friedrich-Alexander University Erlangen-Nuremberg, Germany); Robert Weigel (Friedrich-Alexander Universität Erlangen-Nürnberg, Germany); Alexander Koelpin (BTU & Chair for Electronics and Sensor Systems, Germany)

TH2-K-4

Portable Biomedical Microwave Imaging Using Software-Defined Radio

Anthony E Stancombe (The University of Queensland, Australia); Konstanty S Bialkowski (The University of Queensland, Australia)

TH2-K-5

Orthogonally-face-to-face Type of Micro-electrode with Ring Resonator for Circulating Tumor Cell Detection

Shouta Sora (National Institute of Technology, Kure College, Japan); Kousei Kumahara (NIT, Kure College, Japan); Masanori Eguchi (National Institute of Technology, Kure College, Japan); Futoshi Kuroki (National Institute of Technology, Kure College, Japan); Takeshi Yamakawa (Fuzzy Logic Systems Institute, Japan); Fumihiko Tanaka (University of Occupational and Environmental Health, Japan)

Room 103

Session TH2-103

JSPS 188 Committee/JEMEA Special Session: Innovative Microwave Heating and Chemistry

Chairs: Jun Fukushima (Tohoku University, Japan), Shuntaro Tsubaki (Tokyo Institute of Technology, Japan)

TH2-103-1

New Aspects towards Application of Microwave Heating in Solid Systems

Yuji Wada (Tokyo Institute of Technology, Japan)

TH2-103-2

Electrical Properties of Ferroelectric Thin Films Crystallized by Microwave Heating

Zhanjie Wang (Shenyang University of Technology, P.R. China)

TH2-103-3

Selective microwave heating of organic reaction mixtures

Gregory B Dudley (West Virginia University, USA)

TH2-103-4

Research on Microwave Chemistry in Sichuan University

Kama Huang (Sichuan University, P.R. China); Yanping Zhou (Sichuan University, P.R. China); Li Wu (Sichuan University, P.R. China)

TH2-103-5

Study on Microwave Absorption Property of Multi Metal Particles by Electromagnetic Simulation

Naoki Shinohara (Kyoto University, Japan)

TECHNICAL SESSIONS (Oral Sessions)

Thursday, November 8

13:30 - 15:10

Room B1

Session TH3-B1

Antenna Arrays and Beam-forming II

*Chairs:*Jiro Hirokawa (Tokyo Institute of Technology, Japan), Mayumi Matsunaga (Tokyo University Technology, Japan)

TH3-B1-1

Mm-Wave High Gain Substrate Integrated Cavity Excited Patch Antenna Array

Jianfeng Zhu (Beijing University of Posts and Telecommunications, P.R. China); Li Deng (Beijing University of Posts and Telecommunications, P.R. China); Yang Yang (University of Technology Sydney, Australia); Shufang Li (Beijing University of Posts and Telecommunications, P.R. China)

TH3-B1-2

Microstrip Aperture-Coupled Stacked Patch Antenna Array for Wide-Band Wide-Angle-Scan Applications

Cheng Yang (East China Research Institute of Electronic Engineering, P.R. China); Sen Feng (The 38th Reserch Instatute of China Electronics Technology Group Corporation, P.R. China)

TH3-B1-3

A Novel Rigid-Flex Aperture Coupled Patch Antenna Array

Vincens Gjakaj (Michigan State University, USA); John Papapolymerou (Michigan State University, USA); John Albrecht (Michigan State University, USA); Prem Chahal (Michigan State University, USA)

TH3-B1-4

Bandwidth Enhancement of a Series-Fed Microstrip Patch Array Antenna

Yohei Miura (Japan Radio Co., Ltd., Japan); Kazuo Yamashita (Japan Radio Co., Ltd., Japan); Rei Katoh (Japan Radio Co., Ltd., Japan); Yuzo Shibuya (Japan Radio Co., Ltd., Japan)

TH3-B1-5

Broadband Duplex Slot Antenna Array with high isolation

Wei Hu (South China University of Technology, P.R. China); Zheming Xie (South China University of Technology, P.R. China); MingYou Xie (South China University of Technology, P.R. China)

Room B2

Session TH3-B2

Novel Tunable Technologies and Structures

*Chairs:*Ruey-Beei Wu (National Taiwan University, Taiwan), Hidenori Yukawa (Mitsubishi Electric, Japan)

TH3-B2-1

A Wide Range Tunable Bandpass Filter Using Imaginary Resonance Phenomena

Satoru Yokono (Japan Radio Co., Ltd., Japan); Takashi Chiba (Japan Radio Co., Ltd, Japan); Shotaro Nagai (Japan Radio Co., Ltd, Japan); Kazuo Hirabayashi (Japan Radio Co., Ltd, Japan); Nobuyuki Adachi (Japan Radio Co., Ltd, Japan)

TH3-B2-2

Tunable Filter by FBAR Using Coupling Capacitors

Han-Yun Tsai (National Taiwan University, Taiwan); Ruey-Beei Wu (National Taiwan University, Taiwan)

TH3-B2-3

A Tunable Single-to-Balanced Bandpass Filter with Bandwidth Control

Xu Zhu (University of Electronic Science and Technology of China, P.R. China); Tao Yang (University of Electronic Science and Technology of China, P.R. China); Pei-Ling Chi (National Chiao Tung University, Taiwan); Ruimin Xu (University of Electronic Science and Technology of China, P.R. China)

TH3-B2-4

Miniaturized Tunable Filters with T-coil Design

Chia-Chia Lin (National Taiwan University, Taiwan); Han-Yun Tsai (National Taiwan University, Taiwan); Ruey-Beei Wu (National Taiwan University, Taiwan)

TH3-B2-5

Compact Multi-Function Notch Filter Using $\lambda/4$ Microstrip Resonator with Embedded Varactor-Loaded Hybrid Microstrip/CPW Structure

Tianyi Wang (University of Electronic Science and Technology of China, P.R. China); Xiaohui Liu (University of Electronic Science and Technology of China, P.R. China); Zhixian Deng (University of Electronic Science and Technology of China, P.R. China); Xun Liu (University of Electronic Science and Technology of China, P.R. China)

Room C1

Session TH3-C1

Millimeter-wave Devices and Circuits

*Chairs:*Hiroshi Hamada (NTT Corporation, Japan), Jeffrey Hesler (Virginia Diodes, Inc., USA)

TH3-C1-1

On-Chip Antennas in SiGe BiCMOS Technology: Challenges, State of the art and Future Directions

Herman J Ng (IHP, Germany); Dietmar Kissinger (IHP, Germany)

TH3-C1-2

High Responsivity Power Detectors for W/D-Bands Passive Imaging Systems in 0.13 μ m SiGe BiCMOS Technology

Berktag Ustundag (Sabanci University, Turkey); Esref Turkmen (Sabanci University, Turkey); Barbaros Cetindogan (IHP, Germany); Mehmet Kaynak (IHP, Germany & Leibniz-Institut für innovative Mikroelektronik, Turkey); Yasar Gurbuz (Sabanci University, Turkey)

TH3-C1-3

Tunable Equalizer for 64 Gbps data communication systems in 130nm SiGe

Stavros Giannakopoulos (Chalmers University of Technology, Sweden); Zhongxia Simon He (Chalmers University of Technology & Microwave Electronic Lab, Sweden); Herbert Zirath (Chalmers University of Technology, Sweden)

TH3-C1-4

A 28 GHz Superregenerative Amplifier for FMCW Radar Reflector Applications in 45 nm SOI CMOS

Manu Viswambharan Thayyil (Technische Universität Dresden, Germany); Hatem Ghaleb (TU Dresden, Germany); Niko Joram (Technische Universität Dresden, Germany); Frank Ellinger (Technische Universität Dresden, Germany)

TH3-C1-5

High-output-power and Reverse-isolation G-band Power Amplifier Module Based on 80-nm InP HEMT Technology

Hiroshi Hamada (NTT Corporation, Japan); Takuya Tsutsumi (NTT Access System Services Laboratories & Neko 9 Laboratories, Japan); Hiroki Sugiyama (NTT Device Technology Laboratories, NTT Corporation, Japan); Hideyuki Nosaka (NTT Corporation, Japan)

Room C2

Session TH3-C2

EM Analysis and Scattering Problems

*Chairs:*Takashi Hisakado (Kyoto University, Japan), Xiaochun LI (SHANGHAI Jiao Tong University, P.R. China)

TH3-C2-1

A Compact 2-D WLP-FDTD Method for Superconducting Microstrip Lines

Yan Li (Shanghai Jiao Tong University, P.R. China); Xiaochun LI (SHANGHAI Jiao Tong University, P.R. China); Junfa Mao (Shanghai Jiao Tong University, P.R. China)

TH3-C2-2

THz Wave Scattering by Graphene Strip Grating Embedded into a Dielectric Slab with PEC Plane

Mstyslav Kaliberda (Karazin National University of Kharkiv & National University of Pharmacy, Ukraine); Leonid Lytvynenko (Institute of Radio Astronomy of the National Academy of Sciences of Ukraine, Ukraine); Sergey Pogarsky (Karazin National University of Kharkiv, Ukraine)

TH3-C2-3

Formulation of Single-conductor Transmission Line Model with Feedback Electric Fields by Terminal Discontinuity

Daiki Tashiro (Kyoto University, Japan); Takashi Hisakado (Kyoto University, Japan); Tohlu Matsushima (Kyushu Institute of Technology, Japan); Osami Wada (Kyoto University & Graduate School of Engineering, Japan)

TH3-C2-4

Generation of One-Dimensional Airy Beams by a Single-Layer Flexible Metasurface at Millimeter-Wave Band

Zhuo-Wei Miao (Southeast University, P.R. China); Zhang-Cheng Hao (SEU, P.R. China); Quan Yuan (Southeast University, P.R. China)

TH3-C2-5

Scattering Characteristics of Vortex Electromagnetic Waves for Typical Targets

Xiangxi Bu (Institute of Electronics, Chinese Academy of Sciences, P.R. China); Zhuo Zhang (Institute of Electronics, Chinese Academy of Sciences, P.R. China); Xingdong Liang (Institute of Electronics, Chinese Academy of Sciences, P.R. China); Zheng Zeng (Institute of Electronics, Chinese Academy of Sciences, P.R. China); Longyong Chen (National Key Laboratory of Science and Technology on Microwave Imaging, P.R. China); Haibo Tang (Institute of Electronics, Chinese Academy of Sciences, P.R. China)

TECHNICAL SESSIONS (Oral Sessions)

13:30 - 15:10

Thursday, November 8

Room D

Session TH3-D

mmW Low Noise Amplifiers

Chairs: Yasushi Itoh (Shonan Institute of Technology, Japan), Peng Wen Wong (Universiti Teknologi PETRONAS, Malaysia)

TH3-D-1

Low-Noise Amplifiers for W-Band and D-Band Passive Imaging Systems in SiGe BiCMOS Technology

Berkutg Ustundag (Sabanci University, Turkey); Esref Turkmen (Sabanci University, Turkey); Barbaros Cetindogan (IHP, Germany); Alper Guner (Sabanci University, Turkey); Mehmet Kaynak (IHP, Germany & Leibniz-Institut für innovative Mikroelektronik, Turkey); Yasar Gurbuz (Sabanci University, Turkey)

TH3-D-2

A 38 GHz Low Power Variable Gain LNA Using PMOS Current-Steering Device and Gm-Boost Technique

Yu-Teng Chang (National Taiwan University, Taiwan); Yu-Ni Chen (National Taiwan University, Taiwan); Hsin-Chia Lu (National Taiwan University, Taiwan)

TH3-D-3

A W-Band Low-Noise Amplifier with Shunt Inductors and Transformer Feedback Gm-Boosting Techniques

Hsing-I Tsai (National Tsing Hua University, Taiwan); Hou-Ru Pan (National Tsing Hua University, Taiwan); Hong-Shen Chen (National Tsing Hua University, Taiwan); Jenny Yi-Chun Liu (National Tsing Hua University, Taiwan)

TH3-D-4

An E-Band Transformer-Based 90-nm CMOS LNA

Jeng-Han Tsai (National Taiwan Normal University, Taiwan); Chuan-Chi Hung (National Taiwan Normal University, Taiwan); Jen-Hao Cheng (MediaTek, Taiwan); Chen-Fang Lin (National Taiwan Normal University, Taiwan); Ruei-An Chang (National Taiwan Normal University, Taiwan)

TH3-D-5

A 76-98 GHz Broadband Low-DC-Power Low Noise Amplifier Using Coplanar Waveguide in 40 nm CMOS Process

Shao-Wei Peng (National Central University, Taiwan); Jyun-Jia Huang (National Central University, Taiwan); Hong-Yeh Chang (National Central University, Taiwan); Yeong-Maw Chen (NCSIST, Taiwan)

Room K

Session TH3-K

Beam Controlled Communication Techniques and Radar/Communication Systems

Chairs: Madhumita Chakravarti (Research Center Imarat, India), Kazuaki Takahashi (Panasonic Corporation, Japan)

TH3-K-1

An Efficient Codebook-based Beam Training Technique for Millimeter-Wave Communication Systems

Phonfred Okoth (Waseda University, Japan); Quang Ngoc Nguyen (Waseda University, Japan); Dhruva Dhakal (Waseda University, Japan); Daichi Nozaki (Waseda University, Japan); Yoshihide Yamada (Malaysia-Japan International Institute of Technology, Universiti Teknologi Malaysia, Malaysia); Takuro Sato (Waseda University, Japan)

TH3-K-2

Low Complexity Antenna Array Concept Using Overlapped Subarray Based Hybrid Beamforming

Joerg Eisenbeis (Karlsruhe Institute of Technology, Germany); Pablo Ramos López (Karlsruhe Institute of Technology (KIT), Germany); Tobias Mahler (Karlsruhe Institute of Technology (KIT), Germany); Christian von Vangerow (Karlsruhe Institute of Technology (KIT), Germany); Thomas Zwick (Karlsruhe Institute of Technology (KIT), Germany)

TH3-K-3

A mm-Wave Multi-Beam Directional and Polarimetric Agile Front-End for 5G Communications

Steffen Spira (Technische Universität Ilmenau, Germany); Kurt Gerd Blau (Technische Universität Ilmenau, Germany); Christoph Wagner (Technische Universität Ilmenau, Germany); Alexander Schulz (Technische Universität Ilmenau, Germany); Nam Gutzeit (Technische Universität Ilmenau & IMN, Germany); Jens Müller (Technische Universität Ilmenau, Germany); Reiner S. Thomä (Ilmenau University of Technology, Germany); Matthias Hein (Ilmenau University of Technology, Germany)

TH3-K-4

Development of 5G System Evaluation Tool

Koshiro Kitao (NTT DOCOMO, INC., Japan); Anass Benjebbour (NTT DOCOMO, INC., Japan); Tetsuro Imai (NTT DOCOMO, INC., Japan); Yoshihisa Kishiyama (NTT DOCOMO, INC., Japan); Minoru Inomata (NTT DOCOMO, INC., Japan); Yukihiko Okumura (NTT DOCOMO, INC., Japan)

TH3-K-5

24 GHz QAM-FBMC Radar with Communication System (RadCom)

Jéssica Sanson (University of Aveiro & Instituto de Telecomunicacoes, Portugal); Atilio Gameiro (Telecommunications Institute/Aveiro University, Portugal); Daniel Castanheira (Instituto de Telecomunicações (IT)/University of Aveiro, Portugal); Paulo P. Monteiro (Universidade de Aveiro & Instituto de Telecomunicações, Portugal)

Room 103

Session TH3-103

Electromagnetic Compatibility (EMC) I

Chairs: Ae-Kyoung Lee (ETRI, Korea), Tohlu Matsushima (Kyushu Institute of Technology, Japan)

TH3-103-1 [Invited]

Review on Human Dosimetry for Radio-Frequency Exposure Above 6 GHz -International Exposure Standards-

Akimasa Hirata (Nagoya Institute of Technology, Japan)

TH3-103-2

Design of an X-band Microwave Magnetic Absorber composed of Multimode Dielectric Resonator Array

Sofian Hamid (RWTH Aachen University, Germany); Dirk Heberling (RWTH Aachen University, Germany)

TH3-103-3

Comparison of different SAR limits in SAM phantom for mobile phone exposure

Ae-Kyoung Lee (ETRI, Korea); Seon-Eui Hong (Broadcasting and Media Research Laboratory, Electronics and Telecommunication Research Institute, Korea); Masao Taki (Tokyo Metropolitan University, Japan); Kanako Wake (National Institute of Information and Communications Technology, Japan); Hyung Do Choi (ETRI, Korea)

TH3-103-4

Shielding Effect of Mu-Near-Zero Metamaterial Slab to Reduce Magnetic Flux Leakage in Wireless Power Transfer System

In Gon Lee (Kongju National University, Korea); Nam Kim (Chungbuk National University, Korea); In-Kui Cho (ETRI, Korea); Ic Pyo Hong (Kongju National University, Korea)

TECHNICAL SESSIONS (Oral Sessions)

Thursday, November 8

15:30 - 17:10

Room B1

Session TH4-B1

Applications of Metasurfaces

Chairs: Takuji Arima (Tokyo University of Agriculture and Technology, Japan), Sungtek Kahng (Incheon National University, Korea)

TH4-B1-1

All-Polarization Blazed Surface

Haozhan Tian (University of California, Los Angeles, USA); Tatsuo Itoh (UCLA, USA)

TH4-B1-2

A Circularly Polarized Antenna Integrated with a Solar Cell Metasurface for CubeSat

Son Xuat Ta (Hanoi University of Science and Technology, Vietnam); Ikmo Park (Ajou University, Korea)

TH4-B1-3

Highly Unidirectional Slot Antenna using Transmissive and Reflective Metasurfaces for WLAN and WiMAX Applications

Tanan Hongnara (King Mongkut's University of Technology North Bangkok, Thailand); Sarawuth Chaimool (Khon Kaen University, Thailand); Prayoot Akkaraekthalin (King Mongkut's University of Technology North Bangkok, Thailand)

TH4-B1-4

An X-Band Flat Broadband Transformation-Optics-Driven Luneburg Lens Antenna for Synthetic Aperture Radar

Yuanyan Su (National University of Singapore, Singapore); Zhi Ning Chen (National University of Singapore, Singapore); Siegfried Daquiao Balon (National University of Singapore, Singapore); Ke You Cheong (National University of Singapore, Singapore)

TH4-B1-5

The Angular Stability of a Miniaturized Frequency Selective Surface Wi-Fi Protection Shield

Go Itami (NTT & Network Technology Laboratories, Japan); Yohei Toriumi (NTT, Japan); Jun Kato (NTT, Japan)

Room B2

Session TH4-B2

Novel Active Structures and Components

Chairs: Roe Ben Yishay (ON Semiconductor, Israel), Hiroshi Mizutani (Salesian Polytechnic, Japan)

TH4-B2-1

An L-Band SiGe HBT Active Differential Equalizer with Tunable Positive/Negative Gain Slopes Using Transistor-Loaded RC-Circuits

Yasushi Itoh (Shonan Institute of Technology, Japan)

TH4-B2-2

Low Loss 28 GHz Digital Phase Shifter for 5G Phased Array Transceivers

Roe Ben Yishay (ON Semiconductor, Israel); Danny Elad (ON Semiconductor, Israel)

TH4-B2-3

A 7 GHz Differential 4-Stage Programmable Equalizer with Hybrid Continuous-Time/Discrete-Time Architecture in 28 nm CMOS

Yohei Morishita (Panasonic Corporation, Japan); Junji Sato (Panasonic Corporation, Japan); Koji Takinami (Panasonic Corporation, Japan); Kazuaki Takahashi (Panasonic Corporation, Japan)

TH4-B2-4

A Novel Reconfigurable GaN Filter MMIC with Active Reflector

Hiroshi Mizutani (Salesian Polytechnic, Japan)

TH4-B2-5

A Tunable Non-Foster T-network Loaded Transmission Line Using Distributed Amplifier-Based Reconfigurable Negative Group Delay Circuit

Minning Zhu (Rutgers University, USA); Chung-Tse Michael Wu (Rutgers University, USA)

Room C1

Session TH4-C1

High-speed and Broadband Millimeter and THz Wave Systems

Chairs: Akihiko Hirata (Chiba Institute of Technology, Japan), Ho-Jin Song (POSTECH, Korea)

TH4-C1-1

Performance Evaluation of a 32-QAM 1-Meter Wireless Link Operating at 220-260 GHz with a Data-Rate of 90 Gbps

Pedro Rodriguez-Vazquez (Bergische Universität Wuppertal, Germany); Janusz Grzyb (University of Wuppertal, Germany); Bernd Heinemann (IHP, Germany); Ullrich Pfeiffer (University of Wuppertal, Germany)

TH4-C1-2

Resonant Tunneling Diode Receiver for Coherent Terahertz Wireless Communication

Naoki Nishigami (Osaka University, Japan); Yousuke Nishida (Osaka University, Japan); Sebastian Diebold (Osaka University, Japan); Jaeyoung Kim (Rohm Co, Ltd., Japan); Masayuki Fujita (Osaka University, Japan); Tadao Nagatsuma (Osaka University, Japan)

TH4-C1-3

Study on the Number and Size of Cells Composed of Multiple-beam Transmission Base Station System

Yuma Kase (Nihon University, Japan); Tomohiro Seki (Nihon University, Japan)

TH4-C1-4

A 60-GHz 10-Gb/s OOK Modulator with Transformer-Feedback Technique for High Gain and On-Off Isolation in 90-nm CMOS

Po-Hsiang Chuang (National Taiwan University, Taiwan); Jung-Lin Lin (National Taiwan University, Taiwan); Yu-Hsuan Lin (National Taiwan University, Taiwan); Yunshan Wang (National Taiwan University, Taiwan); Huei Wang (National Taiwan University, Taiwan)

TH4-C1-5

Asynchronous measurement of millimeter waves using integrated one-dimensional multi-channel probe

Yuya Asano (Gifu University, Japan); Hirohisa Uchida (ARKRAY Inc., Japan); Makoto Tojo (Think-Lands Co., Ltd., Japan); Yoichi Oikawa (Think-Lands Co., Ltd., Japan); Kunio Miyaji (Think-Lands Co., Ltd., Japan); Shintaro Hisatake (Gifu University, Japan)

Room C2

Session TH4-C2

Novel Wireless Systems and Propagation

Chairs: Jerome Cheron (NIST, USA), Shuichi Obayashi (Toshiba Corporation, Japan)

TH4-C2-1

Effect of human body shadowing on spatial correlation of indoor millimeter MIMO branches

Shuichi Obayashi (Toshiba Corporation, Japan); Takeo Fujii (The University of Electro-Communications, Japan)

TH4-C2-2

Performance Evaluation of an IEEE 802.11af Prototype in a Suburban Environment

Antonio III Montejo (University of San Carlos, Philippines); Alberto Baniacia (University of San Carlos, Philippines); Hirokazu Sawada (National Institute of Information and Communications Technology, Japan); Kentaro Ishizu (National Institute of Information and Communications Technology, Japan); Takeshi Matsumura (Kyoto University & National Institute of Information and Communications Technology (NICT), Japan); Kazuo Ibuka (National Institute of Information and Communications Technology, Japan); Fumihide Kojima (National Institute of Information and Communications Technology, Japan)

