# 2021 Asia-Pacific Microwave Conference (APMC) Program

**Time Zone: Brisbane, QLD**

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<th>Time</th>
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<th>Sunday, November 28</th>
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<td>10:00 - 11:00</td>
<td>Tutorial T1: Microwave Circuits and Antennas Using Cutting-Edge Additively Electronics (AME) Technology: From Design to Test</td>
<td>Keynote 1: <em>Reflections on a microwave career in a digital world</em></td>
<td>Keynote 2: <em>RF CMOS over the last 25 years</em></td>
<td>Keynote 3: <em>Cross-Band PIM Generation in Collocated Cellular Base Stations</em></td>
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<td>11:00 - 11:15</td>
<td>Manufactured Low-Noise Amplifiers,</td>
<td>Update: 25/11/2021 Antennas for 5G Applications</td>
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<td>11:15 - 12:35</td>
<td>Optimization of S1-01: <em>Low-Noise Amplifiers</em></td>
<td>S1-02: <em>Antennas for 5G Applications</em></td>
<td>S2-01: <em>CMOS Power Amplifiers</em></td>
<td>S3-01: <em>RCS reduction and Cloaking</em></td>
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<td>antennas with S1-02: <em>Antennas for 5G Applications</em></td>
<td>S1-03: <em>Reflectarrays and Transmittarrays</em></td>
<td>S2-02: <em>Resonator and Cavity Antennas</em></td>
<td>S3-02: <em>Metasurfaces and Metastructures</em></td>
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<td>constraints using model-based optimization</td>
<td>S1-SS1A: <em>Recent Advances in Microwave, Millimetre-Wave and Terahertz Technologies in Australia (Part 1)</em></td>
<td>S2-03: <em>Mm-Wave Communications</em></td>
<td>S3-03: <em>Filters I</em></td>
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<td>S3-04: <em>Horns and Reflector Antennas</em></td>
<td>S2-SS4: <em>Recent Advances in Electromagnetic Medical Imaging and Microwave Biomedical Devices</em></td>
<td>S3-04: <em>Horns and Reflector Antennas</em></td>
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<td>S3-SS6: <em>Wearable Antennas, Sensors and Material Characterisation</em></td>
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<td>12:35 - 12:45</td>
<td>Algorithms</td>
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<td>12:45 - 14:05</td>
<td>S1-04: Antennas for Radar and Imaging Applications</td>
<td>S2-04: VCOs, Mixers and Switches</td>
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<td>S1-05: Biomedical applications and flexible antennas</td>
<td>S2-05: Reconfigurable Antennas</td>
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<td>S1-06: Manufacture and Integration</td>
<td>S2-06: Metamaterials and EBG structures</td>
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<td>S1-07: Device Modelling</td>
<td>S2-07: Transmission Lines and Transitions</td>
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<td>S1-SS1B: Recent Advances in Microwave, Millimetre-Wave and Terahertz Technologies in Australia (Part 2)</td>
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<td>14:05 - 14:20</td>
<td>Tutorial T4: Resonant measurement methods of dielectric and ferromagnetic materials in microwave and mm-wave spectra</td>
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<td>14:20 - 14:40</td>
<td>Industrial_1: EMSolutions</td>
<td>Industrial_2: EMVision</td>
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<td>14:40 - 15:00</td>
<td>Tutorial T5: 5G RF Front End Design Techniques for Cellular Applications</td>
<td>Industrial_3: LEAP Australia</td>
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<td>Tutorial T6: Antennas &amp; Propagation Standards</td>
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<td>15:00 - 16:30</td>
<td>S1-08: GaN/GaAs Power Amplifiers</td>
<td>S2-08: Modelling of Devices and Circuits</td>
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<td>S1-09: Localization and DoA</td>
<td>S2-09: Rectifiers/DACs/Mixers</td>
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<td>S1-10: Power Dividers and Diplexers</td>
<td>S2-10: Circularly Polarized and Dual-Polarized Antennas</td>
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<td>S1-SS2: Advanced Multifunctional Microwave/Millimeter-Wave Components</td>
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<td>S-Memorial: Memorial Session for Prof. Marek Białkowski</td>
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<td>S3-09: Wireless Power Transfer</td>
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<td>S3-10: Measurement Techniques</td>
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<td>16:30 - 16:40</td>
<td>S1-SS3: 3D Printed/Additively Manufactured Microwave, Millimetre-wave and Terahertz Circuits and Antennas</td>
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<td>S2-11: Microwaves in Agriculture and Environment S2-SS5: Advanced Terahertz Technologies for Next-Generation Communications and Sensing</td>
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<td>S3-SS7: Microwave Systems Advanced Microwave Filtering Components and Circuits</td>
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<td>17:00 - 18:30</td>
<td>Opening Ceremony S-I1: EuMA Invited Session S-I2: Microwaves in Asia-Pacific</td>
<td>S-I3: Recent Advances in Active Devices and Systems S-I4: Recent Advances in Passive Devices, Antennas and Systems</td>
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<td>S-I5: Research Translation S-I6: Microwaves in Australia</td>
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Sunday, November 28