TH4-C2-3

Propagation of Compact-Modeling Measurement Uncertainty to 220 GHz Power-Amplifier Designs

Jerome Cheron (NIST, USA); Dylan Williams (NIST, USA); Konstanty Lukasiak (KU Leuven, Belgium & Warsaw University of Technology, Poland); Richard Chamberlin (NIST, USA); Benjamin F Jamroz (NIST, USA); Erich Grossman (NIST, USA); Wojciech Wiatr (Warsaw University of Technology, Poland); Dominique Schreurs (KU Leuven, Belgium)

TH4-C2-4

Multiple Frequency Reconstruction Method with Phaseless Data

Hu Zheng (University of Electronic Science and Technology of China, P.R. China); Baojin Liu (University of Electronic Science and Technology of China, P.R. China)

TH4-C2-5

Silicon Metadevices for Vortex Beam Generation at Visible Frequencies

Zhixia Xu (Southeast University, P.R. China); Yicheng Hou (Southeast University, P.R. China); Changjiang Su (Southeast University, P.R. China); Hongxin Zhao (Southeast University, P.R. China); Shunli Li (Southeast University, P.R. China); Xiaoxing Yin (Southeast University, P.R. China)

TECHNICAL SESSIONS (Oral Sessions)

15:30 - 17:10

Thursday, November 8

Room D

Session TH4-D

Monolithic Receivers and Transmitters

Chairs: Mizuki Motoyoshi (Tohoku University, Japan), Jae-Sung Rieh (Korea University, Korea)

TH4-D-1

A 28GHz 4-Channel Transmit/Receive RF Core-Chip with Highly-Accurate Phase Shifter for High SHF Wide-band Massive MIMO in 5G

Wataru Yamamoto (Mitsubishi Electric Corporation, Japan); Koji Tsutsumi (Mitsubishi Electric Corporation, Japan); Takaya Maruyama (Mitsubishi Electric Corporation, Japan); Takanobu Fujiwara (Mitsubishi Electric Corporation, Japan); Tatsuya Hagiwara (Mitsubishi Electric Corporation, Japan); Ai Osawa (Mitsubishi Electric Corporation, Japan); Mitsuhiro Shimozawa (Mitsubishi Electric, Japan)

TH4-D-2

36-40 GHz Tx/Rx Beamformers for 5G mm-Wave Phased-Array

Chun-Nien Chen (National Taiwan University, Taiwan); Yi-Hsien Lin (National Taiwan University, Taiwan); Yin-Lin Liu (National Taiwan University, Taiwan); Wei-Jun Liao (National Chung Cheng University, Taiwan); Yu-Hsiang Nien (National Chung Cheng University, Taiwan); Hsin-Chia Lu (National Taiwan University, Taiwan); Tsung-Heng Tsai (National Chung Cheng University, Taiwan); Tian-Wei Huang (National Taiwan University, Taiwan); Huei Wang (National Taiwan University, Taiwan)

TH4-D-3

A Ku-Band 8-Element Phased-Array Receiver in 0.18- μ m CMOS Technology

Yiming Yu (University of Electronic Science and Technology of China, P.R. China); Xiaoning Zhang (University of Electronic Science and Technology of China, P.R. China); Zhengdong Jiang (University of Electronic Science and Technology of China, P.R. China); Yunqiu Wu (University of Electronic Science and Technology of China, P.R. China); Chenxi Zhao (University of Electronic Science and Technology of China, P.R. China); Huihua Liu (University of Electronic Science and Technology of China, P.R. China); Kai Kang (University of Electronic Science and Technology of China, P.R. China)

TH4-D-4

Design of V-Band CMOS Low-Noise Amplifier and Mixer with Integrated Transformers

Hong-Shen Chen (National Tsing Hua University, Taiwan); Wen-Chieh Huang (National Tsing Hua University, Taiwan); Jenny Yi-Chun Liu (National Tsing Hua University, Taiwan)

TH4-D-5

A Ku-Band Receiver with 12-to-20-dB Gain, -14-dBm IP1dB in 65-nm CMOS Technology

Depeng Cheng (Southeast University, P.R. China); Lianming Li (Southeast University, P.R. China)

Room K

Session TH4-K

System Techniques - Material, Component, Circuit, and Evaluation Aspects

Chairs: Julian L Webber (Osaka University & Advanced Telecommunications Research Institute International, Japan), Herbert Zirath (Chalmers University of Technology, Sweden)

TH4-K-1

Clipping-and-Bank-Filtering Technique in Joint Crest Factor Reduction and Digital Predistortion for Power Amplifiers

Siqi Wang (GeePs, centralesupelec); Morgan Roger (Supélec, France); Caroline Lelandais-Perrault (SUPELEC, France)

TH4-K-2

Cancelling Noise in Multi-Band Digital-Intensive Transmitters

Sungwon Chung (University of Southern California, USA); Rui Ma (Mitsubishi Electric Research Lab, USA)

TH4-K-3

Evaluation of Link Level Performance Considering EVM of Transmit Signal for Downlink NOMA

Kenta Mayama (Tohoku University, Japan); Kohei Akimoto (Tohoku University, Japan); Suguru Kameda (Tohoku University, Japan); Noriharu Suematsu (Tohoku University, Japan)

TH4-K-4

Emulator to Generate Multiple Heterogeneous Interference Signal in Korean Unlicensed Band

Sangjoon Lee (Kookmin University, Korea); Hyungoo Yoon (Myongji College, Korea); Kyung-Jin Baik (Kookmin University, Korea); Byung Jun Jang (Kookmin Univ, Korea)

Room 103

TH4-103

Electromagnetic Compatibility (EMC) II

Chairs: Katsushige Harima (National Institute of Information and Communications Technology, Japan), Tohlu Matsushima (Kyushu Institute of Technology, Japan)

TH4-103-1

Both-side Retrodirective System for Minimizing the Leak Energy in Microwave Power Transmission

Takayuki Matsumuro (Ryukoku University, Japan); Yohei Ishikawa (Kyoto University, Japan); Masashi Yanagase (Murata Manufacturing Co., Ltd., Japan); Naoki Shinohara (Kyoto University, Japan)

TH4-103-2

Investigation of Radiated Immunity Testing Using White Gaussian Noise and Multitone Signals

Katsushige Harima (National Institute of Information and Communications Technology, Japan); Daichi Akita (TOYO Corporation, Japan); Tetsuya Nakamura (TOYO Corporation, Japan)

TH4-103-3

ESD-Reliability Enhancement in a High-voltage 60 V Square-type pLDMOS by the Guard-Ring Engineering

Shen-Li Chen (National United University, Taiwan); Yi-Hao Chiu (National United University, Taiwan); Yu-Lin Jhou (National United University, Taiwan); Pei-Lin Wu (National United University, Taiwan); Po-Lin Lin (National United University, Taiwan); Yu-Jen Chen (National Sun Yat-sen University, Taiwan)

TECHNICAL SESSIONS (Oral Sessions)

Friday, November 9

8:30 - 10:10

Room B1

Session FR1-B1

Millimeter-wave Antenna Technologies

Chairs: Kunio Sakakibara (Nagoya Institute of Technology, Japan), Young Joong Yoon (Yonsei University, Korea)

FR1-B1-1

Via-less Waveguide to Microstrip Line Transition with Tolerance to Misalignment of Circuit Patterns

Takashi Maruyama (Mitsubishi Electric Corporation, Japan); Shigeo Udagawa (Mitsubishi Electric Corporation, Japan)

FR1-B1-2

Experimental Investigation of Residual Substrate Effect in CMOS On-Chip Antenna Design

Chun-Chi Lin (Industrial Technology Research Institute, Taiwan); Pei-Yu Lyu (National Chung Cheng University, Taiwan); Chia-Chan Chang (National Chung-Cheng University, Taiwan)

FR1-B1-3

Design and Experiment of Wideband Circularly-Polarized Millimeter-Wave Transmitarrays

Zhihao Jiang (Southeast University, P.R. China); Xiaowei Zhu (Southeast University, P.R. China); Zhe Song (Southeast University, P.R. China); Ling Tian (University of Southeast, P.R. China); Nianzu Zhang (SEU, P.R. China)

FR1-B1-4

Design Analysis of Folded Reflectarray Element for High Aperture Efficiency

Jun Gi Jeong (Yonsei University, Korea); Young Joong Yoon (Yonsei University, Korea); Youngwook Kim (California State University, Fresno, USA); Hyungrak Kim (Daelim University, Korea)

Room B2

Session FR1-B2

Couplers and Dividers I

Chairs: Kwok-keung (Michael) Cheng (Chinese University of Hong Kong, Hong Kong), Pei-Ling Chi (National Chiao Tung University, Taiwan)

FR1-B2-1

A Modified Wilkinson Power Divider with Wide Dual-band Frequency Ratio Range

Pu-Hua Deng (National University of Kaohsiung, Taiwan)

FR1-B2-2

A Power Divider with Controllable Transmission Zeros Using Lumped Artificial Transmission Line

Siang Chen (National Taiwan University, Taiwan); Tzong-Lin Wu (National Taiwan University, Taiwan)

FR1-B2-3

Analysis and Verification of three-way Gysel Power Divider with Arbitrary Power-Dividing Ratio

Yihua Zhou (Nanjing University of Science and Technology, P.R. China); Haidong Chen (Nanjing University of Science and Technology, P.R. China); Wenquan Che (Nanjing University of Science and Technology, P.R. China); Tingting Liu (Nanjing University of Science and Technology, P.R. China); Wenjie Feng (Nanjing University of Science and Technology, P.R. China); Wanchen Yang (Nanjing University of Science and Technology, P.R. China); Quan Xue (South China University of Technology, P.R. China)

FR1-B2-4

Design of the Wide-Stopband Balun With Stepped Coupled Lines

Chun-Yuan Huang (National Chung Cheng University, Taiwan); Guan-Yin Lin (National Chung Cheng University, Taiwan); Ching-Wen Tang (National Chung Cheng University, Taiwan)

Room D

Session FR1-D

Special Session: Recent Advances in Metamaterial and Metasurfaces for Antenna Applications

Chairs: Toru Uno (Tokyo University of Agricultural Technology, Japan), Naobumi Michishita (National Defense Academy, Japan)

FR1-D-1

Measured Performance of Broadband Frequency Selective Surface to Reduce Return Loss of Dielectric Plate Designed by Matrix Analysis of Equivalent Circuit

Tomihiko Ikegami (Nagoya Institute of Technology, Japan); Kunio Sakakibara (Nagoya Institute of Technology, Japan); Shota Ino (Nagoya Institute of Technology, Japan); Nobuyoshi Kikuma (Nagoya Institute of Technology, Japan)

FR1-D-2

Design of Transmission Line Resonator Based CRLH Leaky-Wave Antenna

Yujiro Kushiya (Tokyo University of Agriculture and Technology, Japan); Takuji Arima (Tokyo University of Agriculture and Technology, Japan); Toru Uno (Tokyo University of Agricultural Technology, Japan)

FR1-D-3

Leaky-wave antennas of CRLH waveguide using the cutoff TM₀₁ mode and sector-shaped cutoff TE mode

Jungo Nakajima (Doshisha University, Japan)

FR1-D-4

Negative Effective Permeability Material Composed of Multi-Layer Ceramic Capacitors

Thanh Binh Nguyen (National Defense Academy, Japan); Naoyuki Kinai (National Defense Academy, Japan); Naobumi Michishita (National Defense Academy, Japan); Hisashi Morishita (National Defense Academy, Japan); Teruki Miyazaki (The Yokohama Rubber Co., Ltd., Japan); Masato Tadokoro (The Yokohama Rubber Co., Ltd., Japan)

FR1-D-5

Unit Cell Block for 3-D Isotropic Negative-Index Metamaterials Impedance-Matched to Free Space by Using Dielectric Cubes and Metallic Mesh

Takuya Yamaguchi (Kyoto Institute of Technology, Japan); Takumi Ishiyama (Kyoto Institute of Technology, Japan); Tetsuya Ueda (Kyoto Institute of Technology, Japan); Tatsuo Itoh (UCLA, USA)

Room J

Session FR1-J

Special Session: Silicon-Based mmW/THz Technologies

Chairs: Shuhei Amakawa (Hiroshima University, Japan), Davide Guermandi (IMEC, Belgium)

FR1-J-1 [Invited]

CMOS Devices and Circuits for THz Applications

Chun-Hsing Li (National Tsing Hua University, Taiwan); Te-Yen Chiu (National Central University, Taiwan); Wei-Min Wu (National Central University, Taiwan)

FR1-J-2

Phase Modulated mm-Wave Radars in Advanced CMOS Technology

Davide Guermandi (IMEC, Belgium); Piet Wambacq (IMEC/VUB, Belgium); Andre Bourdoux (IMEC, Belgium); Jan Craninckx (IMEC, Belgium)

FR1-J-3

Scalable Wideband and Wide-Angle Beam Steering mm-Wave/THz Radiator and Phased Arrays in Silicon

Hossein Jalili (University of California, Davis, USA); Omeed Momeni (University of California Davis, USA)

FR1-J-4

Millimeter-wave CMOS Transceiver Toward 1Tbps Wireless Communication

Kenichi Okada (Tokyo Institute of Technology)

TECHNICAL SESSIONS (Oral Sessions)

8:30 - 10:10

Friday, November 9

Room K

Session FR1-K

High Frequency Oscillators

Chairs: Chairs: Nobuyuki Itoh (Okayama Prefectural University, Japan), Hiroshi Okazaki (NTT DOCOMO, Japan)

FR1-K-1

A 16-GHz-Band Low-Supply-Voltage Class-C VCO IC with Switching Feedback Circuit in 40-nm SOI CMOS

Mengchu Fang (Waseda University, Japan); Xiao Xu (Waseda University, Japan); Toshihiko Yoshimasu (Waseda University, Japan)

FR1-K-2

60-GHz Millimeter-Wave Voltage-Controlled Oscillators Using Transformer-Tuning Technique

Hao-Jiun Wu (National Cheng Kung University, Taiwan); Chien-Chang Chou (National Cheng Kung University, Taiwan); Chun-Yu Ku (National Cheng Kung University, Taiwan); Tzuen-Hsi Huang (National Cheng Kung University, Taiwan); Huey-Ru Chuang (National Cheng Kung University, Taiwan); Tsai-Kan Chien (Industrial Technology Research Institution (ITRI), Taiwan); Tai-Hsing Lee (ITRI, Taiwan)

FR1-K-3

Low Phase Noise Integrated Mechanically Tunable Oscillator Based on Multi-layer SIW Bandpass Filter

Ruoqiao Zhang (Southeast University, P.R. China)

FR1-K-4

Two Ultra-Low Power mm-Wave Push-Pull VCOs in FD-SOI CMOS

Therese Forsberg (Lund University, Sweden); Johan Wernehag (Lund University, Sweden); Henrik Sjöland (Lund University, Sweden); Markus Törmänen (Lund University, Sweden)

FR1-K-5

70% Improvement in Q-factor of spiral inductor and its application in a switched K-band VCO using 0.18 μm CMOS Technology

Islam Mansour (Egypt-Japan University of Science and Technology (E-JUST), Egypt); Ahmed Allam (EJUST, Egypt); Adel B. Abdel-Rahman (EJUST, Egypt); Mohammed Abo-Zahhad (EJUST, Egypt); Ramesh Pokharel (Kyushu University, Japan)

Room 103

Session FR1-103

Microwave Heating and Chemistry

Chairs: Yoshio Nikawa (Kokushikan University, Japan), Changjun Liu (Sichuan University, P.R. China)

FR1-103-1

Permittivity and Electric Conductivity Measurement and Microwave Heating Behavior of Mo/Cordierite Composite Materials

Noboru Yoshikawa (Graduate School of Environmental Studies, Tohoku University, Japan)

FR1-103-2

Studies on a Frequency-Stabilized Power-Adjustable Magnetron Based on Equivalent Model

Xiaojie Chen (Sichuan University, P.R. China); Hang Lin (Sichuan University, P.R. China); Zhenlong Liu (Sichuan University, P.R. China); Kama Huang (Sichuan University, P.R. China); Changjun Liu (Sichuan University, P.R. China)

FR1-103-3

Feasibility Study on a Microwave Heating Applicator Using Electromagnetic Coupling

Tomohiko Mitani (Kyoto University, Japan); Daichi Nishio (Kyoto University, Japan); Naoki Shinohara (Kyoto University, Japan)

FR1-103-4

A 5.8 GHz Microwave Applicator by Post-Wall Waveguide

Yuu Nishie (Okayama Prefectural University, Japan); Mitsuyoshi Kishihara (Okayama Prefectural University, Japan); Kensuke Okubo (Okayama Prefectural University, Japan); Akinobu Yamaguchi (University of Hyogo, Japan); Yuichi Utsumi (University of Hyogo, Japan)

FR1-103-5

Development of rapid heating and cooling technology by single-mode microwave cavity applied for nanoparticle synthesis

Masateru Nishioka (National Institute of Advanced Industrial Science and Technology (AIST), Japan); Masato Miyakawa (National Institute of Advanced Industrial Science and Technology (AIST), Japan)

TECHNICAL SESSIONS (Oral Sessions)

Friday, November 9

10:30 - 12:10

Room B1

Session FR2-B1

Broadband and Multi-band Antennas

*Chairs:*Ryo Yamaguchi (SOFTBANK Corp., Japan), Eisuke Nishiyama (Saga University, Japan)

FR2-B1-1

Prototype of 12/21GHz-band Dual-circularly Polarized Receiving Antenna for Satellite Broadcasting

Masafumi Nagasaka (NHK, Japan); Susumu Nakazawa (NHK, Japan); Masaaki Kojima (NHK(Japan Broadcasting Corporation), Japan); Shoji Tanaka (NHK Science and Technical Research Laboratories, Japan)

FR2-B1-2

Bandwidth Enhancement of a Double-Element Vivaldi Antenna with Sum and Difference Radiation Patterns

Seyed-Ali Malakooti (University of Adelaide, Australia); Christophe Fumeaux (The University of Adelaide & School of Electrical and Electronic Engineering, Australia)

FR2-B1-3

A Broadband Circular Polarized Hexagon Patch Antenna with Three-Feeds

Changjiang Su (Southeast University, P.R. China); Cheng Lu (Southeast University, P.R. China); Xiaoxing Yin (Southeast University, P.R. China)

FR2-B1-4

The design of smartwatch antenna for bluetooth and 5G applications

Zhu Duan (Nanjing University of Information Science and Technology, P.R. China); Lijie Xu (Nanjing University of Posts and Telecommunications, P.R. China)

FR2-B1-5

Design methodology of single-layer wideband notch antenna with interdigital capacitor

Constant Manouan Aka Niamien (Normandie Univ, UNIROUEN, ESIGELEC/IRSEEM, Rouen, France)

Room B2

Session FR2-B2

Couplers and Dividers II

*Chairs:*Motomi Abe (Mitsubishi Electric, Japan), Qing-Xin Chu (South China University of Technology, P.R. China)

FR2-B2-1

A Wide Band Coupler with High Directivity Using Phase Compensation for LTE

Jongmo Lim (Samsung Electro-Mechanics, Korea); Hyun-Jin Yoo (Samsung Electro-Mechanics, Korea); Yoo-Sam Na (Samsung Electro-Mechanics, Korea)

FR2-B2-2

Dual-Function Circuit with Crossover/Branch-Line Coupler Characteristics

I-Ju Chen (National University of Kaohsiung, Taiwan); Yi-Hsin Pang (National University of Kaohsiung, Taiwan)

FR2-B2-3

Design of the Compact Planar Butler Matrix

Chen-Chan Tang (National Chung Cheng University, Taiwan); Chun-Yuan Huang (National Chung Cheng University, Taiwan); Ching-Wen Tang (National Chung Cheng University, Taiwan)

FR2-B2-4

An In-phase Balanced-to-Single-Ended Power Divider with Arbitrary Power Division Ratio

Kai Xu (Nantong University, P.R. China); Jin Shi (Nantong University, P.R. China); Wei Zhang (Nantong University, P.R. China); Gire Merphy Mbongo (Nantong University, P.R. China)

FR2-B2-5

A Substrate Integrated Coaxial Line Dual-Band Balun for 5G Applications

Satya Krishna Idury (Indian Institute of Technology Jodhpur, India); Soumava Mukherjee (Indian Institute of Technology Jodhpur, India)

Room D

Session FR2-D

Metamaterials, EMBGs and FSSs II

*Chairs:*Ye Han (Nanjing University of Posts and Telecommunications, P.R. China), Toshio Watanabe (Kagoshima University, Japan)

FR2-D-1

A study on nonreciprocal CRLH-TL composed of gyrator and series capacitor

Kensuke Okubo (Okayama Prefectural University, Japan); Masayuki Ishihara (Okayama Prefectural University, Japan); Mitsuyoshi Kishihara (Okayama Prefectural University, Japan); Hironori Takimoto (Okayama Prefectural University, Japan)

FR2-D-2

A 2-D Via-Free Indefinite Anisotropic Medium with LH and RH modes Degenerated at the Γ -Point

Yuto Kato (National Institute of Advanced Industrial Science and Technology & Osaka University, Japan); Masahiro Horibe (National Institute of Advanced Industrial Science and Technology, Japan); Atsushi Sanada (Osaka University, Japan)

FR2-D-3

Generation of Orbital Angular Momentum Vortex Waves on Both Sides of the Cascaded Metasurfaces

Wang Lingling (Nanjing University of Aeronautics and Astronautics, P.R. China); Xiangkun Kong (Nanjing University of Aeronautics and Astronautics, P.R. China)

FR2-D-4

Digital Microfluidics for Terahertz Digital and Programmable Metamaterials: A Proof-of-Concept Study

Fangjing Hu (Huazhong University of Science and Technology, P.R. China); Peiyi Song (Huazhong University of Science and Technology, P.R. China); Kai Luo (Huazhong University of Science and Technology, P.R. China); Huafeng Liu (Huazhong University of Science and Technology, P.R. China); Kai Zhang (Huazhong University of Science and Technology, P.R. China); Zhenggang Hu (Huazhong University of Science and Technology, P.R. China); Liang-Cheng Tu (Huazhong University of Science and Technology, P.R. China)

FR2-D-5

Reflectionless Metalens Collimating Multi-OAM Waves for Antenna Gain Enhancement in Wireless Communication

Yudai Shigeta (Osaka University, Japan); Atsushi Sanada (Osaka University, Japan); Atsushi Fukuda (NTT DOCOMO, INC., Japan); Kunihiro Kawai (NTT DOCOMO, INC., Japan); Hiroshi Okazaki (NTT DOCOMO, Japan)

Room J

Session FR2-J

Radar Architectures, Signal Processing, and Systems

*Chairs:*Futoshi Kuroki (National Institute of Technology, Kure College, Japan), Withawat Withayachumnankul (The University of Adelaide, Australia)

FR2-J-1

A Scalable 77 GHz Massive MIMO FMCW Radar by Cascading Fully-Integrated Transceivers

Andreas Och (DICE GmbH & Co KG, Austria & Friedrich-Alexander University of Erlangen-Nuremberg, Germany); Clemens Pfeffer (DICE GmbH & Co KG, Austria); Jochen Schrattecker (DICE GmbH & Co KG, Austria); Stefan Schuster (Voestalpine Stahl GmbH & Institute for Communications and Information Engineering, Austria); Robert Weigel (Friedrich-Alexander Universität Erlangen-Nürnberg, Germany)

FR2-J-2

Evaluation of ISAR-based autofocus methods for estimation of true-speed-over-ground using a 24 GHz FMCW-Radar

Torsten Reissland (University of Erlangen-Nuremberg, Germany); Bjoern Lenhart (University of Erlangen-Nuremberg, Germany); Johann Lichtblau (Friedrich-Alexander-Universität, Germany); Michael Sporer (Friedrich-Alexander University of Erlangen-Nuremberg, Germany); Alexander Koelpin (BTU & Chair for Electronics and Sensor Systems, Germany); Robert Weigel (Friedrich-Alexander Universität Erlangen-Nürnberg, Germany)

FR2-J-3

Application of MUSIC method to multicarrier optical FM-CW radar system based on optical-modulator-based optical frequency comb

Shintaro Otani (Aoyama Gakuin University, Japan)

FR2-J-4

A 7-9 GHz UWB Radar Sensor Module with Single Chip Radar IC and on-Board Antenna

Byeong Jae Seo (Kwangwoon University, Korea); Jun Young Yoo (Kwangwoon University, Korea); Sang Gyun Kim (Silicon R&D, Korea); Yun Seong Eo (Kwangwoon University, Korea)

FR2-J-5

Two-dimensional Subspace-based Model Order Selection Methods for FMCW Automotive Radar Systems

Yuliang Sun (HELLA GmbH & Co. KGaA & Ruhr-University Bochum, Germany); Tai Fei (HELLA GmbH & Co. KGaA, Germany); Nils Pohl (Ruhr-University Bochum & Fraunhofer FHR, Germany)

TECHNICAL SESSIONS (Oral Sessions)

10:30 - 12:10

Friday, November 9

Room K

Session FR2-K

Emerging III-V Devices/Circuits

Chairs: Hiroshi Okazaki (NTT DOCOMO, Japan), Atsushi Fukuda (NTT DOCOMO, INC., Japan)

FR2-K-1

Effect of AlN Spacer on the AlGaIn/GaN HEMT Device Performance at Millimeter-wave Frequencies

Chun Wang (National Chiao Tung University, Taiwan); Heng-Tung Hsu (National Chiao Tung University & International College of Semiconductor Technology, Taiwan); Ting-Jui Huang (National Chiao Tung University, Taiwan); Jun-Kai Fan (National Chiao Tung University, Taiwan); Edward Chang (National Chiao Tung University, Taiwan)

FR2-K-2

A 26-W X-band high efficiency GaN MMIC power amplifier with compact spurious suppression filters

Jun Kamioka (Mitsubishi Electric Corporation, Japan); Eigo Kuwata (Mitsubishi Electric Corporation, Japan); Masatake Hangai (Mitsubishi Electric Corporation, Japan); Kazuhiko Nakahara (Mitsubishi Electric Corporation, Japan); Yoshitaka Kamo (Mitsubishi Electric Corporation, Japan); Shintaro Shinjo (Mitsubishi Electric Corporation, Japan); Mitsuhiro Shimozawa (Mitsubishi Electric, Japan)

FR2-K-3

18GHz-/28GHz-Band Gain-Boosted Feedback Power Amplifiers Using Affordable GaN HEMT MMIC Process

Tsukasa Yasui (The University of Electro-Communications, Japan); Ryo Ishikawa (The University of ElectroCommunications, Japan); Kazuhiko Honjo (The University of Electro-Communications, Japan)

FR2-K-4

10-MHz-to-70-GHz Ultra-Wideband Low-Insertion-Loss SPST and SPDT Switches using GaAs PIN Diode MMIC Process

Hao-En Liu (National Central University, Taiwan); Xiang Lin (National Central University, Taiwan); Hong-Yeh Chang (National Central University, Taiwan); Yu-Chi Wang (Win Semiconductors Corporation, Taiwan)

Room 103

Session FR2-103

Material Characterization Techniques at Microwave and Millimeter-wave frequencies

Chairs: Masahiro Horibe (National Institute of Advanced Industrial Science and Technology, Japan), Karsten Kuhlmann (Physikalisch-Technische Bundesanstalt (PTB), Germany)

FR2-103-1

Measurements of Interface Conductivity of Copper-clad Dielectric Substrates at Millimeter Wave Frequencies Using TE_{02δ} Mode Dielectric Rod Resonator Excited by NRD Guide

Naoki Hirayama (Kyocera Corporation, Japan); Akira Nakayama (Kyocera Corporation, Japan); Hiromichi Yoshikawa (Kyocera Corporation, Japan)

FR2-103-2

Frequency Dependence Measurement of Conductivity of Copper Plates by the Balanced-type Disk Resonator Method

Yoshio Kobayashi (SUMTEC, Inc., Japan); Sotaro Kobayashi (SUMTEC, Inc., Japan); Hirokazu Kawabata (Tomo Industrial Technology Center, Japan)

FR2-103-3

Equivalent Conductivity Characterization of Silver-Coated Plastic Antenna Components in Ku, K and Ka Bands

Plamen I. Dankov (Sofia University "St. Kliment Ohridski" & SU, Bulgaria); Rossen Traykov (RaySat Bulgaria Ltd, Bulgaria); Vesselin Peshlov (RaySat Bulgaria Ltd, Bulgaria); Stanimir Kamenopolski (MatriQx Antenna Systems Ltd., Bulgaria)

FR2-103-4

Microwave characteristics of a conductor backed CPW by a home printed electronics technology with silver nanoparticle ink

Takashi Shimizu (Utsunomiya University, Japan); Yoshinori Kogami (Utsunomiya University, Japan)

FR2-103-5

An Interferometric Sensor for Scanning Microwave Microscopy Application

Aleksandra Baskakova (Czech Technical University in Prague, Czech Republic)

TECHNICAL SESSIONS (Oral Sessions)

Friday, November 9

13:30 - 15:10

Room B1

Session FR3-B1

Smart and Reconfigurable Antennas

Chairs: Wayne A. Shiroma (University of Hawaii, USA), Ichihiko Toyoda (Saga University, Japan)

FR3-B1-1

A Polarization-Reconfigurable Antipodal Dipole Antenna Using Liquid Metal

Matthew Moorefield (University of Hawaii, USA); Aaron T. Ohta (University of Hawaii, USA); Wayne A. Shiroma (University of Hawaii, USA)

FR3-B1-2

A Polarization Switchable Active Array Antenna Integrating a Multiport Oscillator and PSK Modulators

Maodudul Hasan (Saga University, Japan); Hiroki Ushiroda (Saga University, Japan); Eisuke Nishiyama (Faculty of Science and Engineering, Saga University, Japan); Ichihiko Toyoda (Faculty of Science and Engineering, Saga University, Japan)

FR3-B1-3

A Fully Integrated Frequency Reconfigurable Antenna Co-designed as a Whole Circuit on Silicon

Rozenn Allanic (Lab-STICC - UBO Brest, France); Denis Le Berre (Lab-STICC - UBO Brest, France); Yves Quéré (Université de Brest, France); Cedric Quendo (Lab-STICC - UBO Brest, France); David Chouteau (Université de Tours, France); Virginie Grimal (Université de Tours, France); Damien Valente (Université de Tours, France); Jérôme Billoué (Université de Tours, France)

FR3-B1-4

Design of A Phased Array Antenna for Indoor Positioning System

Chai-Eu Guan (Nagasaki University, Japan); Kuniaki Yoshitomi (Kyushu University, Japan); Haruichi Kanaya (Kyushu University, Japan)

Room B2

Session FR3-B2

Novel Technologies for Wireless Communication Systems

Chairs: Tadashi Kawai (University of Hyogo, Japan), Tzyh-Ghuang Ma (National Taiwan University of Science and Technology, Taiwan)

FR3-B2-1

Circuit Simulator for Wideband Lumped Element Circulator

Shigeru Takeda (Magnontech Ltd., Japan); Takao Okada (Orient Microwave Corp., Japan)

FR3-B2-2

Generalized Topology and Design Method for a New Class of Wideband Phase Shifters Based on Multimode Resonators

Yun-Peng Lyu (Nanjing University of Posts and Telecommunications, P.R. China); Lei Zhu (University of Macau); Chonghu Cheng (Nanjing University of Post & Telecommunication, P.R. China)

FR3-B2-3

Compact On-chip Quadruplexer Using Lumped Elements on Integrated Passive Device Process

Huy Nam Chu (National Taiwan University of Science and Technology, Taiwan); Poki Chen (National Taiwan University of Science and Technology, Taiwan); Tzyh-Ghuang Ma (National Taiwan University of Science and Technology, Taiwan)

FR3-B2-4

Cryogenic 29-50 GHz Orthomode Transducer for Radio Astronomical Receiver

Chau-Ching Chiong (Institute of Astronomy and Astrophysics, Academia Sinica, Taiwan); Chen Chien (Institute of Astronomy and Astrophysics, Academia Sinica, Taiwan); Chih-Cheng Chang (Institute of Astronomy and Astrophysics, Academia Sinica, Taiwan); Ted Huang (ASIAA, Taiwan); Yuh-Jing Hwang (Institute of Astronomy and Astrophysics, Academia Sinica, Taiwan)

FR3-B2-5

Development of Zero-shrinkage-LTCC Substrate for Millimeter-wave Applications

Koichi Tokita (Tokyo Metropolitan Industrial Technology Research Institute, Japan); Yuichi Hashimoto (Adamant Namiki Precision Jewel Co., Ltd., Japan); Kohei Fujiwara (Tokyo Metropolitan Industrial Technology Research Institute, Japan); Asako Suzuki (Adamant Namiki Precision Jewel Co., Ltd., Japan); Yuso Ishida (Adamant Namiki Precision Jewel Co., Ltd., Japan); Hidehiko Yamaoka (Tokyo Metropolitan Industrial Technology Research Institute, Japan)

Room D

Session FR3-D

Metamaterials, EMBGs and FSSs III

Chairs: Ryuji Kuse (Kumamoto University, Japan), Shah Nawaz Burokur (LEME, France)

FR3-D-1

Novel 3D Bandpass Frequency Selective Structures Based on Stacked Planar Slotlines: Modelling, Design and Validation

Wanping Zhang (Nanjing University of Posts and Telecommunications, P.R. China); Bo Li (NJUPT, P.R. China); Lei Zhu (University of Macau, Macau SAR, China); Ye Han (Nanjing University of Posts and Telecommunications, P.R. China); Yun-Peng Lyu (Nanjing University of Posts and Telecommunications, P.R. China)

FR3-D-2

Proposal and Design of Dual-Polarized Frequency Selective Absorbers with Passband and Notched-Band

Ye Han (Nanjing University of Posts and Telecommunications, P.R. China); Lei Zhu (University of Macau, Macao); Bo Li (NJUPT, P.R. China); Yumei Chang (Nanjing University of Posts and Telecommunications & State Key Laboratory of Millimeter Waves, P.R. China); Lijie Xu (Nanjing University of Posts and Telecommunications, P.R. China)

FR3-D-3

A New Fitness Function in Binary Particle Swarm Optimization for Efficient Design of Frequency Selective Surfaces

Yang Dae Do (Yonsei University, Korea)

FR3-D-4

A Band-Pass Frequency Selective Surface with Wideband Rejection Characteristic

Ning Liu (Dalian University of Technology, P.R. China); Xianjun Sheng (Dalian University of Technology, P.R. China); Xiang Gao (Dalian University of Technology, P.R. China); Dongming Guo (Dalian University of Technology, P.R. China); Rui Yang (Dalian University of Technology, P.R. China)

FR3-D-5

Design of a novel 2.5-D frequency selective surface element using Fibonacci spiral for radome application

Krushna Kanth Varikuntla (National Institute of Technology Tiruchirappalli, India); Raghavan S (NIT, India)

Room J

Session FR3-J

Radar Applications and Remote Sensing

Chairs: Jerdvisanop Chakarothai (National Institute of Information and Communications Technology, Japan), Jaeyoung Kim (Rohm Co, Ltd., Japan)

FR3-J-1 [Invited]

Small Satellite Constellations to Provide Rapid-Refresh Microwave Observations of Severe Storms, Hurricanes and Typhoons

Steven C. Reising (Colorado State University, USA); V. Chandrasekar (Colorado State University, USA); Chris Kummerow (Colorado State University, USA); Wesley Berg (Colorado State University, USA); C. Radhakrishnan (Colorado State University, USA); Todd Gaier (Jet Propulsion Laboratory, California Institute of Technology, USA); Shannon Brown (JPL-CalTech, USA); Sharmila Padmanabhan (Jet Propulsion Laboratory, California Institute of Technology, USA); Boon Lim (Jet Propulsion Laboratory, California Institute of Technology, USA); Cate Heneghan (Jet Propulsion Laboratory, California Institute of Technology, USA); John Carvo (Blue Canyon Technologies, USA); Matthew Pallas (Blue Canyon Technologies, USA)

FR3-J-2

Screen printed chipless RFID resonator design for remote sensing applications

Tharindu Athauda (Monash University, Australia); Nemai Karmakar (MONASH University, Australia)

FR3-J-3

Sensing Performance Evaluation of Landslides Prediction System Using Public AM Radio Broadcasting

Kousei Kumahara (NIT, Kure College, Japan); Masanori Eguchi (National Institute of Technology, Kure College, Japan); Futoshi Kuroki (National Institute of Technology, Kure College, Japan)

FR3-J-4

Characterization of Layered Dielectric Materials Using Ultra-Wideband FMCW-Radar Measurements

Jochen Jebramcik (Ruhr-Universität Bochum, Germany); Jan Barowski (Ruhr-Universität Bochum, Germany); Ilona Rolfes (Ruhr-Universität Bochum, Germany)

TECHNICAL SESSIONS (Oral Sessions)

13:30 - 15:10

Friday, November 9

Room K

Session FR3-K

Special Session: Advance in Numerical Simulation Technology does not stop ! - Technological Collaboration brings a New World -

*Chairs:*Hideaki Kimura (NTT Network Service Systems Laboratories, Japan), Yasuhide Tsuji (Muroran Institute of Technology, Japan)

FR3-K-1 [Invited]

Automated Microstrip Bandpass Filter Design Using Feedforward and Inverse Models of Neural Network

Masataka Ohira (Saitama University, Japan); Ao Yamashita (Saitama University, Japan); Zhewang Ma (Saitama University, Japan); Xiaolong Wang (Jilin University, P.R. China)

FR3-K-2

Topology Optimization Using Beam Propagation Method for Fabrication Tolerant Optical Waveguide Devices

Akito Iguchi (Muroran Institute of Technology, Japan); Yasuhide Tsuji (Muroran Institute of Technology, Japan); Takashi Yasui (Kitami Institute of Technology, Japan); Koichi Hirayama (Kitami Institute of Technology, Japan)

FR3-K-3

Object Identification from GPR Images by Deep Learning

Jun Sonoda (National Institute of Technology, Japan)

FR3-K-4

Numerical Simulation and Experiments on Advanced Traffic Engineering

Takashi Miyamura (NTT, Japan); Akira Misawa (Chitose Institute of Science and Technology, Japan); Akio Kawabata (NTT, Japan)

FR3-K-5

Future Society Created by Progress of Numerical Simulation Technology

Hideaki Kimura (NTT Network Service Systems Laboratories, Japan)

Room 103

Session FR3-103

Microwave Measurement and Sensing

*Chair:*Masahiro Horibe (National Institute of Advanced Industrial Science and Technology, Japan)

FR3-103-1

Capacitance Extraction De-Embedding Method to Address Board Variability

David Molinero (Wispry, inc, USA); Shawn Cunningham (Wispry, inc., USA); Art Morris (Wispry, USA)

FR3-103-2

Magnetolectric Microwave Magnetic Field Sensor at 3 GHz

Sebastian Salzer (University of Kiel, Germany); Christine Kirchhof (CAU Kiel, Germany); Eckhard Quandt (Christian-Albrechts-Universität zu Kiel, Germany); Michael Höft (Kiel University, Germany); Reinhard Knoechel (CAU Kiel, Germany)

FR3-103-3

Efficiency Calculation of Non-Periodic Metasurface Based on Modified Near Field to Far Field Transformation

Ashif Aminulloh Fathnan (University of New South Wales, Canberra, Australia); David Powell (University of New South Wales, Australia)

FR3-103-4

A Stacked Planar Sensor Concept for Minimally Invasive Plasma Monitoring

Dennis Pohle (Ruhr-University Bochum, Germany); Christian Schulz (Ruhr-Universität Bochum, Germany); Moritz Oberberg (Ruhr-Universität Bochum, Germany); Michael Friedrichs (Leuphana University Lüneburg, Germany); Alexandra Serwa (IMST GmbH, Germany); Peter Uhlig (IMST GmbH, Germany); Jens Oberrath (Leuphana University Lüneburg, Germany); Peter Awakowicz (Ruhr-Universität Bochum, Germany); Ilona Rolfes (Ruhr-Universität Bochum, Germany)

FR3-103-5

Heat-resistant 3D printed microwave devices

Vincent Laur (Lab-STICC / University of Brest, France); Mira Kaissar Abboud (Lab-STICC / University of Brest, France); Azar Maalouf (Lab-STICC / University of Brest, France); Den Palessonga (Lab-STICC / University of Brest, France); Alexis Chevalier (University of Brest & Lab-STICC UMR CNRS 3192, France); Julien Ville (IRD / University of Brest, France)

TECHNICAL SESSIONS (Interactive Forum)

Wednesday, November 7

10:00 - 11:30

Session WE1-IF

Room A

Chair: Peng Wen Wong (Universiti Teknologi PETRONAS, Malaysia)

WE1-IF-1

A Triple-Band SiGe HBT Cross-Coupled Differential VCO Using a Novel Element-Switching Technique

Yasushi Itoh (Shonan Institute of Technology, Japan)

WE1-IF-2

A Ka-band Monolithic Doubly Balanced Up- and Down-conversion Mixer

Liang Zhang (Microsystem and Terahertz Research Center, China Academy of Engineering Physics & Institute of Electronic Engineering, China Academy of Engineering Physics, P.R. China); Fengjun Chen (Microsystem and Terahertz Research Centre of CAEP, P.R. China); Jiang-An Han (China Academy of Engineering Physics, P.R. China); Xu Cheng (Microsystem and Terahertz Research Centre of CAEP, P.R. China); Xian-jin Deng (Microsystem and Terahertz Research Centre of CAEP, P.R. China)

WE1-IF-3

A 90-140 GHz, High Power Frequency Source Packaged in a Self-aligned Waveguide Module

Zhongxia Simon He (Chalmers University of Technology & Microwave Electronic Lab, Sweden); Sona Carpenter (Chalmers University of Technology, Sweden); Vessen Vassilev (Chalmers University of Technology, Sweden); Herbert Zirath (Chalmers University of Technology, Sweden)

WE1-IF-4

A Novel K-band Divide-by-4 Injection-Locked Frequency Divider

Yu-Hsin Chang (National Formosa University, Taiwan); Yen-Chung Chiang (National Chung Hsing University, Taiwan)

WE1-IF-5

A K-Band High-Gain Linear CMOS Mixer with Current-Bleeding Neutralization Technique

Dong-Ru Lin (National Taiwan University, Taiwan); Kun-Yao Kao (National Taiwan University, Taiwan); Kun-You Lin (National Taiwan University, Taiwan)

WE1-IF-6

A Wideband, Low-Noise, and High-Resolution Digitally-Controlled Oscillator for SDR Applications

Chun-Ming Lin (Graduate Institute of Communication Engineering, National Taiwan University, Taiwan); Kun-Yao Kao (National Taiwan University, Taiwan); Kun-You Lin (National Taiwan University, Taiwan)

WE1-IF-7

A Mutual Phase Synchronization Type Push-Push Oscillator Array Using Fourth-Harmonic Push-Push Oscillators

Naoaki Takeda (Saga University, Japan); Takayuki Tanaka (Faculty of Science and Engineering, Saga University, Japan); Ichihiko Toyoda (Faculty of Science and Engineering, Saga University, Japan)

WE1-IF-8

Microwave-assisted Continuous Flow Process of Biodiesel Production

Huacheng Zhu (Sichuan University, P.R. China)

WE1-IF-9

A 60 GHz Frequency Doubler with Differential Output in 130 nm SiGe BiCMOS Technology

Vincent Rieß (Technische Universität Dresden, Germany); Corrado Carta (Dresden University of Technology, Germany); Frank Ellinger (Technische Universität Dresden, Germany)

WE1-IF-10

Trans-directional Coupler Based Planar Balun with Improved Bandwidth and Output Balance

Hongmei Liu (Dalian Maritime University, P.R. China); Shaojun Fang (Dalian Maritime University, P.R. China); Te Shao (Dalian Maritime University, P.R. China); Zhongbao Wang (Dalian Maritime University, P.R. China); Chenhui Xun (Dalian Maritime University, P.R. China)

WE1-IF-11

A Miniature 92-95 GHz On-chip Slow-wave Branch-line Coupler

Yi-Tang Chen (National Chiao-Tung University, Taiwan); Chia-Sung Chiu (National Nano Device Laboratories, Taiwan); Chia-Wei Chuang (National Nano Device Laboratories, Taiwan); Guo-Wei Huang (National Nano Device Laboratories, Taiwan); Sheng-Kai Peng (National Chiao-Tung University, Taiwan); Yu-Ting Ke (National Chiao-Tung University, Taiwan); Lin-Kun Wu (National Chiao Tung University, Taiwan)

WE1-IF-12

Novel Dielectric Waveguide Design Studies for mmW Applications

Felix Distler (Friedrich-Alexander-University, Germany); Martin Vossiek (LHFT, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany); Jan Schür (Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU), Germany)

WE1-IF-13

Design of compact E-plane differential phase shift circulators

Guangjian Deng (Northwest Institute of Nuclear Technology, P.R. China); Jiawei Li (Northwest Institute of Nuclear Technology, P.R. China); Tao Ba (Northwest Institute of Nuclear Technology, P.R. China); Letian Guo (Northwest Institute of Nuclear Technology, P.R. China); Xie Shaoyi (Northwest Institute of Nuclear Technology, P.R. China); Wenhua Huang (Northwest Institute of Nuclear Technology, P.R. China); Shao Hao (Northwest Institute of Nuclear Technology, P.R. China)

WE1-IF-14

A Differential 90° Phase Shifter with Controllable Common-Mode Suppression

Wei Zhang (Nantong University, P.R. China); Kai Xu (Nantong University, P.R. China); Gire Merphy Mbongo (Nantong University, P.R. China); Jin Shi (Nantong University, P.R. China)

WE1-IF-15

NRD-guide Beam Lead Diode Mount Consisting of High Permittivity Dielectric Substrate at 60GHz

Yuto Uchida (National Institute of Technology, Kure College, Japan); Masanori Eguchi (National Institute of Technology, Kure College, Japan); Futoshi Kuroki (National Institute of Technology, Kure College, Japan); Yuya Ueno (DAIHEN Co., Japan); Tadamas Fukae (DAIHEN Co., Japan)

WE1-IF-16

Design of Compact Dual-Band Matching Network with Single Unequal Susceptance Cancellation Stub

Antra Saxena (University of Calgary, Canada); Deepayan Banerjee (University of Calgary, Canada); Mohammad Hashmi (Nazarbayev University, Kazakhstan & IIIT Delhi, India); Fadel Ghannouchi (University of Calgary, Canada)

WE1-IF-17

X band RF interface technology with both low loss characteristic and low thermal insulating

Hiroyuki Kayano (Toshiba Corporation, Japan)

WE1-IF-18

Modeling and Synthesis of On-chip Multi-layer Spiral Inductor for Millimeter-wave Regime Based on ANN Method

Cheng Cao (Beijing University of Posts and Telecommunications, P.R. China); Yajing Hou (Beijing University of Posts and Telecommunications, P.R. China); Jiangfan Liu (Beijing University of Posts and Telecommunications, P.R. China); Xiuping Li (Beijing University of Post Telecommunications, P.R. China)

WE1-IF-19

Waveguide Structure Compatible with TE, TM, and TEM Modes

Shotaro Ishino (Furuno Electric, Japan); Satoshi Matsumoto (Furuno Electric, Japan)

WE1-IF-20

Cut-off-less Coplanar Waveguide Connector with Mode-Selectable Filter

Satoshi Matsumoto (Furuno Electric, Japan); Shotaro Ishino (Furuno Electric, Japan)

WE1-IF-21

X-band compact microwave terminations

Allan Pen (Lab-STICC / University of Brest, France); Alexis Chevalier (Lab-STICC / University of Brest); Azar Maalouf (Lab-STICC / University of Brest, France); Vincent Laur (Lab-STICC / University of Brest, France)

WE1-IF-22

A Novel Design of a Tri-Band Impedance Matching Network Based on the Concept of an Impedance Bridge

Deepayan Banerjee (University of Calgary, Canada); Mohammad Hashmi (Nazarbayev University, Kazakhstan & IIIT Delhi, India); Fadel Ghannouchi (University of Calgary, Canada)

WE1-IF-23

Compact Four-Way Radial-Cavity-Based Power Divider/Combiner with High Power and High Isolation

Hao Shao (Northwest Institute of Nuclear Technology, P.R. China); Kaijun Song (University of Electronic Science and Technology of China, P.R. China); Liyuan Xue (University of Electronic Science and Technology of China, P.R. China); Letian Guo (Northwest Institute of Nuclear Technology, P.R. China); Song Guo (University of Electronic Science and Technology of China, P.R. China); Yedi Zhou (University of Electronic Science and Technology of China, P.R. China); Yong Fan (University of Electronic Science and Technology of China, P.R. China)

WE1-IF-24

Dielectric Constant Measurement Using Metallized Slot Substrate Integrated Waveguide at PCB process

Pei-Tzu Chen (National Taiwan University, Taiwan); Yu-Heng Cai (National Taiwan University, Taiwan); Joseph Cheng (BoardTek Electronics Corp., Taiwan); Jason Lee (BoardTek Electronics Corp., Taiwan); Chung-Hsing Liao (BoardTek Electronics Corp., Taiwan); Hsin-Chia Lu (National Taiwan University, Taiwan)

TECHNICAL SESSIONS (Interactive Forum)

10:00 - 11:30

Wednesday, November 7

*The Interactive Forum (IF) will provide an opportunity for authors to present theoretical or experimental materials interactively to participants with posters.