Sunday, November 28 10:00 - 12:35

**Tutorial T1: Microwave Circuits and Antennas Using Cutting-Edge Additively Manufactured Electronics (AME) Technology: From Design to Test**

Jaim Nulman, Yang Yang  
Room: Boardroom 1  
Chair: Yang Yang

**Tutorial T2: Microwaves for Materials, Wastes and Agriculture**

Mohan Jacob, Graham Brodie  
Room: Boardroom 2  
Chair: Yang Yang

**Tutorial T3: Optimization of antennas with constraints using model-based optimization algorithms**

Maria Kovaleva, Karu Esselle  
Room: Boardroom 3  
Chair: Yang Yang

Sunday, November 28 14:05 - 16:30

**Tutorial T4: Resonant measurement methods of dielectric and ferromagnetic materials in microwave and mm-wave spectra**

Jerzy Krupka, Bartlomiej Salski  
Room: Boardroom 1  
Chair: Yang Yang

**Tutorial T5: 5G RF Front End Design Techniques for Cellular Applications**

Florinel Balteanu, Venkata Vanukuru  
Room: Boardroom 2

**Tutorial T6: Antennas & Propagation Standards**

Vikass Monebhurrun, Lars Jacob Foged, Vince Rodriguez
Sunday, November 28 17:00 - 18:30
Opening Ceremony
Room: Auditorium
Chair: Konstanty S Bialkowski
Opening Addresses and Networking

Monday, November 29

Monday, November 29 10:00 - 11:00
Keynote 1: Reflections on a microwave career in a digital world
Dr. Rowan Gilmore
Room: Auditorium
Chair: Amin Abbosh

Monday, November 29 11:15 - 12:35
S1-01: Low-Noise Amplifiers
Room: Conference Hall 1
Chair: Yasar Gurbuz

11:15 Characterization of Wideband Low-Noise Distributed Amplifiers in 0.15 Um Gallium Arsenide Process
Adnin Natasha, Sudipta Chakraborty, Simon Mahon, Benny Wu, Andrew Jones and Michael Heimlich

11:35 Design of a 1.8-mW K-Band Low Noise Amplifier With 19.3-dB Gain and 3.3-dB Noise Figure in 90-Nm CMOS
Kai Chun Chang, Yunshan Wang and Huei Wang

11:55 A 21.5-50 GHz Low Noise Amplifier in 0.15-μm GaAs pHEMT Process for Radio Astronomical Receiver System
Yu-Min Chen, Yunshan Wang, Chau-Ching Chiong and Huei Wang

12:15 LNA Designs for 5G Receiver Applications
S1-02: Antennas for 5G Applications

Room: Boardroom 1
Chairs: N Nasimuddin, Nghia Nguyen-Trong

11:15 *Single-Feed Dual-Band Antenna With Large Frequency Ratio for 5G Wireless Terminals*
Muhammad Ikram and Nghia Nguyen-Trong

11:35 *Compact SRR-Based Dual-Polarized Antenna for 5G-NR Applications*
Zilin Peng, Zhan Wang and Yuandan Dong