WE1-IF-25

Fully Additively Manufactured Broadband Low Loss High Frequency Interconnects

Michael Thomas Craton (Michigan State University, USA); Chris Oakley (Michigan State University, USA); John Albrecht (Michigan State University, USA); Prem Chahal (Michigan State University, USA); John Papapolymerou (Michigan State University, USA)

WE1-IF-26

0-level encapsulation using thin films deposition for RF MEMS - demonstration on RF MEMS switch structures

Dan Vasilache (IMT-Bucharest, Romania); Andrei Marius Avram (National Institute for R&D in Microtechnologies - IMT Bucharest, Romania); Alexandra Stefanescu (University Politehnica of Bucharest, Romania); George Boldeiu (IMT-Bucharest, Romania); Sergiu Iordanescu (IMT-Bucharest, Romania); Bogdan Bită (IMT-Bucharest, Romania)

WE1-IF-27

Investigation of High-Efficiency Hybrid Power Combining for Ka-Band Frequencies

Philipp Neining (Fraunhofer IAF & Karlsruhe Institute of Technology, Germany); Dirk Meder (Fraunhofer IAF, Germany); Laurenz John (Fraunhofer IAF, Germany); Christian Friesicke (Fraunhofer IAF, Germany); Rüdiger Quay (Fraunhofer IAF, Germany); Thomas Zwick (Karlsruhe Institute of Technology (KIT), Germany)

WE1-IF-28

Study on Quadruple-Mode Cavity-Type Resonator for Mobile-Phone Base-Station Filter

Akihiro Tsubouchi (Ryukoku University, Japan); Toshio Ishizaki (Ryukoku University, Japan)

WE1-IF-29

Area Source Design for Exciting a Microstrip Line in an FDTD Simulation

Yong Wang (Remcom Inc., USA); Scott Langdon (Remcom Inc., USA)

WE1-IF-30

Wake Identification and Detection Method by Sea Surface Correlation Difference Measure

Nan Bi (Harbin Engineering University, P.R. China); Tao Jiang (Harbin Engineering University, P.R. China)

WE1-IF-31

Analytical small-signal description of unilateral distributed amplifiers with uniform lines and arbitrary terminations

Christian von Vangerow (Karlsruhe Institute of Technology (KIT), Germany); Joerg Eisenbeis (Karlsruhe Institute of Technology, Germany); Thomas Zwick (Karlsruhe Institute of Technology (KIT), Germany)

WE1-IF-32

An Empirical Nonlinear Capacitance Model for SOI Transistor

Qiuping Wang (University of Electronic Science and Technology of China, P.R. China); Yunqiu Wu (University of Electronic Science and Technology of China, P.R. China); Shili Cong (University of Electronic Science and Technology of China, P.R. China); Yiming Yu (University of Electronic Science and Technology of China, P.R. China); Chenxi Zhao (University of Electronic Science and Technology of China, P.R. China); Huihua Liu (University of Electronic Science and Technology of China, P.R. China); Hongyan Tang (University of Electronic Science and Technology of China, P.R. China); Yuehang Xu (University of Electronic Science and Technology of China, P.R. China); Kai Kang (University of Electronic Science and Technology of China, P.R. China)

WE1-IF-33

Super-Resolution Information in Electromagnetic Inverse Scattering

Qimeng Fan (National University of Defense Technology, P.R. China); Chengyou Yin (National University of Defense Technology, P.R. China); Ziqiang Xu (National University of Defense Technology, P.R. China)

WE1-IF-34

A Method for Accurate ADS-B Signal Strength Measurement under Co-channel Interference

Junichi Naganawa (Electronic Navigation Research Institute, Japan); Hiromi Miyazaki (Electronic Navigation Research Institute, Japan)

WE1-IF-35

CSI-based Indoor high-precision localization System

Mingyang Zheng (Beijing University of Posts and Telecommunications, P.R. China); Shufang Li (Beijing University of Posts and Telecommunications, P.R. China); Li Deng (Beijing University of Posts and Telecommunications, P.R. China); Meijun Qu (Beijing University of Posts and Telecommunications, P.R. China); Chen Zhang (Beijing University of Posts and Telecommunications, P.R. China)

WE1-IF-36

Distributed modeling of 4-port transistor for linear mmW design application

Wafa Khelifi (XLIM, France); Tibault Reveyard (XLIM, France); Julien Lintignat (XLIM UMR 7252 Université de Limoges/CNRS, France); Bernard Jarry (XLIM - University of Limoges, France); Raymond Quere (XLIM, France)

WE1-IF-37

Investigation of Extension Limits of Main Passband of the "Chain of Coupled Resonators"-Type Slow-Wave Structure

Natalya Kravchenko (National Research University Higher School of Economics, Russia); Semyon Presnyakov (National Research University Higher School of Economics, Russia); Alexandr Kasatkin (National Research University Higher School of Economics, Russia); Sergey Mukhin (Moscow University of Finances and Law)

WE1-IF-38

A small signal model for Carbon Nanotube Field-Effect Transistor

Yuming Zhang (University of Electronic Science and Technology of China, P.R. China); Tao Yang (University of Electronic Science and Technology of China, P.R. China); Yang Yang (Nanjing Electronic Devices Institute, P.R. China); Lei Xia (University of Electronic Science and Technology of China, P.R. China); Ruimin Xu (University of Electronic Science and Technology of China, P.R. China)

WE1-IF-39

Radar Simultaneous Localization and Mapping (SLAM) for Stochastic Spread Targets

Xiong Liu (Shanghai Jiao Tong University, P.R. China); Dongying Li (Shanghai Jiaotong University, P.R. China); Wenxian Yu (Shanghai Jiao Tong University, P.R. China)

WE1-IF-40

RF CMOS Transistor Equivalent Circuit Model up to 66 GHz

Muhammad Adil Bashir (University of Electronic Science and Technology of China, P.R. China); Yunqiu Wu (University of Electronic Science and Technology of China, P.R. China); Kai Kang (University of Electronic Science and Technology of China, P.R. China); Yiming Yu (University of Electronic Science and Technology of China, P.R. China); Chenxi Zhao (University of Electronic Science and Technology of China, P.R. China); Hongyan Tang (University of Electronic Science and Technology of China, P.R. China)

WE1-IF-41

A global modeling technique for InP HBT based on machine learning method

Jialin Cai (Hangzhou Dianzi University, P.R. China)

WE1-IF-42

Temperature Dependent Robust Behavioral Modeling of Non-Linear Power Amplifier

Sagar Kumar Dhar (University of Calgary, Canada); Mohamed Helaoui (University of Calgary, Canada); Fadel Ghannouchi (University of Calgary, Canada)

WE1-IF-43

Investigation of a 3D Printed Tetrahedral Aligned Sphere Target at 145 GHz for Radar Positioning

Christian Schulz (Ruhr-Universität Bochum, Germany); Michael Gerding (Ruhr-Universität Bochum, Germany); Timo Jaeschke (Ruhr-Universität Bochum, Germany); Alexander Golkowski (Ruhr-Universität Bochum, Germany); Nils Pohl (Ruhr-Universität Bochum & Fraunhofer FHR, Germany)

WE1-IF-44

Supply Noise Induced Jitter Reduction in Package Power Distributed Networks for 28 Gbps High Speed Serial Links

Sheng-Fan Yang (Global Unichip Corporation, Taiwan)

WE1-IF-45

A novel approach on multi-shielded coaxial cable immunity assessment based on electromagnetism simulation

Clement Pornin (IMEP LaHC, Grenoble INP Université Grenoble Alpes, France); Tan Phu Vuong (Grenoble INP, France); Pascal Xavier (UJF Grenoble, France); Gilbert Angenieux (Université Savoie Mont-Blanc, France)

WE1-IF-46

Measurement of electromagnetic shielding provided by new generation train windshields

Tarik Hammi (SNCF, France); Gabriel Papaiz (SNCF, France)

WE1-IF-47

A Study of Very Low mm-scale Dk Variation Fluoro-Carbon Resin Substrate on mm-Wave range

Tamaki Tatsuya (NIPPON PILLAR PACKING CO. LTD., Japan); Kojiro Iwasa (Nippon Pillar Packing Co., Ltd., Japan); Takeshi Okunaga (Nippon Pillar Packing Co., Ltd., Japan); Hirakawa Nobuhito (NIPPON PILLAR PACKING CO. LTD., Japan); Ishida Kaoru (NIPPON PILLAR PACKING CO. LTD., Japan)

WE1-IF-48

Use of Mode Stirred Reverberating Chambers for evaluating wireless communication performances

Wilfrid Quenum (ONERA, France); Isabelle Junqua (ONERA, France)

TECHNICAL SESSIONS (Interactive Forum)

Thursday, November 8

10:00 - 11:30

Session TH1-IF

Room A

Chairs: Masahiro Horibe (National Institute of Advanced Industrial Science and Technology, Japan), Dmitry Kholodnyak (St. Petersburg Electrotechnical University, Russia)

TH1-IF-1

A -194 dBc/Hz FoM VCO with Low-Supply Sensitivity for Ultra-Low-Power Atomic Clock

Haosheng Zhang (Tokyo Institute of Technology, Japan); Hans Herdian (Tokyo Institute of Technology, Japan); Aravind Tharayil Narayanan (Tokyo Institute of Technology, Japan); Bangan Liu (Tokyo Institute of Technology, Japan); Rui Wu (Tokyo Institute of Technology, Japan); Atsushi Shirane (Tokyo Institute of Technology, Japan); Kenichi Okada (Tokyo Institute of Technology, Japan)

TH1-IF-2

Single-pole Double-throw Switch Using Stacked-FET Configuration at Millimeter Wave Frequencies

Peng-I Mei (National Chiao Tung University, Taiwan); Ting-Jui Huang (National Chiao Tung University, Taiwan); Yi-Fan Tsao (International College of Semiconductor Technology, NCTU, Taiwan); Che-Yang Chiang (Industrial Technology Research Institute, Taiwan); Heng-Tung Hsu (National Chiao Tung University & International College of Semiconductor Technology, Taiwan)

TH1-IF-3

Phase Noise Improvement of a Ku-Band Push-Push Oscillator Using Injection Locking via Two Magnetic Coupling Points

Elton Nascimento Lima (Graduate School of Science and Engineering, Saga University, Japan); Takayuki Tanaka (Faculty of Science and Engineering, Saga University, Japan); Ichihiko Toyoda (Faculty of Science and Engineering, Saga University, Japan)

TH1-IF-4

A Low-loss Compact X-band Superconducting Phase Shifter

Hiroaki Ikeuchi (Toshiba Corporation, Japan); Tamio Kawaguchi (Toshiba Corporation, Japan); Norisugu Shiokawa (Toshiba Corporation, Japan); Yuichi Sawahara (Toshiba Corporation, Japan); Hiroyuki Kayano (Toshiba Corporation, Japan)

TH1-IF-5

Tunable Film Bulk Acoustic Wave Resonator Based on Magnetostrictive Fe65Co35 Thin Films

Jitendra Singh (CEERI Pilani, India)

TH1-IF-6

Linearity characterization of reactive components

David Molinero (Wispry, inc, USA); Shawn Cunningham (Wispry, inc., USA); Art Morris (Wispry, USA)

TH1-IF-7

A X-Band Wide-Scan Phased Array system based on Rotman lens

Yang Yuchen (No38 Research Institute of CETC, P.R. China)

TH1-IF-8

Design and Implementation of 2.4Gsps Digital Channelized Receiver

Yang Yuchen (No38 Research Institute of CETC, P.R. China)

TH1-IF-9

Non-contact and Real-time Pulse-based radar with Sensitivity Improvement for Vital-sign Monitoring

Jian-Yu Huang (Feng-Chia University, Taiwan); Chia-Chin Hsu (Feng-Chia University, Taiwan); Chia-Hung Chang (Feng-Chia University, Taiwan); Wei-Wen Hu (Southern Taiwan University of Science and Technology, Taiwan)

TH1-IF-10

A modified Map-Drift Algorithm for SAR Autofocusing

Wu Wang (National University of Defense Technology, P.R. China); Daoxiang An (National University of Defense Technology, P.R. China); Yuxiao Luo (National University of Defense Technology, P.R. China); Zhimin Zhou (National University of Defense Technology, P.R. China); Xiaotao Huang (National University of Defense Technology, P.R. China)

TH1-IF-11

Quantized Beamforming for RAR Suppression using Convex-ABC Hybrid Algorithm

Sung-Jun Yang (KAIST, Korea)

TH1-IF-12

Wireless 3D Localization Concept for Industrial Automation Based on a Bearings Only Extended Kalman Filter

Melanie Lipka (LHFT, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany); Erik Sippel (Friedrich-Alexander Universität Erlangen-Nürnberg, Germany); Markus Hehn (University Erlangen Nuremberg, Germany); Julian Adametz (FAU, Germany); Martin Vossiek (LHFT, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany); Yassen Dobrev (Symeo GmbH, Germany); Peter Gulden (Symeo GmbH, Germany)

TH1-IF-13

Short Range FMCW Radar for Velocity and Range Detection of Slow Moving Target

Mengting Tu (University of Macau, Macao); Wai Wa Choi (University of Macau, Macao); Pedro Cheong (University of Macau, Macao)

TH1-IF-14

Squint SAR Ground Moving Target Imaging and Motion Parameters Estimation with Keystone Transform

Jiefang Yang (National Space Science Center, Chinese Academy of Sciences, P.R. China); Yunhua Zhang (National Space Science Center, Chinese Academy of Sciences, P.R. China)

TH1-IF-15

Holographic SAR Tomographic Processing of the Multicircular Data

Dong Feng (National University of Defense Technology, P.R. China); Daoxiang An (National University of Defense Technology, P.R. China); Xiaotao Huang (National University of Defense Technology, P.R. China); Zhimin Zhou (National University of Defense Technology, P.R. China)

TH1-IF-16

A Theory of Aircraft Position Verification using TDOA

Junichi Naganawa (Electronic Navigation Research Institute, Japan); Hiromi Miyazaki (Electronic Navigation Research Institute, Japan)

TH1-IF-17

Automatic Tracking of Human Body Using Millimeter-Wave Adaptive Array Radar for Noncontact Heart Rate Measurement

Kentaro Konishi (University of Hyogo, Japan); Takuya Sakamoto (University of Hyogo & Kyoto University, Japan)

TH1-IF-18

High Resolution Moving Train Imaging using Linear-FM Random Radar Waveform

Jiafang Liu (National Space Science Center, Chinese Academy of Sciences & University of Chinese Academy of Sciences, P.R. China); Yunhua Zhang (National Space Science Center, Chinese Academy of Sciences, P.R. China); Xiao Dong (National Space Science Center, Chinese Academy of Sciences, P.R. China)

TH1-IF-19

Experimental Results of Target Classification Using mmWave Corner Radar Sensors

Xinyi Tang (Desay SV Automotive, Singapore); Xiaojun Wu (Desay SV Automotive, Singapore); Siew Bee Yeap (Desay SV Automotive, Singapore); Ruijiang Luo (Desay SV Automotive Singapore PTE LTD, Singapore); Tiffany Dai (Desay SV Automotive, Singapore); Li Huang (Desay SV Automotive, P.R. China)

TH1-IF-20

Range Migration Algorithm for Near-field SIMO Array Imaging

Rongqiang Zhu (National University of Defense Technology, P.R. China); Jianxiong Zhou (National University of Defense Technology, P.R. China); Qiang Fu (National University of Defense Technology, P.R. China)

TH1-IF-21

A HSV-Based Fusion of InRA SAR and GoogleEarth Optical Images

Dong Li (National Space Science Center, Chinese Academy of Sciences, P.R. China); Yunhua Zhang (National Space Science Center, Chinese Academy of Sciences, P.R. China); Xiao Dong (National Space Science Center, Chinese Academy of Sciences, P.R. China); Xiaojin Shi (Center for Space Science and Applied Research, Chinese Academy of Sciences, P.R. China); Wenshuai Zhai (Center for Space Science and Applied Research, Chinese Academy of Sciences, P.R. China)

TH1-IF-22

Interferometric Imaging Radar Altimeter on Board Chinese Tiangong-2 Space Laboratory

Yunhua Zhang (National Space Science Center, Chinese Academy of Sciences, P.R. China); Xiaojin Shi (National Space Science Center, Chinese Academy of Sciences, P.R. China)

TH1-IF-23

Broadband 2 W SiGe - GaN Driver Amplifier and 28 W GaN on Si Power Amplifier

Eigo Kuwata (Mitsubishi Electric Corporation, Japan); Shuichi Sakata (Mitsubishi Electric Corporation, Japan); Kengo Kawasaki (Mitsubishi Electric Corporation, Japan); Daisuke Tsunami (Mitsubishi Electric Corporation, Japan); Kazuhiro Maeda (Mitsubishi Electric Corporation & High Frequency & Optical Device Works, Japan); Shintaro Shinjo (Mitsubishi Electric Corporation, Japan)

TH1-IF-24

A Frequency-domain Technique of Chipless RFID Identification using Cauchy Method

Lakkhana Bannawat (RMUTR, Thailand); Akkarat Boonpoonga (KMUTNB, Thailand)

TH1-IF-25

24 GHz FMCW Radar System for Real-time Hand Gesture Recognition Using LSTM

Jun Seuk Suh (KAIST, Korea); Sijung Ryu (KAIST, Korea); Byunghun Han (KAIST Institute for IT Convergence, Korea); Jaewoo Choi (KAIST, Korea); Jong-Hwan Kim (Korea Advanced Institute of Science and Technology (KAIST), Korea); Songcheol Hong (IEEE, USA)

TH1-IF-26

Envelope Tracking System for High Power Applications in uplink 4G/5G LTE Advanced

Florinel Balteanu (Skyworks Solutions, USA)

TH1-IF-27

An On-chip Self-Interference Canceller with Variable Inductor Based Electrical Balance Network for Full Duplex Systems

Xiucheng Hao (Peking University, P.R. China); Yongan Zheng (Peking University, P.R. China); Zhengkun Shen (Peking University, P.R. China); Zexue Liu (Peking University, P.R. China); Junhua Liu (Peking University, P.R. China); Huailin Liao (Peking University, P.R. China)

TH1-IF-28

Flange Angle Design for Waveguide-Based Orbital Angular Momentum Multiplexing Communication Systems

Nedime Pelin M. H. Salem (New Jersey Institute of Technology, USA); Edip Niver (NJIT, USA); Mohamed A Salem (Sonoma State University, USA)

TH1-IF-29

Experimental demonstration of OFDM based WDM-MIMO visible light communication system

Nariisa Omura (Kyoto Institute of Technology, Japan); Saeko Oshiba (Kyoto Institute of Technology, Japan)

TH1-IF-30

Six-port based High Performance Concurrent Dual-band Receiver

Nadia Chagmti (Faculté des Sciences de Tunis, Tunisia); Afef Harguem (Ecole Polytechnique de Montreal, Canada); Noureddine Boulejfene (Center for Research on Microelectronics and Nanotechnology, Technopole of Sousse, Sousse, Tunisia); Fadhel Ghannouchi (University of Calgary, Canada)

TH1-IF-31

Clustering Based Pilot Allocation Algorithm for Mitigating Pilot Contamination in Massive MIMO Systems

He Gao (Beijing University of Posts and Telecommunications, P.R. China); Tiankui Zhang (Beijing University of Posts and Telecommunications, P.R. China); Chunyan Feng (Beijing University of Posts and Telecommunications, P.R. China); Youxiang Wang (China United Network Communication Corporation Ltd., P.R. China)

TH1-IF-32

Experimental Evaluation of Adaptive Simultaneous Transmission Timing Control Considering Idle/Busy Probability for Multi-band Wireless LAN

Naoto Egashira (ATR Wave Engineering Laboratories, Japan); Kazuto Yano (ATR, Japan); Masayuki Suto (Mobile Techno Corp., Japan); Atsuhiko Sugitani (Mobile Techno Corps, Japan); Yasuharu Amezawa (Mobile Techno Corp, Japan); Tomoaki Kumagai (ATR, Japan)

TH1-IF-33

Development of High Isolation Ping-Pong DDS-PLL based Frequency Synthesizer for Fast Frequency Hopping Applications

Jian-Yu Li (Yuan Ze University, Taiwan); Fu Chun Tang (Yuan Ze University, Taiwan); Tsung-Hwa Hsieh (Yuan Ze University, Taiwan)

TH1-IF-34

Study on Fading Prediction for Automated Guided Vehicle using Probabilistic Neural Network

Julian L Webber (Osaka University & Advanced Telecommunications Research Institute International, Japan); Norisato Suga (ATR, Japan); Abolfazl Mehdodniya (UCD, Ireland); Kazuto Yano (ATR, Japan); Tomoaki Kumagai (ATR, Japan)

TH1-IF-35

Atmospheric Vapor Distribution Observation by Using a Ku-Band Beacon from a LEO Satellite

Seiji Fukushima (Kagoshima University, Japan); Yusuke Kora (Kagoshima University, Japan); Masanori Nishio (Aichi University of Technploxy, Japan)

TH1-IF-36

Busy/Idle Duration Model for WLAN Traffic and Its Prediction Performance using Autoregressive Method

Yafei Hou (Okayama University, Japan); Yusuke Tanaka (Okayama University, Japan); Julian L Webber (Osaka University & Advanced Telecommunications Research Institute International, Japan); Kazuto Yano (ATR, Japan); Satoshi Denno (Okayama University, Japan); Tomoaki Kumagai (ATR, Japan)

TH1-IF-37

Efficient Acquisition of Map Information using Local Data Sharing over Hierarchical Wireless Network for Service Robots

Rui Teng (Advanced Telecommunications Research Institute International, Japan); Kazuto Yano (ATR, Japan); Tomoaki Kumagai (ATR, Japan)

TH1-IF-38

Effect of Applying Meta-surface Reflector on 2x2 LOS MIMO

Ryuji Kuse (Kumamoto University, Japan); Takeshi Fukusako (Kumamoto University, Japan); Akira Matsushima (Kumamoto University, Japan)

TH1-IF-39

Wool-Air Mix Permittivity Measurement

Kimberley W. Eccleston (Lincoln Agritech Ltd, New Zealand); Sonya M Scott (AgResearch Ltd, New Zealand); Paula A Brooksby (University of Canterbury, New Zealand); Ian Fowler (AgResearch Ltd, New Zealand); Scott A Sevier (AgResearch Ltd, New Zealand)

TH1-IF-40

Simulation of Suppression Technology of Angular Glint Based on MIMO Radar

Hai Lin (Nanjing University of Information Science & Technology, P.R. China); Jun-Xiang Ge (Nanjing University of Information Science & Technology, P.R. China); Jie Wang (Nanjing University of Information Science & Technology, P.R. China)

TH1-IF-41

Flexible OTA Probe Setups for Massive MIMO Base Station Testing

Heng Wang (Beijing University of Posts and Telecommunications, P.R. China); Weimin Wang (Beijing University of Posts and Telecommunications, P.R. China); Yongle Wu (Beijing University of Posts and Telecommunications, P.R. China); Yuanan Liu (Beijing University of Posts and Telecom, P.R. China)

TH1-IF-42

A 3D Printed Elliptical Mirror for Material Characterization using FMCW Transceivers

Jonas Wagner (Ruhr-Universität Bochum, Germany); Jan Barowski (Ruhr-Universität Bochum, Germany); Ilona Rolfes (Ruhr-Universität Bochum, Germany)

TH1-IF-43

Towards an Automated, Non-Destructive Method to Measure Sugar Content Using Dielectric Spectroscopy

Scott J Thomason (The University of Queensland, Australia); Konstanty S Bialkowski (The University of Queensland, Australia)

TH1-IF-44

Near Field Quasi Plane Wave Generation and Performance Evaluation

Xuelei Sun (Beihang University, P.R. China); Zhengpeng Wang (Beihang University, P.R. China); Jungang Miao (Beihang University, P.R. China)

TH1-IF-45

The Impact of Human Walking on the Time-Frequency Distribution of In-Home Radio Channels

Alireza Borhani (University of Agder, Norway); Matthias Pätzold (University of Agder, Norway)

TH1-IF-46

A Novel Composite-Loop Active Load-Pull System Having Stability and Simple Structure

Kentaro Kawabe (Ryukoku University, Japan); Toshio Ishizaki (Ryukoku University, Japan)

TH1-IF-47

Microstrip Lines Loaded with Bandstop Resonators for High Resolution Permittivity Sensing

Amir Ebrahimi (RMIT University, Australia); Asif Ahmed (RMIT University, Australia & American International University Bangladesh, Bangladesh); Benjamin Mapleback (RMIT University, Australia); James Scott (RMIT University, Australia); Kamran Ghorbani (RMIT University, Australia)

TH1-IF-48

Complex permittivity evaluation of dielectric materials for millimeter wave circuit substrates with the Whispering-gallery mode resonator method

Kentaro Takano (Utsunomiya University, Japan); Kota Tsunoda (Utsunomiya University, Japan); Takashi Shimizu (Utsunomiya University, Japan); Yoshinori Kogami (Utsunomiya University, Japan)

TH1-IF-49

Complex permittivity measurements of thermoplastic resin filaments for a 3D printer using a 50GHz TM₀m₀ mode cavity resonator

Takafumi Sasaki (Utsunomiya University, Japan); Kohei Takahagi (Utsunomiya University, Japan); Yoshinori Kogami (Utsunomiya University, Japan); Takashi Shimizu (Utsunomiya University, Japan)

TECHNICAL SESSIONS (Interactive Forum)

Thursday, November 8

14:00 - 15:30

Session TH3-IF

Room A

Chairs: Tuptim Angkeaw (Chulalongkorn University, Thailand),

Kazuya Yamamoto (Mitsubishi Electric Corporation & High Frequency and Optical Device Works, Japan)

TH3-IF-1

A Generalized Digital Predistortion Model Based on Artificial Neural Networks

Zhijian Yu (Shanghai Huawei Technologies Co., Ltd., P.R. China)

TH3-IF-2

In-Phase or Quadrature Observation for Indirect Learning Architecture Digital Predistortion Method Based on Forward Modeling

Yikang Zhang (University of Science and Technology of China, P.R. China); Gang Li (University of Science and Technology of China, P.R. China); Hongmin Li (University of Science and Technology of China, P.R. China); Wen Qiao (University of Science and Technology of China, P.R. China); Falin Liu (University of Science and Technology of China, P.R. China)

TH3-IF-3

A 32% Bandwidth, 47.2% PAE Power Amplifier with a reduced IMD3 using GaAs HBT Technology

Li Shaojun (Xidian University, P.R. China); Lv Hongliang (Xidian University, P.R. China); Zhang Yimen (Xidian University, P.R. China); Zhang Yuming (Xidian University, P.R. China); Muhammad Asif (Chinese Academy of Science, Pakistan)

TH3-IF-4

Design of a 1.4 - 3.6 GHz High-Efficiency Broadband Power Amplifiers with Mixed Operation Modes

Fei You (University of Electronic Science and Technology of China, P.R. China); Chuan Li (University of Electronic Science and Technology of China, P.R. China); Weimin Shi (University of Electronic Science and Technology of China, P.R. China); Songbai He (University of Electronic Science and Technology of China, Chengdu, P.R. China)

TH3-IF-5

Design of Low-power High-speed Current Mode Dual-modulus Prescaler with Inductive Peaking Structure

Wanlu Wang (Peking University, P.R. China); Song Jia (Peking University, P.R. China); Xinning Liu (Peking University, P.R. China); Yuan Wang (Peking University, P.R. China)

TH3-IF-6

An 88.68% Tuning Range Enhancement and High Process Compatibility mm-Wave QVCO with SCHI Achieving -196.6 FOMT

Hui Yang (Institute of Microelectronic Circuits and Systems, East China Normal University, P.R. China); Runxi Zhang (East China Normal University, P.R. China); Chunqi Shi (East China Normal University, P.R. China); Guangsheng Chen (Shanghai Eastsoft Microelectronics Co. Ltd., P.R. China)

TH3-IF-7

1-40GHz MMIC Distributed Power Amplifier in Gallium Nitride Technology with P1dB > 31dBm

Iban Barrutia (Universidad de Cantabria, Spain); Amparo Herrera (Universidad de Cantabria, Spain)

TH3-IF-8

A 2W 45% PAE X-Band GaN HEMT Class-F MMIC Power Amplifier

Tomohiro Senju (Toshiba Infrastructure Systems & Solutions Corporation, Japan); Kazutaka Takagi (Toshiba Infrastructure Systems & Solutions Corporation, Japan); Hideki Kimura (Toshiba Infrastructure Systems & Solutions Corporation, Japan)

TH3-IF-9

Deep Neural Network Based Predistorter with ReLU Activation for Doherty Power Amplifiers

Reina Hongyo (Toshiba Corporation); Yoshimasa Egashira (Toshiba Corporation, Japan); Keiichi Yamaguchi (Toshiba Corporation, Japan)

TH3-IF-10

A low loss slow wave structure based on HCG SSP for traveling wave tube applications

Chen Zhao (Nanyang Technological University, Singapore); Geyi Wen (Nanjing University of Information Science and Technology, P.R. China)

TH3-IF-11

A 26GHz 22.2dBm Variable Gain Power Amplifier in 28nm FD-SOI CMOS for 5G Antenna Arrays

Christian Elgaard (Ericsson Research & Lund University, Sweden); Andreas Axholt (Acconeer, Sweden); Eric Westesson (Ericsson Research, Sweden); Henrik Sjöland (Lund University, Sweden)

TH3-IF-12

Novel Dual Power-Mode CMOS Differential Power Amplifier Design Using Single Supply Voltage and a Compact Reconfigurable Output Combining Network

Chenxi Zhai (The Chinese University of Hong Kong, Hong Kong); Kwok-keung (Michael) Cheng (Chinese University of Hong Kong, Hong Kong)

TH3-IF-13

A GaN-on-Si MMIC Doherty Power Amplifier for 5G Applications

Rocco Giofrè (University of Roma Tor Vergata, Italy); Alessandro Del Gaudio (University of Roma Tor Vergata, Italy); Walter Cicognani (Università di Roma Tor Vergata, Italy); Sergio Colangeli (University of Roma Tor Vergata, Italy); Ernesto Limiti (University of Roma Tor Vergata, Italy)

TH3-IF-14

Phase Noise Characteristics of VCOs Utilizing Various Structural 3D-Striped Inductor

Yuta Sakamoto (Okayama Prefectural University, Japan); Nobuyuki Itoh (Okayama Prefectural University, Japan)

TH3-IF-15

Solid-State Transmitters and Sources for Remote Sensing Radars, Instruments and Communication

Naresh Deo (QuinStar Technology, USA)

TH3-IF-16

Mode-Reconfigurable RF Power Amplifier with Independently Controllable Fundamental and Second Harmonic Output Impedances

Genedyn Gems Mendoza (University of the Philippines, Philippines); Miguel Carlo Purisima (University of the Philippines, Philippines)

TH3-IF-17

Study on Linearization Performance of Highly Efficient Low-Voltage Biased Driver Including Dual-Stage GaN MMIC

Osman Ceylan (Ampleon Netherlands BV, The Netherlands); Andre Prata (Ampleon Netherlands BV, The Netherlands); Sergio Pires (Ampleon Netherlands BV, The Netherlands)

TH3-IF-18

A 29.6 dBm 29-GHz Power Amplifier for Satellite and 5G Communications Using 0.15- μ m GaAs p-HEMT Technology

Ian Huang (National Taiwan University, Taiwan); Shao-Ting Yen (National Taiwan University, Taiwan); Wei-Pang Chao (National Taiwan University, Taiwan); Jeng-Han Tsai (National Taiwan Normal University, Taiwan); Abdulelah Alshehri (KACST, Saudi Arabia); Mazen Almalki (KACST, Saudi Arabia); Abdulhamid Sayed (KACST, Saudi Arabia); Tian-Wei Huang (National Taiwan University, Taiwan)

TH3-IF-19

High Power High Efficiency Asymmetric Doherty Amplifiers for Base Station Applications

James Wong (Sumitomo Electric Europe Ltd & Sumitomo Electron Device Innovations, United Kingdom (Great Britain)); Akira Akiyama (Sumitomo Electric Device Innovations, Inc., Japan)

TH3-IF-20

A High-Efficiency 4.35-4.85 GHz Doherty Amplifier for Base Station Applications

James Wong (Sumitomo Electric Europe Ltd & Sumitomo Electron Device Innovations, United Kingdom (Great Britain)); Gaku Nishio (Sumitomo Electric Device Innovations, Inc., Japan)

TH3-IF-21

A Novel Indirect Learning Digital Predistortion Architecture Only with In-phase Component

Cuiping Yu (Beijing University of Posts and Telecommunications, P.R. China); Quan Tang (Beijing University of Posts and Telecommunications, P.R. China); Yuanan Liu (Beijing University of Posts and Telecom, P.R. China)

TH3-IF-22

Envelope Tracking Linearizability of Power Amplifier

Yu Zhu (Skyworks, USA); Alex Klimashov (Skyworks, USA); Boshi Jin (Skyworks Solutions Inc., USA); Florinel Balteanu (Skyworks Solutions, USA); Serge Drogi (Skyworks Solutions, USA); Dylan Bartle (Skyworks, USA); Paul DiCarlo (Skyworks Solutions, USA)

TH3-IF-23

A Novel Power Combining Technique for Microwave Generation with a Combination of Injection-Locked High Power Oscillator and Power-Adjustable High Efficiency Amplifier

Hikaru Ikeda (Company & Panasonic Corporation, Japan); Yasushi Itoh (Shonan Institute of Technology, Japan)

TH3-IF-24

A Low-profile Dual-polarized Wideband Antenna with AMC Reflector

Kaining Zhu (Beijing University of Posts and Telecommunications, P.R. China); Ming Su (Beijing University of Post and Telecommunication, P.R. China); Cuiping Yu (Beijing university of posts and telecommunications, P.R. China); Yuanan Liu (Beijing University of Posts and Telecom, P.R. China); Chaorui Zang (Beijing University of Posts and Telecommunications, P.R. China)

TH3-IF-25

Directed gain bandwidth enhancement in patch/slot hybrid antenna

Bei Huang (Guangdong University of Technology, P.R. China); Jun Zhang (Guangdong University of Technology, P.R. China); Zuhua Liu (Foshan Innovative Micro-IC Technology Inc, P.R. China); Gary Zhang (Guangdong University of Technology, P.R. China); Fugen Wu (Guangdong University of Technology, P.R. China)

TH3-IF-26

Millimeter Wave High-isolated MIMO Antenna With Two Opposite Radiation Directions

Zheng Gan (South China University of Technology, P.R. China)

TH3-IF-27

Wideband Reconfigurable Parasitic Plasma Antenna in VHF Band

Chao Wang (Shanghai Jiao Tong University, P.R. China); Bin Yuan (Shanghai Jiao Tong University, P.R. China)

TH3-IF-28

A Microstrip Patch Antenna Sandwiched Between a Ground Plane and a Metasurface for WiMAX Applications

Niamat Hussain (Chungbuk National University, Korea); Uktam Azimov (Chungbuk National University, Korea); Ji Woong Park (Chungbuk National University, Korea); Seung-Yeop Rhee (Chonnam National University, Korea); Nam Kim (Chungbuk National University, Korea)

TH3-IF-29

Design of a Triple Band Folded Dipole Antenna with Low SAR for GPS/WLAN Application

Ji Woong Park (Chungbuk National University, Korea); Min-joo Jeong (Chungbuk National University, Korea); Han Ul Bong (Chungbuk National University, Korea); Ic Pyo Hong (Kongju National University, Korea); Nam Kim (Chungbuk National University, Korea)

TH3-IF-30

High-Performance Long-range OAM Communication Using Loop Antenna Arrays in 12-GHz Band

Hiroto Otsuka (The University of Electro-Communications, Japan); Ryohei Yamagishi (The University of Electro-Communications, Japan); Ryo Ishikawa (The University of Electro-Communications, Japan); Akira Saitou (The University of Electro-Communications, Japan); Hiroshi Suzuki (The University of Electro-Communications, Japan); Kazuhiko Honjo (The University of Electro-Communications, Japan)

TH3-IF-31

The Design and Simulation of a Compact Vivaldi Antenna for UWB Applications

Yongdong Zang (CETC38, P.R. China); Mou-ping Jin (East China Research Institute of Electronic Engineering, P.R. China)

TH3-IF-32

A Magnetic Current-Based Filtering Antenna

Xue Ren (City University of Hong Kong, P.R. China); Shaowei Liao (South China University of Technology, P.R. China); Quan Xue (South China University of Technology, P.R. China)

TH3-IF-33

A Low-profile and High-gain Circularly Polarized Antenna Based on Holographic Principle

Lei Gan (Xidian University, P.R. China)

TH3-IF-34

Slot Antenna Backed by a Quarter Cylindrical Cavity with a Tuning Slit Stub

Jun Nishijima (Kyoto Institute of Technology, Japan)

TH3-IF-35

A Super Compact 2x2 MIMO Antenna for GSM/WLAN Applications

Sachin Kumar (Kyungpook National University, Korea); Kunal Srivastava (Indian Institute of Technology (ISM) Dhanbad, India); Kang Wook Kim (Kyungpook National University, Korea); Hyun Chul Choi (Kyungpook National University, Korea)

TH3-IF-36

Planar Via-Free Medium with 2-D Negative Refractive Index Properties

Hidehisa Shiomi (Osaka University, Japan); Atsushi Sanada (Osaka University, Japan)

TH3-IF-37

Mie Resonances of Silicon Meta-atoms at Visible Frequencies

Zhixia Xu (Southeast University, P.R. China); Changjiang Su (Southeast University, P.R. China); Siyuan Liu (Southeast University, P.R. China); Hongxin Zhao (Southeast University, P.R. China); Shunli Li (Southeast University, P.R. China); Xiaoxing Yin (Southeast University, P.R. China)

TH3-IF-38

Low Frequency Leaky Waves at Left Handed Ferrite Microstrip Line

Makoto Tsutsumi (Fukui Institute Technology & Kyoto Institute of Technology, Japan)

TH3-IF-39

Using Magnetic Photonic Crystal to Achieve High Performance Broadband Band-Pass Filter

Xi Yang (Nanjing University, P.R. China); Yan Gu (Nanjing University, P.R. China); Zhong-Hao Sa (Nanjing University, P.R. China); Rui-Xin Wu (Nanjing University, P.R. China)

TH3-IF-40

Phase Modulation in Partially Reflective Surfaces for Beam Steering in Fabry-Perot Cavity Antennas

Badreddine Ratni (Univ Paris Nanterre, France); André de Lustrac (Institut d'Electronique Fondamentale - Université Paris-Sud, France); Gérard-Pascal Piau (Airbus, France); Shah Nawaz Burokur (LEME, France)

TH3-IF-41

Flat Retroreflector Mimicking a Cylindrical Retroreflector with a Function of a Luneburg Lens

Tsutomu Nagayama (Kagoshima University, Japan); Seiji Fukushima (Kagoshima University, Japan); Toshio Watanabe (Kagoshima University, Japan); Atsushi Sanada (Osaka University, Japan)

TH3-IF-42

Miniaturized Antenna Based On Vertical Split-Ring Resonator

Zhan Wang (University of Electronic Science and Technology of China, P.R. China); Yuandan Dong (University of Electronic Science and Technology of China, P.R. China)

TH3-IF-43

Numerical Homogenization for Effective Permittivity of Composite Dielectrics in Waveguide by the Finite Element Method

Tuptim Angkeaw (Chulalongkorn University, Thailand)

TH3-IF-44

Design methodology of a single-beam passive reflectarray for controlling arbitrary illuminations

Jiawei Han (ESIGELEC, IRSEEM & Normandie Univ, UNIROUEN, France); Constant Manouan Aka Niamien (Normandie Univ, UNIROUEN, ESIGELEC/IRSEEM, Rouen, France); Zouheir Riah (Normandie Univ UNIROUEN ESIGELEC/IRSEEM, France)

TH3-IF-45

Design of a Perfect Absorber for Normal Incident Waves Using Dirac Cone Metasurface with Anchor Shaped Unit Cells

Subaru Morita (Osaka University, Japan); Atsushi Sanada (Osaka University, Japan)

TH3-IF-46

Ground-Wave-Suppressed High-Frequency Sky-Wave Radar Based on Practically-Realizable Bandgap Structure

Liang-Yu Ou Yang (National Chung-Shan Institute of Science & Technology, Taiwan); Shih-Yuan Chen (National Taiwan University, Taiwan)

TH3-IF-47

Antenna Gain Enhancement by 2-D Photonic Crystals with the Γ -Point Dirac Cone

Daigo Kambayashi (Osaka University, Japan); Atsushi Sanada (Osaka University, Japan)

TH3-IF-48

Design of Small-size Bandstop Filters with Lumped-element Immittance Inverters on Artificial Transmission Lines

Dmitry Kholodnyak (Saint Petersburg Electrotechnical University "LETI", Russia / Tohoku University, Japan); Noriharu Suematsu (Tohoku University, Japan)

TH3-IF-49

Design of a low-voltage high-efficiency 250 GHz gyrotron

Chenxiang An (National University of Defense Technology, P.R. China); Dian Zhang (National University of Defense Technology, P.R. China); Jun Zhang (National University of Defense Technology, P.R. China); Song Li (National University of Defense Technology, P.R. China); Jing Liu (National University of Defense Technology, P.R. China)

TECHNICAL SESSIONS (Interactive Forum)

Friday, November 9

10:00 - 11:30

Session FR1-IF

Room A

Chairs: Rozenn Allanic (Lab-STICC - UBO Brest, France),
Hidehisa Shiomi (Osaka University, Japan)

FR1-IF-1

Parallel-coupled-line quasi-elliptic single-ended and balanced bandpass filters

Chih-Jung Chen (National Taiwan Ocean University & National Taiwan Ocean University, Taiwan); Chun-Lung Chen (National Taiwan Ocean University, Taiwan)

FR1-IF-2

Bandpass Filter with Capacitively Loaded Coupled Lines for Wideband Spurious Rejection

Peng Chen (University of Electronic Science and Technology of China, P.R. China); Luping Li (University of Electronic Science and Technology of China, P.R. China); Kai Yang (University of Electronic Science and Technology of China, P.R. China); Qiang Chen (Tohoku University, Japan)

FR1-IF-3

Matrix Synthesis of Cascaded K-Tuplets Filters with Frequency-Variant Couplings

Yuxing He (Yokohama National University, Japan); Nobuyuki Yoshikawa (Yokohama National University, Japan)

FR1-IF-4

A Design of Balun Bandpass Filter for Wide Stopband Attenuation Base on Stepped Impedance Resonators

Phirun Kim (Chonbuk National University, Korea); Wang Qi (Chonbuk National University, Korea); Girdhari Chaudhary (Chonbuk National University, Korea); Yongchae Jeong (Chonbuk National University, Korea)