11:55 *Wideband Linear Frequency Scanning Antenna for 5G Millimeter Wave Applications*
Wei Shuping, N Nasimuddin and Arokiaswami Alphones

12:15 *Design and Analysis of A Simple Miniaturized Fractal Antenna for 5G Ka-Band Applications*
Wahaj Abbas Awan, Mohammad Alibakhshikenari and Ernesto Limiti

S1-03: Reflectarrays and Transmittarrays

Room: Boardroom 2
Chair: Peiyuan Qin

11:15 *Design of Single-Layered Broadband Circularly Polarized Reflectarray*
Long Jin, Yao Sun and Zhibin He

11:35 *Millimetre-Wave Multi-Beam Shaped Transmittarray With A Wide Beam Coverage*
Lizhao Song, Peiyuan Qin and Y. Jay Guo

11:55 *Experimental Evaluation of Load-Modulating Channel Estimation for Tunable Reflectarray*
Shun Sasaki

12:15 *A High Gain Dual-Polarization Reflectarray Antenna Design Using Modified Mushroom Elements*
Luohao Liu, Fan Yang, Shenheng Xu and Maokun Li

S1-SS1A: Recent Advances in Microwave, Millimetre-Wave and Terahertz Technologies in Australia (Part 1)
11:15 Load-Pull Measurement Technique for 94 GHz GaAs Amplifiers Based on Discrete Sampling With Compact Gamma Matching Networks  
Leigh E Milner and Michael Heimlich

11:35 Design Progress and Technology Maturity: Trends in Compound Semiconductor MMICs  
Simon Mahon

11:55 A 77 GHz Power Amplifier for Low Cost Radar Transmitters in a 55-Nm CMOS Technology  
Viet Hoang Le

12:15 A W-Band Driver Amplifier in 0.1 μm pHEMT Gallium Arsenide Process  
Sudipta Chakraborty, Tran Van Dung, Jakov Mihaljevic, Simon Mahon and Michael Heimlich

Monday, November 29 12:45 - 14:05

S1-04: Antennas for Radar and Imaging Applications

Room: Conference Hall 1  
Chair: Morteza Shahpari

12:45 UWB Antipodal Vivaldi Antenna With Metamaterial Slabs and Dielectric Enclosure for Microwave to Millimeter Wave Imaging Applications  
Athul O Asok and Sukomal Dey

13:05 A Centrosymmetric Triple-Tail Bow-Tie Antenna for Ground Penetration Radar  
Yue Liu and Xue Jun Li

13:25 An Ultra-Wideband Resistively Loaded Modified Dipole for Ground Penetrating Radar  
Yan Deng, Sheng Gao, Shun Li Li, Hongxin Zhao and Xiaoxing Yin

13:45 Location and Angular Velocity Detection Using a Circular Frequency Diverse Array Radar  
Zhehao Yu, Chong Han, Yingtao Zou and Xuyang Lu

S1-05: Biomedical applications and flexible antennas
12:45 **Microwave Doppler Radar for Monitoring of Vital Sign and Rotational Movement**
Shubhadip Paul and Mohammad Jaleel Akhtar

13:05 **Dual-Band Dual-Mode Wearable Textile Antennas for On-Body and Off-Body Communications**
Quoc Hung Dang, Shengjian Jammy Chen, Baoqi Zhu and Christophe Fumeaux

13:25 **A Poly-Di-Methyl-Siloxane Based Conformal Ultra-Wideband Antenna With Additional GSM Band**
Wahaj Abbas Awan, Mohammad Alibakhshikenari and Ernesto Limiti

13:45 **The Effects of Using Ferromagnetic Core and Shield on Deep TMS System**
Rawan Abu Yosef and Ahmed Toaha Mobashsher

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**S1-06: Manufacture and Integration**

Room: Boardroom 2
Chairs: Thomas Baum, Robert Minasian

12:45 **28GHz-Band 2x2 Patch Antenna Module Vertically Integrated With a Compact 2-D BFN in Broadside Coupled Stripline Structure**
Jean Temga, Taiki Machii, Takashi Shiba and Noriharu Suematsu