FR1-IF-5

A Novel 3.5 GHz Low-Loss Bandpass Filter Using I.H.P. SAW

Yuichi Takamine (Murata Manufacturing Co., Ltd., Japan); Tsutomu Takai (Murata Manufacturing Co., Ltd., Japan); Hideki Iwamoto (Murata Manufacturing Co., Ltd., Japan); Takeshi Nakao (Murata MFG., Japan); Masayoshi Koshino (Murata Manufacturing Co., Ltd., Japan)

FR1-IF-6

Novel Length Independent Beltrami Resonators Using Corrugated Reflectors

Ryo Mochizuki (Kyoto University, Japan); Yuma Takano (Osaka University, Japan); Naoki Shinohara (Kyoto University, Japan); Atsushi Sanada (Osaka University, Japan)

FR1-IF-7

Compact Ultra-Narrowband Superconducting Filter using Asymmetric Twin-Spiral Resonators

Lin Tao (Tsinghua University, P.R. China); Bin Wei (Tsinghua University, P.R. China); Xubo Guo (Tsinghua University, P.R. China); Bisong Cao (Tsinghua University, P.R. China)

FR1-IF-8

Compact Microstrip Lowpass Filter with Ultra-wide Stopband

Thulaseedharan Kodyattuvara Rekha (Cochin University of Science and Technology, India); Parambil Abdulla (Cochin University of Science and Technology, India); Thevaruparambil Abdulnazer Nisamol (Cochin University of Science and Technology, India)

FR1-IF-9

Compact Quasi-elliptic Bandpass Filter Using Magnetically Coupled LC Resonator Pair

Ting-Yi Lin (National Taiwan University & GICE, Taiwan); Tzong-Lin Wu (National Taiwan University, Taiwan)

FR1-IF-10

Miniaturized EMSIW Filter with High out of Band Rejection

Xing-He Nie (Southeast University & State Key Laboratory of Millimeter Waves, P.R. China); Wei Hong (Southeast University, P.R. China)

FR1-IF-11

Analysis and Determination of Microwave Filter Order

Eng Leong Tan (Nanyang Technological University, Singapore); Ding Yu Heh (Nanyang Technological University, Singapore)

FR1-IF-12

Design and fabrication of 3-pole BPF configured by hairpin resonators and different types of coupling and feed types at 20 GHz

Satoshi Ono (The University of Electro-Communications, Japan)

FR1-IF-13

A Compact Power Divider Using Dual Composite Right-/Left-Handed Resonators (D-CRLH) with Filtering Response

I-Ju Chen (National University of Kaohsiung, Taiwan); Wen-Chen Lee (National University of Kaohsiung, Taiwan); Yi-Hsin Pang (National University of Kaohsiung, Taiwan)

FR1-IF-14

A Notch Filter Design Using Quarter-mode SIW Cavities with High Mode Suppression

Xiaolong Huang (Shanghai Jiao Tong University, P.R. China); Liang Zhou (Shanghai Jiao Tong University, P.R. China); Junfa Mao (Shanghai Jiao Tong University, P.R. China)

FR1-IF-15

Design of Holographic Metasurface for Antenna Beam Steering Based on Liquid Crystal Technology

Xiang Zhang (University of Science and Technology of China, P.R. China); Qingyuan Zhang (University of Science and Technology of China, P.R. China); Chang Chen (University of Science and Technology of China, P.R. China); Weidong Chen (University of Science & Technology of China, P.R. China); Bin Liu (University of Science and Technology of China, P.R. China); Jian Cai (Institute of Microelectronics of the Chinese Academy of Sciences, P.R. China)

FR1-IF-16

Reconfigurable Metasurface as Microwave Reflectors and Polarization Converters

Badreddine Ratni (Univ Paris Nanterre, France); André de Lustrac (Institut d'Electronique Fondamentale - Université Paris-Sud, France); Gérard-Pascal Piau (Airbus, France); Shah Nawaz Burokur (LEME, France)

FR1-IF-17

A Reconfigurable 4G MIMO Liquid Metal Mobile Handset Antenna

Haiqiang Gao (Beihang University, P.R. China); Zhengpeng Wang (Beihang University, P.R. China); Chang Xu (BeiHang University, P.R. China)

FR1-IF-18

Dual-band Conformal Antenna for Wireless Capsule Endoscopy Applications

Lijie Xu (Nanjing University of Posts and Telecommunications, P.R. China); Zhu Duan (Nanjing University of Information Science and Technology, P.R. China); Ming Zhang (Nanjing University of Posts and Telecommunications, P.R. China); Yaming Bo (Nanjing University of Posts and Telecommunications, P.R. China)

FR1-IF-19

Flexible Broadband achromatic microwave metalens design using polynomial fitting method

Ling Wang (Beijing University of Posts and Telecommunications, P.R. China); Weijun Hong (Beijing University of Posts and Telecommunications, P.R. China); Li Deng (Beijing University of Posts and Telecommunications, P.R. China); Shufang Li (Beijing University of Posts and Telecommunications, P.R. China); Shahab Uddin (Beijing University of Posts and Telecommunications, Pakistan); Haomin Tian (Beijing University of Posts and Telecommunications, P.R. China); Deken Chen (Beijing University of Posts and Telecommunications, P.R. China)

FR1-IF-20

High-Gain Low-Profile Substrate-Integrated Fabry-Pérot Cavity Antenna

Zhiming Liu (Nanjing University of Aeronautics and Astronautics, P.R. China); Xiangkun Kong (Nanjing University of Aeronautics and Astronautics, P.R. China)

FR1-IF-21

Circularly Polarized Antenna with Asymmetric-Metasurface

Jils Sheersha (Nanyang Technological University, Singapore); N Nasimuddin (Institute for Infocomm Research, Singapore); Arokiaswami Alphones (Nanyang Technological University, Singapore)

FR1-IF-22

Novel Compact High-Gain Wideband Filtering Metasurface Antenna

Si Chen (Nanjing University of Science and Technology, P.R. China); Wanchen Yang (Nanjing University of Science and Technology, P.R. China); Wenquan Che (Nanjing University of Science and Technology, P.R. China); Quan Xue (South China University of Technology, P.R. China); Wenjie Feng (Nanjing University of Science and Technology, P.R. China)

FR1-IF-23

Unambiguous Determination of Oscillation Frequency for Multiple Objects using Quadrature Doppler Radar

Avon Whitworth (University of Hawaii at Manoa, USA); Khaldoun Ishmael (University of Hawaii at Manoa, USA); Ehsan Yavari (University of Hawaii at Manoa, USA); Olga Boric-Lubecke (University of Hawaii at Manoa, USA)

FR1-IF-24

14.5GHz Circular Waveguide Applicator for the Treatment of Skin Cancer

Shaun Preston (Bangor University, United Kingdom (Great Britain)); Christopher Paul Hancock (Bangor University and Creo Medical, United Kingdom (Great Britain))

FR1-IF-25

A Miniature Flexible Microwave Applicator for the Ablation of Pancreatic Tumours at 5.8GHz

William Taplin (Bangor University, United Kingdom (Great Britain)); Shaun Preston (Bangor University, United Kingdom (Great Britain)); Christopher Paul Hancock (Bangor University and Creo Medical, United Kingdom (Great Britain))

FR1-IF-26

The Effect of Data Acquisition Configuration on Simultaneous Algebraic Reconstruction Technique Algorithm for Microwave Imaging System

Basari Basari (Universitas Indonesia, Indonesia); Ria Aprilliyani (Universitas Indonesia, Indonesia)

FR1-IF-27

Dual-Band Dual-Polarization Coding Metasurface Antenna

Shun-Cheng Tian (Xidian University, P.R. China); Yunjia Huang (Xidian University, P.R. China); Xiaoxiao Liu (Xidian University, P.R. China); Yu-Ying Zhao (Xidian University, P.R. China); Haixia Liu (Xidian University, P.R. China); Long Li (Xidian University, P.R. China)

FR1-IF-28

An Extensive Load Resistor Operation of Wireless Power Transfer System in 13.56MHz Resonant Mode

Heng-Ming Hsu (National Chung-Hsing University, Taiwan)

FR1-IF-29

Reflection Investigation of Modified Greinacher Charge Pump Using Frequency Doubler for An Elegant Full-Duplex WPT System

Hao Zhang (Nanjing University of Science and Technology & National University of Singapore, P.R. China); Si-Ping Gao (National University of Singapore, Singapore); Jian Wang (National University of Singapore, Singapore); Zheng Zhong (National University of Singapore Suzhou Research Institute, P.R. China); Wen Wu (Nanjing University of Science and Technology, P.R. China)

FR1-IF-30

Long Range Wireless SAW Passive Tag System using Patch Antenna for Vibration Monitoring

Koki Shibata (Japan Radio Co., Ltd., Japan); Eiki Takahashi (Japan Radio Co., Ltd., Japan)

FR1-IF-31

Autopilot Drone with Rectenna for 28GHz Microwave Irradiation Measurement

Satoru Suganuma (University of Tsukuba, Japan)

FR1-IF-32

Improvement in Transmission Efficiency for Cavity Resonance Enabled Wireless Power Transfer by Handling Cavity Impedance

Shinji Nimura (Toyohashi University of Technology, Japan)

FR1-IF-33

Analysis of Contact-less Power Transfer Characteristics in a Periodically Connected Drill Pipes Based on Measurement of Coupling Unit

Ikuo Awai (Ryutech Corporation, Japan); Tatsuya Hiraiwa (Ryukoku University, Japan); Toshio Ishizaki (Ryukoku University, Japan); Tomoya Inoue (JAMSTEC, Japan); Junya Ishiwata (JAMSTEC, Japan)

FR1-IF-34

Wide Range Dual Linear Polarization Rectenna Using Beamforming Networks for Nuclear Power Plants

Dong-Jin Lee (Korea Institute of Nuclear Safety(KINS), Korea); Jaeyul Choo (Korea Institute of Nuclear Safety, Korea); In-June Hwang (Korea Advanced Institute of Science and Technology(KAIST), Korea)

FR1-IF-35

Stacked Microstrip Patch Antenna Array with High-gain and Improved Thermal-Stability for Microwave Power Transmission Applications

Kyoung-Joo Lee (Korea Electrotechnology Research Institute, KERI, Korea); Juntaek Oh (Yeungnam University, Korea); Sang-Hwa Yi (Korea Electrotechnology Research Institute, KERI, Korea)

FR1-IF-36

A High Q Dual E-Shaped Defected Ground Structure for Wireless Power Transfer Applications

Shalin Verma (IIITD, India); Dinesh Rano (Indraprastha Institute of Information Technology, Delhi, India); Mohammad Hashmi (Nazarbayev University, Kazakhstan & IIIT Delhi, India); Vivek A Bohara (Indraprastha Institute of Information Technology, Delhi (IIIT-Delhi), India)

FR1-IF-37

A Novel Coil Design Method for Inductive Power Transfer Avoiding Compensation Circuits

Zixuan Yi (University of Science and Technology of China, P.R. China); Qi Zhu (University of Science and Technology of China, P.R. China)

FR1-IF-38

A Polarization-Based Power-Splitting Full-Duplex Relaying Scheme Design for SWIPT System

Jinyang Li (Beijing University of Posts and Telecommunications, P.R. China); Fangfang Liu (Beijing University of Posts and Telecommunications, P.R. China); Caili Guo (Beijing University of Posts and Telecommunications, P.R. China)

FR1-IF-39

Drone Driven by Microwave

Yudai Hashimoto (NTT Communications Corporation, Japan); Qiaowei Yuan (National Institute of Technology, Sendai College, Japan); Takumi Aoki (National Institute of Technology, Sendai College, Japan)

FR1-IF-40

Experiment on Direction Finding using Array antenna for Solar Power Satellite

Mudassir Raza (The Graduate University for Advanced Studies (SOKENDAI), Japan); Koji Tanaka (Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency, Japan); Shotaro Katano (The Graduate University for Advanced Studies (SOKENDAI), Japan)

FR1-IF-41

Contactless Power Transfer Module for an Articulated Arm Robot

Motoki Futatsuya (Ryukoku University, Japan); Toshio Ishizaki (Ryukoku University, Japan); Ikuo Awai (Ryutech Corporation, Japan)

FR1-IF-42

RF Energy Harvesting Using Efficiency Dual Band Rectifier

Nermeen Ahmed Eltresy (Faculty of Engineering, Ain Shams University & Electronics Research Institute, Egypt); Dalia Elsheekh, dalia (Electronics Research Institute & ElTahrir St. Dokki Giza, Egypt); Esmat Abdallah (Former President of the Electronics Research Institute, Egypt); Hadia Elhenawy (Prof, Egypt)

FR1-IF-43

Study on a Microwave Power Transfer System to a Stratospheric Platform Airship

Yuta Nakamoto (Kyoto University, Japan); Naoki Shinohara (Kyoto University, Japan)

FR1-IF-44

Deep Body Microwave Hyperthermia Device for Personal Uses from Focused Microwave Thermotherapy System

Soon-Ik Jeon (Electronics and Telecommunications Research Institute, Korea)

FR1-IF-45

Development of objects storage location detector with UHF-RFID system

Shinji Matsuoka (Tokyo City University, Japan); Yoshinobu Okano (Tokyo City University, Japan)

FR1-IF-46

Support Vector Machine-Based Instantaneous Presence Detection for Continuous Wave Radar Systems

Sven Schellenberger (Brandenburg University of Technology, Germany); Kilin Shi (Friedrich-Alexander University Erlangen-Nuremberg, Germany); Tobias Steigleder (University Hospital Erlangen, Germany); Fabian Michler (Friedrich-Alexander University Erlangen-Nuremberg, Germany); Fabian Lurz (Friedrich-Alexander University Erlangen-Nuremberg, Germany); Robert Weigel (Friedrich-Alexander Universität Erlangen-Nürnberg, Germany); Alexander Koelpin (BTU & Chair for Electronics and Sensor Systems, Germany)

FR1-IF-47

Non-contact Emotion Recognition via CW Doppler Radar

Qian Gao (Nanjing University of Science and Technology, P.R. China); Li Zhang (Nanjing University of Science and Technology, P.R. China); Jiaming Yan (Nanjing University of Science and Technology, P.R. China); Heng Zhao (Nanjing University of Science and Technology, P.R. China); Chuanwei Ding (Nanjing University of Science and Technology, P.R. China); Hong Hong (Nanjing University of Science and Technology, P.R. China); Xiaohua Zhu (Nanjing University of Science and Technology, P.R. China)

FR1-IF-48

Terahertz Non-Destructive Monitoring for Infrastructure Components

Tadao Tanabe (Tohoku University, Japan); Yutaka Oyama (Tohoku University, Japan)

FR1-IF-49

Improvement of Electric Field Focusing for Deep Hyperthermia in Breast Cancer Treatment by Using Microwave Dielectric Heating with Curved Plate Applicator

Supawat Kotchaprakit (Suranaree University of Technology, Thailand); Thanaset Thosdeekoraphat (Suranaree University of Technology, Thailand)

FR1-IF-50

A Compact Wearable Antenna Using EBG for Smart-watch Applications

Adel Ashyap (Universiti Tun Hussein Onn Malaysia, Malaysia); Zuhairiah Zainal Abidin (Universiti Tun Hussein Onn Malaysia, Malaysia); Samsul Haimi Dahlan (Universiti Tun Hussien Onn Malaysia, Malaysia); Huda A. Majid (Universiti Tun Hussein Onn Malaysia, Malaysia); Fauziahanim Che Seman (Universiti Tun Hussein Onn Malaysia, Malaysia)

TECHNICAL SESSIONS (Interactive Forum)

Friday, November 9

14:00 - 15:30

Session FR3-IF

Room A

Chairs: Julian L Webber (Osaka University & Advanced Telecommunications Research Institute International, Japan), Chung-Tse Michael Wu (Rutgers University, USA)

FR3-IF-1

Third-Order Bandwidth-Tunable Bandpass Filter with Two Transmission Zeros

Ziwei Zhou (University of Electronic Science and Technology of China, P.R. China); Fei Xiao (University of Electronic Science and Technology of China, P.R. China); Yu Cao (Chengdu Tiger Microwave Tech Co Ltd, P.R. China); Yong Zhang (University of Electronic Science and Technology of China, P.R. China); Xiaohong Tang (University of Electronic Science and Technology of China, P.R. China)

FR3-IF-2

Balanced-to-Balanced Power Divider with Tunable In-Phase/Out-of-Phase Power-Dividing Ratio

Pei-Ling Chi (National Chiao Tung University, Taiwan); Chun-Pin Chien (National Chiao Tung University, Taiwan)

FR3-IF-3

Generic UHF Bandpass Filter with Air-Filled SIR Coaxial Resonators

Marc Hakim Aouidad (Elliptika, France); Eric Rius (Lab-STICC/Université de Brest); Jean François Favennec (Lab-STICC/ENIB, France); Alexandre Manchec (Elliptika, France)

FR3-IF-4

Design theory of dual-band Wilkinson power divider with different frequency ratio ranges

An Song (Saitama University, Japan); Xiaolong Wang (Jilin University, P.R. China); Zhewang Ma (Saitama University, Japan); Masataka Ohira (Saitama University, Japan)

FR3-IF-5

A Wideband Forward Coupler with Tunable Coupling Ratio Using Varactor Based Tuning Network

Chih-Hao Lai (National Chiao Tung University, Taiwan); Chih-Yang Chang (National Chiao Tung University, Taiwan)

FR3-IF-6

Cross-board Synchronization of Oscillators Embedded with Phase-difference Adjusting

Janne-Wha Wu (National Chung Cheng University, Taiwan)

FR3-IF-7

X-Band Broadband Branch-Line Coupler with Loose Coupling Utilizing Short-/Open-Circuited Coupled-Transmission Lines

Yuya Haoka (University of Hyogo, Japan); Tadashi Kawai (University of Hyogo, Japan); Akira Enokihara (University of Hyogo, Japan)

FR3-IF-8

Design Method of Frequency-Reconfigurable Filtering Couplers

Feng Lin (Beijing Institute of Technology, P.R. China); Hongzhong Ma (Beijing Institute of Technology, P.R. China)

FR3-IF-9

A Wideband 90-nm CMOS Phase-locked Loop with Current Mismatch Calibration for Spur Reduction

Yueh-Hua Yu (National Taiwan University, Taiwan); Jau-Horn Chen (National Taiwan University, Taiwan); Yi-Jan Emery Chen (National Taiwan University, Taiwan)

FR3-IF-10

Achieving Perfect Absorption by the combination of Dallenbach Layer and Salisbury Screen

Feifei Li (Nanjing University, P.R. China); Ping Chen (Nanjing University, P.R. China); Yin Poo (Nanjing University, P.R. China); Rui-Xin Wu (Nanjing University, P.R. China)

FR3-IF-11

A Low Droop Rate Wide Input Bandwidth High Dynamic Range Track-and-hold Amplifier in 0.18 μm SiGe Process

Guan-Lin Huang (National Central University, Taiwan); Cheng-Rui Li (National Central University, Taiwan); Hong-Yeh Chang (National Central University, Taiwan)

FR3-IF-12

Design of 6-bit 28GHz Phase Shifter in 65nm CMOS

Jeehoon Park (Electronics and Telecommunications Research Institute, ETRI, Korea); Sunwoo Kong (Electronics and Telecommunications Research Institute, Korea); Seunghyun Jang (ETRI, Korea); Hui Dong Lee (Electronics and Telecommunications Research Institute, Korea); Kwang-Seon Kim (ETRI, Korea); Lee Kwang Chun (ETRI, Korea)

FR3-IF-13

A 110-135 GHz Integrated Sixport Receiver Front-End in a 130-nm BiCMOS Technology

Matthias Voelkel (University Erlangen/Nuernberg, Germany); Karl Borutta (University Erlangen/Nuernberg, Germany); Marco Dietz (Friedrich-Alexander-University Erlangen-Nuremberg & Institute for Electronics Engineering, Germany); Klaus Aufinger (Infineon Technologies AG, Germany); Robert Weigel (Friedrich-Alexander Universität Erlangen-Nürnberg, Germany); Amelie Hagelauer (University of Erlangen-Nuremberg, Germany)

FR3-IF-14

A DC to 40 GHz 4-Vpp Output High-Efficiency Linear Driver for Optical Communication

Xiao Liu (Eindhoven University of Technology, The Netherlands); Xi Zhang (Eindhoven University of Technology - TU/e, The Netherlands); Rainier Van Dommele (Eindhoven University of Technology, The Netherlands); Hao Gao (Eindhoven University of Technology, The Netherlands); Domine Leenaerts (NXP Semiconductors, The Netherlands); Marion Matters-Kammerer (Eindhoven University of Technology, The Netherlands)

FR3-IF-15

A 68-79 GHz 15.6dBm Power Amplifier in 65nm CMOS

Wei Lv (East China Research Institute of Electronic Engineering); Zongming Duan (East China Research Institute of Electronic Engineering); Shiwei Wu (East China Research Institute of Electronic Engineering); Yan Wang (East China Research Institute of Electronic Engineering, P.R. China)

FR3-IF-16

A study on Direct RF Undersampling Receiver Configuration considering Timing Skew Spurs using Time-Interleaved ADC

Tomoyuki Furuichi (Tohoku University, Japan); Mizuki Motoyoshi (Tohoku University, Japan); Suguru Kameda (Tohoku University, Japan); Noriharu Suematsu (Tohoku University, Japan)

FR3-IF-17

An E-Band Silicon-IC-to-Waveguide Contactless Transition Incorporating a Low-Loss Spatial Power Combiner

Piyush Kaul (Eindhoven University of Technology, The Netherlands); Alhassan Aljarosha (Eindhoven University of Technology & Chalmers University of Technology, The Netherlands); A. B. (Bart) Smolders (Eindhoven University of Technology, The Netherlands); Peter Baltus (Eindhoven University of Technology, The Netherlands); Marion Matters-Kammerer (Eindhoven University of Technology, The Netherlands); Rob Maaskant (CHALMERS, Sweden)

FR3-IF-18

A Phased Array Pattern Prediction Technique Based on the Pattern Multiplication Method

Shihyuan Yeh (Texas A&M University, USA)

FR3-IF-19

Design of Planar 8-by-16 Butler Matrix for 16-Element Switch-Beam Antenna Array

Chao-Hsiung Tseng (National Taiwan University of Science and Technology, Taiwan); Jheng-Yuan Huang (National Taiwan University of Science and Technology, Taiwan); Chun-Hao Tseng (National Taiwan University of Science and Technology, Taiwan)

FR3-IF-20

Efficient Antenna Scan Response Models for Large Phased Arrays

Brandt Klopper (Stellenbosch University, South Africa); Dirk de Villiers (Stellenbosch University, South Africa)

FR3-IF-21

6:1 Bandwidth Linearly Polarized Compact Vivaldi Antenna Array

Saurabh Shukla (CARE, IIT DELHI & DARE, DRDO, India); Shibani K Koul (Indian Institute of Technology Delhi, India); Mahesh P Abegaonkar (IIT Delhi, India)

FR3-IF-22

Tri-band 2x2 5G MIMO Antenna Array

Son Chu (University of Oxford, United Kingdom (Great Britain)); Md Nazmul Hasan (Sungkyunkwan University, Korea); Jiaruo Yan (University of Oxford, United Kingdom (Great Britain)); Can Chu (University of Transport and Communications, Vietnam)

FR3-IF-23

A Method of Grating-Lobe Suppression Using Flat-Topped Element Pattern

Xie Shaoyi (Northwest Institute of Nuclear Technology, P.R. China); Jiawei Li (Northwest Institute of Nuclear Technology, P.R. China); Tao Ba (Northwest Institute of Nuclear Technology, P.R. China); Letian Guo (Northwest Institute of Nuclear Technology, P.R. China); Deng Guangjian (Northwest Institute of Nuclear Technology, P.R. China); Shao Hao (Northwest Institute of Nuclear Technology, P.R. China)

FR3-IF-24

A 5.8-GHz Dual-Axis Monopulse Microstrip Array Antenna Using Dual-Feed Network

Thet Paing Phyo (Saga University, Japan); Eisuke Nishiyama (Faculty of Science and Engineering, Saga University, Japan); Ichihiko Toyoda (Faculty of Science and Engineering, Saga University, Japan)

FR3-IF-25

Design of Circularly Polarized Dielectric Resonator Reflectarray Antenna

Xibei Zhao (Xidian University, P.R. China); Feng Wei (Xidian University & National Laboratory of Science and Technology on Antennas and Microwaves, P.R. China)

FR3-IF-26

360-degree Azimuth Beam Scan Four-Branch MRC Adaptive Array for Secure Connected Cars

Ryoya Furukura (University of Toyama); Hiroya Tanaka (University of Toyama, Japan); Kazuhiro Honda (University of Toyama, Japan); Koichi Ogawa (University of Toyama & Faculty of Engineering, Japan)

FR3-IF-27

The Radial Line Slot Antenna using Non-Resonant Cross-Slot Pair for Radiating Waveguide Termination

Yasuhiro Tsunemitsu (Takushoku University, Japan); Yasuhiro Higuma (Takushoku University, Japan); Naohisa Goto (Tokyo Institute of Technology and Takushoku University, Japan)

FR3-IF-28

Design of a Substrate Integrated Coaxial Line based 2x4 Slot Antenna Array for Millimeter Wave Application

Naman Baghel (Indian Institute of Technology Jodhpur, India); Soumava Mukherjee (Indian Institute of Technology Jodhpur, India)

FR3-IF-29

New Approach to Suppress Mutual Coupling Between Longitudinal-Slotted Arrays Based on SIW Antenna Loaded with Metal-Fences Working on VHF/UHF Frequency-Bands: Study, Investigation, and Principle

Mohammad Alibakhshkenari (Università degli Studi di Roma "Tor Vergata", Roma - ITALY, Italy); Bal Virdee (London Metropolitan University, United Kingdom (Great Britain)); Chan See (University of Bolton, United Kingdom (Great Britain)); Raed A Abd-Alhameed (University of Bradford, United Kingdom (Great Britain)); Francisco Falcone (Universidad Publica de Navarra, Spain); Ernesto Limiti (University of Rome Tor Vergata, Italy); Mohsen Khalily (University of Surrey & 5G Innovation Centre, Institute for Communication Systems (ICS), United Kingdom (Great Britain))

FR3-IF-30

Scattering and Radiation Performance of Ninja Array Antennas

Keisuke Konno (Tohoku University, Japan); Qiang Chen (Tohoku University, Japan); Qiaowei Yuan (National Institute of Technology, Sendai College, Japan)

FR3-IF-31

A Wide Impedance Bandwidth Printed Slot Antenna for 28, 38, and 60-GHz Applications

Pei-Ling Chi (National Chiao Tung University, Taiwan); Ching-Hsiang Wang (National Chiao Tung University, Taiwan)

FR3-IF-32

A Planar Super Wideband Annular Ring Monopole Antenna with Time Domain Characterization

Son Chu (University of Oxford, United Kingdom (Great Britain)); Md Nazmul Hasan (Sungkyunkwan University, Korea); Jiaruo Yan (University of Oxford, United Kingdom (Great Britain)); Can Chu (University of Transport and Communications, Vietnam)

FR3-IF-33

A Ka-Band LTCC Magneto-Electric Dipole Array for 5G Communications

Yu Jian Li (Beijing Jiaotong University, P.R. China); Yong-Xin Guo (National University of Singapore, Singapore)

FR3-IF-34

Equal beamwidth and low sidelobe mm-wave horn antenna

Muhammad Shahzad Sadiq (Beihang, P.R. China); Muhammad Wasif Niaz (Northwestern Polytechnical University, P.R. China); Shufeng Zheng (Xidian University, P.R. China); Luyu Zhao (Xidian University, P.R. China)

FR3-IF-35

Novel Design of a Dual-band 5G mm-Wave Antenna Array Integrated with a Metal Frame of a Cellular Phone

Yijin Wang (vivo Mobile Communication Co., Ltd, P.R. China); Huan-Chu Huang (vivo Mobile Communication Co., Ltd, Taiwan); Xianjing Jian (vivo Mobile Communication Co., Ltd, P.R. China)

FR3-IF-36

Broadside 60 GHz Antenna with two Quasi-Yagi Radiators with Corrugated Directors and Reflector

Dan Neculoiu (National Institute of R&D in Microtechnologies - IMT Bucharest & Politehnica University of Bucharest, Romania); Alina-Cristina Bunea (National Institute for R&D in Microtechnologies - IMT Bucharest, Romania); Andrei Marius Avram (National Institute for R&D in Microtechnologies - IMT Bucharest, Romania)

FR3-IF-37

SIW Cavity-Backed Self-Triplexing Antenna with T-Shaped Slot

Arvind Kumar (National Institute of Technology, Trichy India & National Institute of Technology, Trichy India, India); Divya Chaturvedi (NIT Trichy, India); B Murugeswari (NIT TRICHY, India); Raghavan S (NIT, India)

FR3-IF-38

Broadband Thin-Film Microstrip Superconducting Antenna

Bing Li (Southwest Jiaotong University, P.R. China)

FR3-IF-39

A Multi-Mode Resonator-Fed Broadband Patch Antenna with Improved Selectivity and Harmonic Suppression

Jian-Feng Qian (School of Electronic and Information Engineering, South China University of Technology, P.R. China); Fu-Chang Chen (South China University of Technology, P.R. China)

FR3-IF-40

A Consistently High Gain Frequency Scanning Antenna for Portable Low-Profile Beamforming Applications

Karthik Thothathri Chandrasekaran (Nanyang Technological University, Singapore); N Nasimuddin (Institute for Infocomm Research, Singapore); Michael Ong (Institute for Infocomm Research, Singapore); Arokiaswami Alphones (Nanyang Technological University, Singapore); Faeyz Karim (Nanyang Technological University, Singapore)

FR3-IF-41

A Single-Feed Circularly Polarized Patch Antenna for Wideband Wireless Applications

Min Han (Southeast University & State Key Laboratory of Millimeter Waves, P.R. China); Wenbin Dou (Southeast University & State Key Of MMW, Southeast University, P.R. China)

FR3-IF-42

Nature Inspired Golden Spiral Super-Ultra Wideband Microstrip Antenna

Sarthak Gupta (Netaji Subhas Institute of Technology, India); Tushar Arora (Netaji Subhas Institute of Technology, India); Deepak Singh (Netaji Subhas Institute of Technology, India); Krishan Kumar Singh (Netaji Subhas Institute of Technology, India)

FR3-IF-43

A LTE/GPS/WWAN Dipole Antenna for Smartwatch Applications

Jui-Han Lu (National Kaohsiung Marine University, Taiwan); Jia-Wen Hsu (National Kaohsiung University of Science and Technology, Taiwan); Jing-Hui Zhuang (National Kaohsiung University of Science and Technology, Taiwan)

FR3-IF-44

A Compact Ku/E band Horn Antenna

Xiaoyu Du (Xidian University, P.R. China); Shufeng Zheng (Xidian University, P.R. China)

FR3-IF-45

UWB Double-Sided Printed Bowtie Antenna Using Supershape

Vignesh Shanmugam Bhaskar (S2-B3c-26, (Comm Research lab) & Nanyang Technological University, Singapore); Eng Leong Tan (Nanyang Technological University, Singapore); King Ho Holden LI (Nanyang Technological University, Singapore)

FR3-IF-46

Dielectric Measurement in Liquids Using an Estimation Equation Without Short Termination via the Cut-off Waveguide Reflection Method

Kouji Shibata (Hachinohe Institute of Technology, Japan)

FR3-IF-47

Relation between complex permittivity and microwave heating for semiconductor materials

Hideoki Fukushima (Toyota Central R&D Labs. Inc., Japan)

FR3-IF-48

2.45 GHz ISM-Band 450W High Efficiency GaN Pallet Amplifier for Microwave Heating

Takumi Sugitani (Mitsubishi Electric Corporation, Japan)

FR3-IF-49

Experimental Evaluation of Uniform Heating of Object Arranged in Microwave Oven by Planar Electromagnetic Stirrer

Naruki Saito (Aoyama Gakuin University, Japan); Yuta Mizushima (Aoyama Gakuin University, Japan); Ryosuke Suga (Aoyama Gakuin University, Japan); Osamu Hashimoto (Aoyama Gakuin University, Japan)

FR3-IF-50

Microwave Specific Effect on Catalytic Enantioselective Reactions

Tohru Yamada (Keio University, Japan)

FR3-IF-51

Effect of Multimode and Single-mode Microwave Processing of Anisotropic Grain Growth of CuFeO₂

Jun Fukushima (Tohoku University, Japan)

WORKSHOPS

Tuesday, November 6 10:00-17:00

Room B1

WS-B1

RF Front End Modules for 4G/5G Applications

Organizer: Florinel Balteanu (Skyworks Solutions, USA)

With the world wide adoption and access to voice and data through Long Term Evolution (LTE) services, the cellular industry is now the world's largest innovation engine. For most parts of the world mobile is the leading internet access platform for internet access. Today there are 4.5 billion worldwide mobile subscribers with this number expected to reach 6 billion by 2020. The workshop examines the current status of LTE RF Front End Modules and the ways it evolve to deliver a gigabit-per-second user experience which is the LTE 5G goal. 5G is simultaneously an evolutionary process (LTE evolution) with few elements of revolution (5G New Radio NR). There are three LTE advanced techniques to increase the data rate for 5G which will be explained in this workshop such as:

- Wider bandwidth via carrier aggregation
- Higher order modulation
- MIMO utilization

5G ecosystem will consist of two frequency area of interest: sub 6GHz frequency domain and mmWave spectrum. Both areas will be covered by this workshop as well the technologies used. Both 4G LTE as it currently used and 5G NR will be deployed concurrently in spectrum below 6GHz and therefore standalone 5G will not be deployed in LTE bands for a while. To increase the data bandwidth there is also the need to increase the capacity for backhaul network.

Most of the recent 5G headlines have been focused on mmWave spectrum and the introduction of the new techniques like beam forming which will be presented in this workshop. Currently there are many technical challenges that would prohibit mmWave deployment in consumer devices as a first step in the 5G technology roadmap, but will be initially deployed for wireless backhaul solutions.

- WS-B1-1 Introduction
Florinel Balteanu (Skyworks Solutions, USA)
- WS-B1-2 RF-SOI for LTE Carrier Aggregation and 5G
Venkata Narayana Rao Vanukuru (Globalfoundries, India)
- [Lunch break]
- WS-B1-3 Envelope Tracking Linearization
Yu Zhu (Skyworks Solutions, USA)
- WS-B1-4 5G CMOS Tunable Filters for RF Front Ends
Gaëtan Prigent (Univesité de Toulouse, France)
- WS-B1-5 RF Front End Modules for 4G/5G Cellular Applications
Florinel Balteanu (Skyworks Solutions, USA)
- WS-B1-6 A 28GHz CMOS Phased-Array Transceiver for 5G New Radio
Kenichi Okada (Tokyo Institute of Technology, Japan); Rui Wu (Tokyo Institute of Technology, Japan)

Tuesday, November 6 10:00-13:00

Room B2

WS1-B2

mm-Wave GaN for 5G Applications

Organizers: Kazuya Yamamoto (Mitsubishi Electric Corporation, Japan), Kazutaka Inoue (Sumitomo Electric Industry Corporation, Japan)

Sponsorship: Endorsed by IEEE MTT-S TC-7

Millimeter-wave and sub-millimeter-wave applications, such as satellite communications, radar systems, high-speed wireless communications, and emerging 5G systems, have demanded high-power and high-efficiency devices. A GaN device is still a main player for the above frequencies and applications. This workshop introduces the advances in GaN device technology and its application to 5G millimeter-wave transmitter systems while focusing on transmitter system design and efficiency-enhancement techniques as well as recent GaN device achievements. This workshop will be of great value to GaN power amplifier designers, especially beginners or less-experienced designers, because it allows the attendees to learn and understand the hottest topics and the latest results related to GaN devices at a time.

- WS1-B2-1 Novel Heterostructures for Millimeter-wave GaN Devices
Farid Medjdoub (Villeneuve D'ASCQ, France)
- WS1-B2-2 GaN Transistor Development for High-Power High-Linearity Millimeter-Wave Applications
Keisuke Shinohara (Teledyne Scientific & Imaging, LLC, USA)
- WS1-B2-3 GaN and Si Applications to 5G mm-Wave Massive-MIMO Base-Stations
Tomoya Kaneko (NEC Corporation, Japan)
- WS1-B2-4 Envelope Tracking GaN Power Amplifiers for 5G mmWave Signals
Donald Kimball (pSemi Corporation, USA)

WORKSHOPS

Tuesday, November 6 14:00-17:00

Room B2

WS2-B2

Recent Progress of Terahertz Sources for Advanced Applications

Organizers: Masayuki Fujita (Osaka University, Japan), Shuhei Amakawa (Hiroshima University, Japan)

Terahertz (THz) electromagnetic waves, which are located between microwaves and light (from around 0.1 THz to 10 THz), are attracting much attention in interdisciplinary fields straddling electronics and photonics. A wide variety of THz-wave applications are being developed, including high-data-rate wireless communication and high-resolution sensing. THz sources are the most important components in developing advanced THz applications because the sources can be the limiting factor of the performance of application systems. Performance indicators of interest include the operation frequency, output power, power consumption, size, complexity, tunability and cost. Among others, solid-state semiconductor-based sources are highly promising for various applications and are rapidly being developed around the world.

In this Workshop on "Recent progress of terahertz sources for advanced applications", six distinguished invited speakers will present solid-state THz sources using different mechanism and materials including a multiplier based on Schottky barrier diodes (SBDs), integrated circuits based on high-electron-mobility transistors (HEMTs) using III-V compound semiconductors, silicon-based complementary metal oxide semiconductor (CMOS) circuits, resonant tunneling diodes (RTDs), quantum cascade lasers (QCLs), and photodetectors (PDs). After the invited talks, we will hold an open discussion with all the presenters and participants on the future direction of the field and any further points.

- WS2-B2-0 Welcome Address on the Workshop of Recent Progress of Terahertz Sources for Advanced Applications
Masayuki Fujita (Osaka University, Japan); Shuhei Amakawa (Hiroshima University, Japan)
- WS2-B2-1 Terahertz Sources Based on Schottky Barrier Diode Multipliers
Jeffrey Hesler (Virginia Diodes, Inc., USA)
- WS2-B2-2 (Sub-) Millimeter-Wave Applications in Space, Communication and Sensing Using Advanced III/V mHEMT Technology: From Devices to Subsystems
Michael Schlechtweg (Fraunhofer IAF, Germany)
- WS2-B2-3 Devices and Circuits for Efficient Generation of Broadband Terahertz Signals in Standard CMOS
Zeshan Ahmad (Texas Instruments, USA)
- WS2-B2-4 Development of Resonant Tunneling Diodes for Terahertz Applications
Jae-Young Kim (Rohm Co.,Ltd., Japan)
- WS2-B2-5 Recent Developments of Terahertz Quantum Cascade Laser Sources
Giacomo Scalari (ETH Zürich, Switzerland)
- WS2-B2-6 Photodetectors for Terahertz Applications
Tadao Nagatsuma (Osaka University, Japan)

[Open Discussion]

Tuesday, November 6 10:00-13:00

Room C1

WS1-C1

Advances in RF Wireless Power Transfer and Energy Harvesting Techniques

Organizers: Ramesh K. Pokharel (Kyushu University, Japan), Mohammad Hashmi (Nazarbayev University, Kazakhstan)

The Near-Field Wireless Power Transfer (WPT) techniques has found extreme usefulness in this decade. It can be due to multiple low power sensor type potential applications as a wireless power supply system for implants, body area networks, drug delivery systems, etc. In this context, there has been strong emphasis on DGS-based WPT systems owing to the superior performance and ease of their design when compared to the conventional coil based WPT systems. This workshop will take the audience through the challenges and solutions related to DGS structures and their incorporation in single band and dual-band WPT systems. Simultaneously RF energy harvesting has also attracted attention for application scenarios such as power transfer to the sensors used in patient health monitoring, the sensors in hazardous environment, and the sensors for covert security operations. The matching network and highly efficient rectifiers are extremely critical to develop a successful energy harvesting system. In this workshop, the audience will be introduced to the recent advances in multi-band and wideband impedance matching techniques and the promising diode-based and PA-based rectifier configurations.

- WS1-C1-1 Single Band Wireless Power Transfer Employing Defected Ground Structures
Ramesh K. Pokharel (Kyushu University, Japan)
- WS1-C1-2 Advanced Impedance Matching and Rectifier Configurations for Energy Harvesting
Mohammad Hashmi (Nazarbayev University, Kazakhstan)
- WS1-C1-3 J-Inverter Modelling Technique for Dual-band WPT Systems
Adel Barakat (Kyushu University, Japan)

WORKSHOPS

Tuesday, November 6 14:00-17:00

Room C1

WS2-C1

Industrial Wireless Applications, Standardizations and Technologies

Organizers: Suguru Kameda (Tohoku University, Japan), Kenichi Maruhashi (National Institute of Information and Communications Technology, Japan)

Chair: Shoichi Narahashi (Setsunan University, Japan)

Wide-spreading IoT utilization needs sophisticated wireless technology which satisfies a variety of requirements of industrial applications. This workshop focuses on activities and technologies based on new standardization activities for industrial wireless applications including use of 5G New Radio (NR) spectrum, coordination of existing wireless technologies, and a model approach with application-oriented assessment. Remarkable wireless technologies dedicated for specific industrial wireless applications are also presented for train radio communications and highly reliable and secure wireless network for manufacturing industries demonstrated in Asian countries.

- WS2-C1-1 5G NR Spectrum Sharing for Industrial IoT
Masakazu Shirota (QUALCOMM Japan Inc., Japan)
- WS2-C1-2 Coordination Control of Wireless Systems in Flexible Factory Environments
Kenichi Maruhashi (National Institute of Information and Communications Technology, Japan)
- WS2-C1-3 Application Oriented Assessment of Industrial Wireless Communication Systems
Lutz Rauchhaupt (Institut für Automation und Kommunikation e. V., Germany)
- WS2-C1-4 Toward the Realization of Millimeter-wave Train Radio Communications Using Linear Cellularization
Hiroshi Nishimoto (Mitsubishi Electric Corporation, Japan); Kenichiro Kamohara (Mitsubishi Electric Corporation, Japan); Fumihiro Hasegawa (Mitsubishi Electric Corporation, Japan); Shusaku Umeda (Mitsubishi Electric Corporation, Japan); Yusuke Kinoshita (Mitsubishi Electric Corporation, Japan); Akihiro Okazaki (Mitsubishi Electric Corporation, Japan); Atsushi Okamura (Mitsubishi Electric Corporation, Japan)
- WS2-C1-5 Highly Reliable and Secure Wireless Network Useful for Manufacturing Industries - Theoretical Investigation and Demonstrations in Malaysia and Singapore -
Ken Takei (Hitachi, Ltd., Hitachi Research Laboratory, Japan)

Tuesday, November 6 10:00-17:00

Room C2

WS-C2

Wireless Power Transfer in Asia

Organizer: Naoki Shinohara (Kyoto University, Japan)

A Wireless Power Transfer technologies are developed in US, EU, and Japan mainly in 20th century. However, after a revolution of the WPT by proposal of a resonance coupling WPT by MIT group, there are a lot of interesting research and development of the WPT in the world. Recently, Asian activities of the R&D of the WPT is very active, not only in Japan but also in various Asian countries. For example, a lot of commercial electric buses supported by an inductive wireless charging system run in many Chinese cities. In Korea, they are promoting OLEV (On-Line Electric Vehicle) and inductive WPT aided train system. In China, some group carried out a microwave beam WPT experiment and designed a Solar Power Satellite with the beam microwave power technology. Singapore's group propose and is developing medical system with a microwave power. In Vietnam, they are interested in the microwave power transfer system. Recently Japan leads a collaboration of Asian countries to promote the WPT R&D via scientific society of IEICE, which is named Asian Wireless Power Transfer Workshop. There are deep discussion toward new regulation of the WPT, not only an inductive WPT but also a WPT via microwave in China-Japan-Korea collaboration. The result of the discussion is submitted to ITU (International Telecommunication Union) to establish new WPT regulation. So recent hottest region of the WPT R&D in the world is Asia. In this workshop, we focus on the novel WPT technologies in Asian countries and regulation/standardization status from the Asia.

- WS-C2-1 RF-DC Conversion Circuit for Wireless Power Transfer and Energy Harvesting Technologies
Tsunayuki Yamamoto (Yamaguchi University, Japan)
- WS-C2-2 RF Rectenna Design for Wireless Power Transfer
Jiafeng Zhou (University of Liverpool, United Kingdom (Great Britain))
- WS-C2-3 Large-scale Rectenna Array at X-band
Xuexia Yang (Shanghai University, P.R. China)
- WS-C2-4 Wireless Power Communications - Combining WPT and Communications
Nuno Borges Carvalho (University of Aveiro/IT Aveiro, Portugal)
- [Lunch break]
- WS-C2-5 RF in Medicine: Current Status and Challenges of Wireless Power and Antennas
Yongxin Guo (National University of Singapore, Singapore)
- WS-C2-6 Internet of Energy Things (IoET) for Industry 4.0
Widad Ismail (Engineering Campus, Universiti Sains Malaysia, Malaysia)
- WS-C2-7 Universal RF Efficiency Calculation Approach for MIMO-WPT System
Qiaowei Yuan (National Institute of Technology, Sendai College, Japan)
- WS-C2-8 Maximum Efficiency Contours Plotted on Smith Chart to Acquire Optimal Duty Cycle in Resonant Wireless Power Transfer System
Heng-Ming Hsu (National Chung-Hsing University, Taiwan)
- WS-C2-9 Wireless Power Transfer Technologies for Electric Vehicles, Mobile Devices, and Biomedical Applications in Korea
Seungyoung Ahn (KAIST, Korea); Hyun Ho Park (University of Suwon, Korea)

WORKSHOPS

Tuesday, November 6 10:00-17:00

Room D

WS-D

Proof of Concepts of 5G Radio Access Technologies and 5G System Trials

Organizers: Satoshi Suyama (NTT DOCOMO, INC., Japan),
Kentaro Nishimori (Niigata University, Japan), Toshihiko Nishimura (Hokkaido University, Japan)

While 5G standardization is progressing steadily in 3GPP, several 5G experimental trials using prototypes and test-beds have been performed by various operators, vendors, and regional 5G projects during the last years with the goal to confirm the performance of key 5G radio access technologies. Recently, 5G system trials for further advanced 5G developments are being started in collaboration with vertical industries. The primary aim of these trials is to test new use cases, create new 5G applications and services, and facilitate the transition to pre-commercial trials. In this workshop, we invite key players from industry and academia in order to share and discuss their status on proof of concepts (experimental trials) of 5G radio access technologies and 5G system trials toward commercialization in 2020.