13:05 **Crosstalk Reduction in Silicon-On-Insulator Waveguides for Dense Integration**
Shijie Song, Chujun Wu, Xiaoke Yi and Robert Minasian

13:25 **Mem's Fabrication Process Using Lithography and Stacking Techniques**
Wattanai Pongtham

13:45 **Investigation of a Composite Embedded RF Passive Devices**
Greg Beziuk, Thomas Baum, Kelvin Nicholson and Kamran Ghorbani

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**S1-07: Device Modelling**

Room: Boardroom 3
Chair: Sourabh Khandelwal

12:45 **L-Bot: A Physically Motivated Deep Learning Based Inductor Modeling Tool**
Uttung Surange and Sourabh Khandelwal
13:05 An Adaptive Synthesis and Design Approach of Extracted-Pole Filters
Minglei Rao, Ping Zhao and Luyu Zhao

13:25 Modified Loss Mechanism of Mason Model for Bulk Acoustic Wave Resonators
Qingwen Li, Xiuping Li, Yuqiang Xie, Zheyan Cao and Jiarui Dong

13:45 Accurate Power Loss Measurements of Aperture Tuning RF Switches on Board
Valentyn Solomko, Oguzhan Oezdamar, Johannes Rimmelspacher, Pablo Nascimento, Michael Muerke, Chul Seung Pyo, Robert Weigel and Amelie Hagelauer

S1-SS1B: Recent Advances in Microwave, Millimetre-Wave and Terahertz Technologies in Australia (Part 2)
Room: Conference Hall 2
Chairs: Sudipta Chakraborty, Xi Zhu

12:45 GaN and GaAs HEMT Channel Conductance Model for Nonlinear Microwave and RF Applications
Anthony Parker

13:05 Design of Passive-Inspired Millimetre-Wave Integrated Devices in Low-Cost Bulk CMOS Technology
Lisheng Chen, Lang Chen, Zeyu Ge, Roberto Gómez-García and Xi Zhu

13:25 Terahertz Integrated Polarization Beam Splitter Based on Effective-Medium Waveguide
Weijie Gao, Christophe Fumeaux and Withawat Withayachumnankul

13:45 Mutual Coupling in Arrays of Metamaterial Loaded Horns
Trevor S. Bird and Maral Ansari

Monday, November 29 14:20 - 14:40
Industrial_1: EMSolutions
Room: Auditorium
Chair: Sasan Ahdi Rezaeieh

Monday, November 29 15:00 - 16:40
S1-08: GaN/GaAs Power Amplifiers
Room: Boardroom 1
Chairs: Ryo Ishikawa, Ernesto Limiti

15:00 A 4.5-GHz-Band Miniature Outphasing GaN HEMT MMIC Power Amplifier
Ryo Ishikawa, Yoichiro Takayama and Kazuhiko Honjo

15:20 W-Band Coplanar Medium Power Amplifier
Simon Mahon, Daniel Sjöberg, Jonas Hansryd and Michael Heimlich

15:40 Novel Power Combining for a 5-18 GHz, 10-21 W, Non-Uniform Distributed Power Amplifier
Simon Mahon, Leigh E Milner, Irfan Shahid and Michael Heimlich

16:00 X-Band GaAs Stacked-FET Amplifier
David Niven, Simon Mahon and Michael Heimlich

16:20 A High Performance In-Package Harmonic Terminated Class-J Doherty Power Amplifier for 3.5 GHz mMIMO Applications
Maruf N Ahmed, Joseph Staudinger, Srinidhi Embar. R and Jennifer Kitchen

S1-09: Localization and DoA
Room: Boardroom 2
Chair: Amin Darvazehban

15:00 Nature Scatterer Assisted Indoor NLoS Localization With a Single AP
Yiwen Wang, Zengshan Tian, Mu Zhou and Ze Li

15:20 A State Recognition Approach Based on Distribution Difference for Passive People Counting
Min Chen, Zengshan Tian, Yue Jin and Mu Zhou

15:40 Indoor Localization Based on Scatterers and Multipath Propagation
Yang Yang, Zengshan Tian, Ze Li and Linxia Li

16:00 A Phase-Based Indoor Localization Algorithm Using EKF for Passive RFID Tags
LiangBo Xie, Xixi Liu, Zengshan Tian, Yaqian Song, Beibei Fan and Mu Zhou

16:20 Device-Free Indoor Tracking Using CSI With Probability Data Association
Zengshan Tian, Chenglin Ye, Yue Jin and Xuan Zuo

S1-10: Power Dividers and Diplexers
Room: Boardroom 3
15:00 Three-Way Substrate-Integrated Waveguide Filtering Power Divider With In-Phase and Anti-Phase Outputs
Hong-Wen Qian and Yi-Hsin Pang

15:20 600-GHz-Band Frequency-Division Multiplexing Communication With Silicon Unclad Diplexer
Norihiko Shibata, Yuta Uemura, Yuma Kawamoto, Li Yi, Masayuki Fujita and Tadao Nagatsuma

15:40 Design of Semi-Lumped-Element Power Divider With Arbitrary Three Matching Frequencies
Ayumu Tsuchiya, Tadashi Kawai and Akira Enokihara

16:00 Design of a Four-Frequency Channel Power Division Multiplexer
Kuo-Lun Sun, Kai-Jie Xu and Pu-Hua Deng

16:20 Group Delay Analysis Approach for Quasi-Reflectionless Power Divider With Flat Phase Difference
Girdhari Chaudhary, Daehan Lee and Yongchae Jeong

S1-SS2: Advanced Multifunctional Microwave/Millimeter-Wave Components
Room: Conference Hall 1
Chairs: Pin Wen, Kai-Da Xu

15:00 High Selectivity Balanced-To-Unbalanced Filtering Power Divider With Stub-Loaded Dual-Mode Resonators
Pin Wen

15:20 Design of Millimeter-Wave Bandpass Filter Using Edge-Coupling Dual-Mode Resonator
Yiqun Liu and Kai-Da Xu

15:40 TE20 Mode Differential Waveguide Directional Coupler and Wideband Balun by 3-D Printing
Patrick Chiu, King Yuk Chan, Sheng Huang and Rodica Ramer

16:00 A Compact Filtering Antenna With High Selectivity and Simple Structure
Dongxi Yu, Wei Nie, Bo Zhang, Zhongqian Niu and Mu Zhou

16:20 Ku-Band Ortho-Mode Transducer Supporting Three Modes and Integrated With Horn Antenna
S1-SS3: 3D Printed/Additively Manufactured Microwave, Millimetre-wave and Terahertz Circuits and Antennas

Room: Conference Hall 2
Chairs: King Yuk Chan, Yang Yang

15:00 RF Printed Circuit Partially Combined With the Inkjet-Printing Technology
Yuta Sugiyama, Hidenori Ishibashi, Toru Takahashi and Yoshio Inasawa

15:20 Rapid Prototyping of Ultrawideband Compact Resonant Cavity Antennas Using 3D Printing
Touseef Hayat, Muhammad Usman Afzal, Foez Ahmed and Karu Esselle

15:40 360° Beam-Steerable Pattern- and Frequency-Reconfigurable Antenna With 3D Printed Dielectric Lens
Weijie Gao, Shengjian Jammy Chen, Withawat Withayachumnankul and Christophe Fumeaux

16:00 Additively Manufactured Multi-Layer Bandpass Filter Based on Vertically Integrated Composite Right and Left Handed Resonator
Mengze Li, Yang Yang, Francesca Iacopi and Jaim Nulman

16:20 A 3D Printed H-Plane Horn Antenna With Size Reduction by Permittivity Control
Sheng Huang, King Yuk Chan and Rodica Ramer

Monday, November 29 17:00 - 18:30

S-I1: EuMA Invited Session

Room: Conference Hall 1
Chair: Kamran Ghorbani
17:00 *Dynamic Behavior of Highly Rugged GaN Receivers*
Matthias Rudolph

17:30 *Stability Analysis and Efficient Simulation of Novel Circuits for Radar Systems, RFID, and Wireless Power Transfer*
Almudena Suarez

18:00 *Towards a Smart EM Environment - Perspectives, Recipes, and Future Trends*
Andrea Massa

**S-I2: Microwaves in Asia-Pacific**

Room: Conference Hall 2
Chair: Christophe Fumeaux

17:00 *Recent Advances in Neuro-TF for Fast Parameterized Modeling and Optimization*
Feng Feng

17:30 *Continuously Beam-Scanning Phased Arrays Using Low-Cost Phase Shifting Elements*
Huy Nam Chu, The Hop Hoang, Ji Kai-Jung and Tzyh-Ghuang Ma

18:00 *Multiport Antenna Systems for Microwave and mmWave Applications*
Shiban K Koul and Karthikeya GS

**Tuesday, November 30**

**Tuesday, November 30 10:00 - 11:00**

Keynote 2: RF CMOS over the last 25 years

*Prof. Neil Weste*

Room: Auditorium
Chair: Amin Abbosh

**Tuesday, November 30 11:15 - 12:35**

**S2-01: CMOS Power Amplifiers**

Room: Conference Hall 1
Chair: Mohammad Hashmi
A 44.3% Peak PAE 25-GHz Stacked-FET Linear Power Amplifier IC With a Varactor-Based Novel Adaptive Load Circuit in 45 nm CMOS SOI
Tsuyoshi Sugiura, Mengchu Fang and Toshihiko Yoshimasu

A 30-To-70-GHz CMOS Amplifier for 300-GHz Heterodyne Receivers
Shinichiro Fujimoto, Ricky Smith, Shuhei Amakawa, Takeshi Yoshida and Minoru Fujishima

A 3.5GHz CMOS Transceiver for Sub-6GHz and Mm-Wave Co-Existed 5G Communication Systems
Jiawen Chen, Shucong Mei, Haoshen Zhu, Liang Wu, Quan Xue and Wenquan Che

Gain Boosted D-Band CMOS Amplifier Using a Radial Stab for Source AC Grounding
Taiki Machii, Mizuki Motoyoshi, Suguru Kameda and Noriharu Suematsu

S2-02: Resonator and Cavity Antennas
Room: Boardroom 1
Chair: Hugo G Espinosa

A Wideband Differentially-Fed Higher-Order Mode Laminated Resonator Antenna With High Gain
Yaowei Hou, Zijian Shao, Yao-ping Zhang and Junfa Mao

A Wideband High-Gain Resonator Cavity Antenna With 2-Level Stepped Ground
Peixing Li, Tayyab Ali Khan and Alex Wong

A Cavity-Backed Slot Antenna on Timber
Mohamed Adel Ezzat Elqunawy Radwan, Yana Salchak, Noor Albadri, Hugo G Espinosa and David V Thiel

Analysis of Coaxial Probe Coupled Wideband Two-Layer Hemispherical Dielectric Resonator Antenna With an Air-Gap
Mahesh Singh, Tazeen Shaikh and Bratin Ghosh

S2-03: Mm-Wave Communications
Room: Boardroom 2
Chair: Xiaolong You

Oriented Genetic Algorithm for Digital Predistortion Model Structure Optimization
Wen Qiao, Chengye Jiang, Guichen Yang, Lei Su and Falin Liu
11:35 *A Robust Algorithm for PAM4 Eye-Diagram Analysis*  
Jeffrey Jargon and Jerome Cheron

11:55 *A Compact DC-To-Over-67-GHz LTCC BGA Package for 100-GBaud Communications Systems*  
Hitoshi Wakita, Munehiko Nagatani and Hiroyuki Takahashi

12:15 *Millimeter Wave RF Front-End in 5G MIMO Channel Emulator*  
Mengyun Hu

**S2-SS4: Recent Advances in Electromagnetic Medical Imaging and Microwave Biomedical Devices**

Room: Conference Hall 2  
Chairs: Sasan Ahdi Rezaieh, Abu Sadat Md. Sayem

11:15 *Wideband Body-Matched Loop-Dipole Composite Antenna for Electromagnetic Fatty Liver Detection Systems*  
Amin Darvazehban and Sasan Ahdi Rezaieh

11:35 *Advanced Materials and Manufacturing Technologies for the Development of Flexible and Transparent Antennas*  
Abu Sadat Md. Sayem and Karu Esselle

11:55 *Big Data-Machine Learning Processing of Recorded Radiofrequency Physiological and Pathological Measurements to Predict the Progression of Alzheimer's Disease*  
Rahmat Ullah, Imran Saied and Tughrul Arslan

12:15 *A Multi-Feature Fusion Temporal Neural Network for Multi-Hand Gesture Recognition Using Millimeter-Wave Radar Sensor*  
Dengke Yao, Yong Wang, Wei Nie, LiangBo Xie, Mu Zhou and Xiaobo Yang

**Tuesday, November 30 12:45 - 14:05**

**S2-04: VCOs, Mixers and Switches**

Room: Conference Hall 1  
Chair: Nobuyuki Itoh

12:45 *An X- to Ka-Band Single-Pole-Double-Throw Switch With Good Power Handling Capability*  
Yi-Fan Tsao, Yuan Wang, Chien-Ming Tsao, Joachim Würfl and Heng-Tung Hsu
13:05 Design of a Q-Band Single-Balanced Passive Mixer in 0.15 Um GaN Technology
Nethini T Weerathunge, Sudipta Chakraborty, Simon Mahon, Gerry McCulloch, Andrew Jones and Michael Heimlich

13:25 A Study on High-Efficiency 24-GHz CMOS Voltage Control Oscillator
Yoshiki Hashimoto, Nobuyuki Itoh, Takayuki Morishita and Kiyotaka Komoku

13:45 A 201.8-dBC/Hz-FoMT Octave-Tuning-Range LC-VCO IC With a Self-Shifted Voltage-Controlled Novel Varactor in 45-Nm CMOS SOI
Mengchu Fang and Toshihiko Yoshimasu

S2-05: Reconfigurable Antennas
Room: Boardroom 1
Chair: Kwok-keung (Michael) Cheng

12:45 Compact, 14-Pattern-States, Reconfigurable Antenna Design and Characterization
Chung Yin Lau and Kwok-keung (Michael) Cheng

13:05 A Pattern Reconfigurable Antenna Array With a Broad Angular Coverage for 5G Millimeter-Wave Mobile Devices
Yu-Chen Lo, Nai-Chen Liu, Sung-Jung Wu and Jenn-Hwan Tarng

13:25 Pattern-Reconfigurable 2-Element MIMO Antenna Design by Using Novel Switchable Decoupling and Matching Network
Chung Yin Lau and Kwok-keung (Michael) Cheng

13:45 Quad-Band Inverted-F Antenna System Tuned by Hybrid C-Tuner
Oguzhan Oezdamar, Valentyn Solomko, Robert Weigel and Amelie Hagelauer

S2-06: Metamaterials and EBG structures
Room: Boardroom 2
Chair: Kimberley W. Eccleston

12:45 Modelling of the Dielectric Resonator and Metal Strip Based Negative-Refractive-Index Lens
Kimberley W. Eccleston, Yiwen Zhou, Ian G Platt, Adrian E.-C. Tan and Ian M Woodhead

13:05 A Compact Slow-Wave Filter With Double-Sided Selectivity and Wide Out-Of-Band Rejection
Arash Arsanjani, Hossein Sarbandi Farahani, Behrooz Rezaee, Reinhard Teschl and
<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>13:25</td>
<td>Equivalent Circuit Model of Nonreciprocal Composite Right/Left-Handed Coupled Line</td>
<td>Takumu Ideguchi and Tetsuya Ueda</td>
</tr>
<tr>
<td>13:45</td>
<td>Nonreciprocal CRLH Transmission Line Using Active Circuit-Loaded Ring Resonators</td>
<td>Hidefumi Yasuda, Tetsuya Ueda and Toshiro Kodera</td>
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</tbody>
</table>

**S2-07: Transmission Lines and Transitions**

Room: Conference Hall 2  
Chairs: Tsugumichi Shibata, Kazuo Tanaka

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
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</thead>
<tbody>
<tr>
<td>12:45</td>
<td>Particle Swarm Optimization of a Cascaded Multisection Line Impedance