- WS-D-1 5G System Trials in Japan
Yukihiko Okumura (NTT DOCOMO, INC., Japan);
Morihiro Minowa (FUJITSU LIMITED, Japan);
Satoshi Suyama (NTT DOCOMO, INC., Japan)
- WS-D-2 Huawei's 5G PoC Activities and Technology Challenges towards Beyond 5G
Masao Akata (Huawei Technologies, Japan)
- WS-D-3 R&D Activities for 5G in IEICE Technical Committee on Radio Communication Systems in FY2017 - Multi-Antenna Technologies and Advanced Modulation/Multiple Access Schemes -
Fumiaki Maehara (Waseda University, Japan);
Hidekazu Murata (Kyoto University, Japan); Tomoaki Ohtsuki (Keio University, Japan); Yukitoshi Sanada (Keio University, Japan); Eisuke Fukuda (Fujitsu Laboratories Ltd., Japan); Satoshi Suyama (NTT DOCOMO, INC., Japan); Tomoya Tandai (Toshiba Corporation, Japan); Toshihiko Nishimura (Hokkaido University, Japan); Tetsuya Yamamoto (Panasonic Corporation, Japan); Koichi Ishihara (NTT Corporation, Japan); Kazushi Muraoka (NTT DOCOMO, INC., Japan); Shinsuke Ibi (Osaka University, Japan); Hiroshi Nishimoto (Mitsubishi Electric Corporation, Japan)

[Lunch break]

- WS-D-4 R&D Activities for Capacity Enhancement using 5G Ultra High-Density Distributed Antenna Systems
Teppei Oyama (Fujitsu Laboratories Ltd., Japan);
Takashi Dateki (Fujitsu Laboratories Ltd., Japan);
Morihiro Minowa (FUJITSU LIMITED, Japan);
Tatsuki Okuyama (NTT DOCOMO, INC., Japan); Jun Mashino (NTT DOCOMO, INC., Japan); Satoshi Suyama (NTT DOCOMO, INC., Japan); Yukihiko Okumura (NTT DOCOMO, INC., Japan)
- WS-D-5 Wireless High Quality Video Transmission in 5G Mobile Network and its Trials
Hideki Shingu (Panasonic Corporation, Japan);
Masaaki Yoshino (Panasonic Corporation, Japan);
Takumi Higuchi (Panasonic Corporation, Japan);
Tetsuro Morimoto (Panasonic Corporation, Japan);
Sojiro Norita (Panasonic Corporation, Japan);
Hiroaki Asano (Panasonic Corporation, Japan);
Yoshifumi Morihiro (NTT DOCOMO, INC., Japan);
Satoshi Suyama (NTT DOCOMO, INC., Japan);
Yukihiko Okumura (NTT DOCOMO, INC., Japan)
- WS-D-6 Development and Field Trial of Low-SHF-Band C-RAN Massive MIMO System for 5G
Yasushi Maruta (NEC Corporation, Japan);
Kenichiro Yamazaki (NEC Corporation, Japan);
Toshifumi Sato (NEC Corporation, Japan); Tatsuki Okuyama (NTT DOCOMO, INC., Japan); Jun Mashino (NTT DOCOMO, INC., Japan); Satoshi Suyama (NTT DOCOMO, INC., Japan); Yukihiko Okumura (NTT DOCOMO, INC., Japan)
- WS-D-7 A 28GHz Compact Hybrid Beamforming System for Wideband Massive MIMO in 5G
Hideyuki Nakamizo (Mitsubishi Electric Corporation, Japan); Hifumi Noto (Mitsubishi Electric Corporation, Japan); Kenichi Tajima (Mitsubishi Electric Corporation, Japan); Manabu Sakai (Mitsubishi Electric Corporation, Japan); Naofumi Iwayama (Mitsubishi Electric Corporation, Japan); Nobuhide Nonaka (NTT DOCOMO, INC., Japan); Satoshi Suyama (NTT DOCOMO, INC., Japan); Jun Mashino (NTT DOCOMO, INC., Japan); Atsushi Okamura (Mitsubishi Electric Corporation, Japan); Yukihiko Okumura (NTT DOCOMO, INC., Japan)
- WS-D-8 Multi-beam massive MIMO without CSI estimation
Kentaro Nishimori (Niigata University, Japan)

WORKSHOPS

Tuesday, November 6 10:00-17:00

Room J

WS-J

Trends of State-of-the-Art Measurement Technology

Organizer: Masahiro Horibe (National Institute of Advanced Industrial Science and Technology, Japan)

Microwave and millimeter-wave measurements are demanded from industry and scientific area for circuit performance test, on-wafer measurement, material characterization techniques. While reliable measurements are becoming more and more state-of-the-art, the traceability in an industrial characterization process and the extension to frequencies beyond 110 GHz are still open topics to the scientific and industrial community. Therefore, the aim of this workshop is to provide an overview of these current research areas and to present future directions in the field of microwave and millimeter-wave measurements.

- WS-J-1 VNA Measurement Uncertainty
Andrea Ferrero (Keysight Technologies)
- WS-J-2 Millimeter-Wave Coaxial VNA and Power Sensor Calibration
Ken Wong (Keysight Technologies)
- WS-J-3 Millimeter-Wave VNA Characterization Using Modulated Signals
Jon Martins (Anritsu, Japan)
- WS-J-4 Material Characterization Overview
Yuto Kato (National Institute of Advanced Industrial Science and Technology & Osaka University, Japan)
- [Lunch break]
- WS-J-5 Material Measurement Application: Nano-Scale Measurement and Food Qualification
Masahiro Horibe (National Institute of Advanced Industrial Science and Technology, Japan)
- WS-J-6 Seven Reasons Why You Should Choose Multiline TRL for Wafer-Level System Calibration at mm-Wave Frequencies
Andrej Rumiantsev (MPI Corporation, Germany)
- WS-J-7 Wafer-Level Measurements from 110 GHz to THz
Choon Beng Sia (FromFactor (Cascade Microtech))
- WS-J-8 Precision and Reproducible On-Wafer Measurements at Millimeter-Wave
Ryo Sakamaki (National Institute of Advanced Industrial Science and Technology, Japan)
- WS-J-9 EURAMET Planar Cal Project
Karsten Kuhlmann (Physikalisch-Technische Bundesanstalt (PTB), Germany)

Tuesday, November 6 14:00-17:00

Room 104

WS2-104

An Example of Bilateral Collaborative Workshop from Grassroots Activity (Thailand-Japan Microwave, TJMW)

Organizers: Hiroshi Okazaki (NTT DOCOMO, Japan), Kenji Itoh (Kanazawa Institute of Technology, Japan)

This workshop will share all the attendees an example of bilateral collaborative workshop from grassroots activity of Thai and Japanese microwave researchers. The workshop, Thailand-Japan Microwave (TJMW), is not a single shot event, it annually continues about ten years. TJMW does not intend to become a premier conference such as IMS, EuMC, and APMC, but aims to be a good place to give opportunities of presentation experience and networking, especially among young researchers and students. There are similar activities besides TJMW. Another example will be introduced in this workshop and discuss the future of the bilateral and/or local collaborative workshop.

- WS2-104-1 Resumption of Thailand-Japan Microwave
Tuptim Angkaew (Chulalongkorn University, Thailand)
- WS2-104-2 A Grassroots Tutorial for RF Power Transfer Engineers
Takashi Ohira (Toyohashi University of Technology, Japan)
- WS2-104-3 Recent TJMW Activities in Thailand
Prayoot Akkaraekthalin (King Mongkut's University of Technology North Bangkok, Thailand)
- WS2-104-4 Recent TJMW Activities in Japan
Hiroshi Okazaki (NTT DOCOMO, Japan)
- WS2-104-5 Research Activities of IEEJ Investigating R&D Committees for Electromagnetic-wave Applications and Wireless Technologies
Tadashi Kawai (University of Hyogo, Japan)

SHORT COURSES

Tuesday, November 6 10:00-13:00

Room E

SC1-E

Reconfigurable Synthesized Transmission Line - a New Ultra-Low-Cost Phase Control Unit for Phased Arrays

Organizer: Tzyh-Ghuang Ma (National Taiwan University of Science and Technology, Taiwan)

Sponsorship: Financially sponsored by the Ministry of Science and Technology, Taiwan (partially).

Over the past two decades, synthesized (or artificial) transmission lines (STLs) have emerged as a promising candidate for a variety of microwave applications using PCB as well as integrated circuit (IC) technologies. Conventionally, STLs with slow-wave property are deemed as a powerful technique for circuit size miniaturization, while those with right-/left-handed properties are a perfect tool for fulfilling multiband designs with non-integer frequency ratio between bands.

Over the past ten years, this topic has further been explored in depth by the short course organizer. The results, disclosed in his recent Wiley-IEEE press book, reveal that STLs can function more than one may expect if its phase can be properly controlled. A series of heterogeneous integrated phased arrays with dramatically different electrical properties in separate frequency bands are fulfilled.

Recently, the organizer's group further explored the reconfigurability of STL by introducing varactor diodes as control unit to fully exploit its phase response at single/multiple frequency bands, which turned out to result in a breakthrough in developing low-cost phase control unit for future phased antenna arrays. It can function as an on-off switch, a n-bit digital phase shifter, or even a continuous (analog) phase tuning element. When compared with commercial off-the-shelf phase shifters, this new sort of phase control unit provides similar power handling capability and hence linearity with negligible dc power consumption; yet, its cost is a hundred times less than the commercial ones, indeed an impressive cost reduction.

The recent progress of this sort of phase control unit, namely the phase reconfigurable synthesized transmission line (PRSTL), will be introduced in details.

Lecturers: Tzyh-Ghuang Ma (National Taiwan Univ. of Science and Technology, Taiwan); Huy Nam Chu (National Taiwan Univ. of Science and Technology, Taiwan)

Course Syllabus:

1. Basis of periodic and non-periodic synthesized transmission lines
 - a. Design concept
 - b. Formulation and synthesis principles
2. Multi-operational mode synthesized lines and its applications to heterogeneous integrated phased arrays
 - a. Principle of Multi-functional STLs
 - b. Application as dual-functional retrodirective array
 - c. Application as beam-switching/phase conjugating array
3. Phase reconfigurable synthesized transmission lines
 - a. Design basis
 - b. Examples
4. Applications as low-cost phase control unit to multi-beam beam-forming networks
 - a. Extended 4 x 4 Butler matrix with 16 beams
 - b. Reconfigurable power divider and its applications to multi-beam phased array
5. Summary and discussion

Objectives and Outcomes:

[Objectives]

- To provide a comprehensive understanding of the evolution of multi-functional synthesized transmission lines
- To provide a clear picture of design principles of phase reconfigurable synthesized transmission lines
- To provide the techniques to implement this simple yet low-cost solution as a replacement of commercial phase shifters in modern phased arrays

[Outcomes]

- To impact future 5G antenna array and microwave component designs with this new break-through

Tuesday, November 6 14:00-17:00

Room E

SC2-E

Ultra High Resolution Millimeterwave and Microwave Photonics Radars

Organizers: Zhongxia Simon He (Chalmers University of Technology, Sweden), Antonella Bogoni (CNIT, Italy)

Range accuracy of traditional FMCW radar is proportional to the bandwidth of the frequency sweep, for instance, several millimeter (mm-wave) range accuracy is expected for a 20 GHz bandwidth FMCW system. With the advance of digital signal processing and semiconductor processing, other radar topologies can be implemented at millimeterwave band (60-200GHz). Using novel topologies such as OFDM radar a range accuracy of several micrometer can be achieved at W-band carrier frequency. This course would introduce several non-FMCW radar topologies, including OFDM radar, DSSS (direct sequence spectrum spread) radar and exhibit system demonstration of mm-wave radar with micrometer accuracy. Several industry applications will be mentioned in the course as well.

Taking advantages of microwave photonic, advanced distributed antenna system (DAS) can be built which may enhance the resolution of radar system.

Lecturers: Zhongxia Simon He (Chalmers University of Technology & Microwave Electronic Lab, Sweden); Antonella Bogoni (CNIT, Italy); Serafino Giovanni (CNIT, Italy)

Course Syllabus:

[Part I]

- Radar accuracy improvement with new radar waveforms
- Basic idea of FMCW radar and the typical performance of FMCW systems
- Techniques for improve FMCW range accuracy
- Introduction of OFDM Radar and its performance analysis
- Demonstration of micrometer accuracy radar system at mm-wave band
- New industrial applications enabled by high accuracy mm-wave radars

[Part II]

Distributed antenna systems (DAS) based on microwave photonics

- Improve radar accuracy using distributed antenna system concept.

Objectives and Outcomes:

- Understanding of FMCW range accuracy limitation and approach of performance improvement
- Understanding of operational principle of OFDM radar
- Understand the expected performance and limitation using different radar topologies
- Microwave photonics and advanced DAS radar system

SHORT COURSES

Tuesday, November 6 10:00-17:00

Room K

SC-K

Practical Evaluation of MIMO Antenna

Organizer: Ryo Yamaguchi (SOFTBANK Corp., Japan)

MIMO technology has been introduced to various wireless systems due to its capabilities of enhancing the data-rate without expanding the frequency bandwidth. Since the MIMO has been mainly studied in a viewpoint of the signal processing, some of the initial works have neglected the realistic characteristics of the antenna and microwave circuits that are essential for the wireless systems. In contrast, understanding MIMO theory is somewhat difficult for the antenna / microwave engineers, and this results in misuse of the equation of the correlation coefficient for example.

This short course aims to provide knowledge and know-how of MIMO antenna evaluation, i.e. a) impact of antenna performance on MIMO system, b) MIMO simulation considering antenna characteristics, and c) MIMO experiment using realistic antennas. Furthermore, the state-of-the-art studies on the MIMO antenna is presented for understanding how this knowledge is actually used.

This course will give an opportunity for antenna / microwave engineers to start or extend the research and development related to MIMO antenna systems.

Lecturer: Naoki Honma (Iwate University, Japan)

Course Syllabus:

1. Introduction to MIMO antennas and its evaluation
 2. MIMO signal model and capacity
 3. Impact of antenna characteristics on MIMO system
 4. Numerical evaluation of MIMO antennas
 5. Experimental evaluation of MIMO antennas
 6. Practical technique and implementation of MIMO antenna
- [Lunch break will be taken sometime between 11:30 and 14:00]

Objectives and Outcomes:

The attendees can understand three important things, i.e. a) impact of antenna performance on MIMO system, b) MIMO simulation considering antenna characteristics, and c) MIMO experiment using realistic antennas.

Also, this course will give an opportunity for antenna / microwave engineers to start or extend the research and development related to MIMO antenna system.

Tuesday, November 6 10:00-17:00

Room 103

SC-103

Bits2Waves - Building a 16 QAM Radio by Hand in One Day

Organizer: David S. Ricketts (North Carolina State University, Raleigh, NC, USA)

Bits2Waves is a 1-day experience on building your own modern, digital radio. You will learn how modern radios work, from communication theory to fabricating microwave PCBs to measurements with our mini-VNA. You will design, construct, measure, and demonstrate a 16 QAM wireless transmitter at 950 MHz. The participants will design a Wilkinson combiner, a branchline coupler, a double balanced mixer, a power amplifier and an antenna in the morning by forming teams of 5 people (one circuit element each). During the afternoon, participants will fabricate their designs and test each component, and then their complete radio. A 16QAM baseband I and Q signal will be provided as well as a 10 dBm 950 MHz LO. Using a receiver provided by the organizers, the participants will test their full radio, including optimizing eye diagrams and error-vector-magnitude (EVM) of their radio. For more information please visit <http://rickettslab.org/bits2waves/apmc2018/>. All materials are provided, including design software. Participants must bring their own 64 bit laptop.

Lecturer: David S. Ricketts (North Carolina State University, Raleigh, NC, USA)

Course Syllabus:

1. Introductory lecture
 2. Design of radio
 3. Fabrication and test of radio components
 4. Testing of radios
- [Lunch break will be taken sometime between 11:30 and 14:00]

[Attention]

Pre-registration is required for this short course. Please see the detail information:

<http://rickettslab.org/bits2waves/apmc2018/>

Contact address:

apmc2018@rickettslab.org

APMC 2018 CLOSING and AWARD CEREMONY

15:30 - 17:10

Friday, November 9

Room D

In the closing session, we will introduce the efforts being done in Kansai area as an attempt to explore new application fields of microwave technology. As applications of microwave for other than communication and broadcasting, very unique efforts are being made in Kansai area. They are advanced radar technology for remote sensing, application of microwave technology to medical surgery, and application to microwave chemical reaction. This time, we will introduce our approaches to these three fields.

In radar technology, the MU-radar that observes wind in the middle and upper atmosphere using a phased array installed in Shigaraki, and technology to observe rainfall three-dimensionally by connecting a plurality of X-band small radars in a network, will be explained.

In medical application, development of microwave forceps, and experiments of incision while performing hemostasis and practical examples of surgery, will be introduced.

In chemical application, the effects of microwave heating in chemical reaction and examples of nonthermal effect by microwave, and a chemical plant for mass-production using microwave heating actually built in Osaka, will be explained.

Following the closing session, award ceremony will be held and closing remarks will be given.

Special talks

Current Status and Future Vision of Microwave Applications in Kansai Area

•Radar Sensing Technologies

- 01 Prof. Mamoru Yamamoto (RISH, Kyoto Univ., Kyoto, Japan)
Explore the Earth's Atmosphere by MU Radar and Equatorial Atmosphere Radar
- 02 Dr. Takuo Kashiwa (Furuno Electric Co., Ltd., Hyogo, Japan)

X-band Compact Weather Radars,

- Observation Examples Using Multiple Weather Radars -

•Medical Applications

- 01 Prof. Tohru Tani (Shiga University of Medical Science, Shiga, Japan)
Microwave Application to the Medical Field,
- Surgery Assisting Devices and Magnetic Resonance Compatible Energy Devices -
- 02 Dr. Shigeyuki Naka (Department of Surgery, Shiga University of Medical Science, Shiga, Japan & Department of Surgery, Hino Memorial Hospital, Shiga, Japan)
First Clinical Application of Microwave Surgical Device,
- Cutting-Edge Technology from Japan -

•Chemical Applications

- 01 Prof. Yuji Wada (Tokyo Institute of Technology, Tokyo, Japan)
Effects of Microwaves on Chemical Reactions Realized in Industrial Processes
- 02 Dr. Masahiro Kanno (Microwave Chemical Co., Ltd., Osaka, Japan)
Standardization of Microwave-Based Manufacturing Factories

Award Ceremony

The winners of APMC 2018 Prize and APMC 2018 Student Prize will be announced and commended for their excellent achievements.

Closing Remarks

APMC 2018 Steering Committee Chair, Prof. Toshio Ishizaki will wrap up the four days of memorable 30th APMC.

STUDENT AND YOUNG ENGINEER DESIGN COMPETITIONS

9:00 - 17:00

Thursday, November 8

Room A

APMC Student and Young Engineer Design Competitions (SDC) will be held during APMC 2018. All the students and young engineers in the microwave engineering are solicited to challenge the following competitions.

Track A: Active (high efficiency amplifier design)

Track B: Passive (bandpass filter design)

Track C: Wireless Power Transfer (WPT mini 4WD 400-cm drag race world championship)

Track D: Transmission Line (artificial transmission line with large delay, low loss and small size)

Track A, B, and D are for students only, while Track C is for both students and young engineers. The winners will be selected

based on the measurement results. Please visit "<http://www.apmc2018.org/competition.html>" for the detailed information. The competitions will be held on November 8, 2018 at Room A. (* Competitions of Track A and D may start in the afternoon. Detailed time schedule will be announced at the venue.)

The winners will be awarded prizes.

Award ceremony will be held after the competition in the same room on the same day in the evening.

APMC 2018 SDC are supported by Anritsu, Keysight Technologies, Kikusui Electronics, and Rohde & Schwartz with their measurement instruments.

EXHIBITION

The APMC 2018 Exhibition will take place in Room A on November 7-9, where the APMC 2018 financial sponsors ("Package Sponsors" and "Sole Sponsors"), as well as IEEE MTT-S, EuMA, APMC 2019, and IEICE, will have their

exhibition booths. In addition, the APMC 2018 University Poster Exhibition will be provided in front of Room A for university laboratories to present their latest research outcomes.

(Please refer to the APMC 2018 website for further details.)

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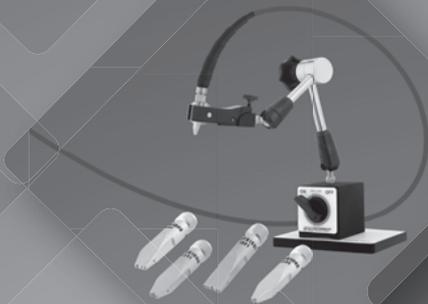
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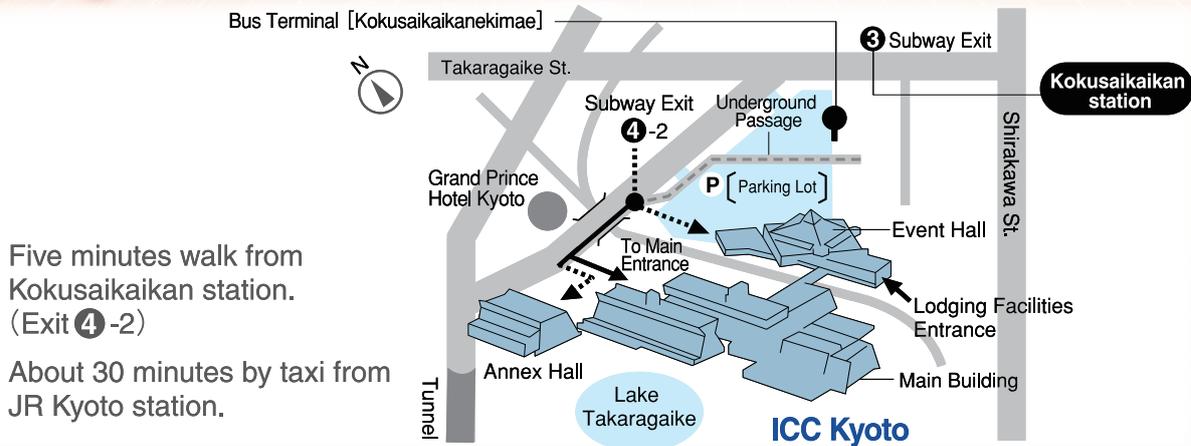
Innovation is a way of life at Murata, which is why the company continues to push the boundaries of technology.

With the goal of promoting happiness through technology, Murata proudly introduces the world's first team of robot cheerleaders.

Representing the infinite possibilities of electronics, Murata Cheerleaders are ready to cheer on innovators everywhere!

Cheering for Innovators

MAP OF Kyoto International Conference Center



LOCATION OF KYOTO

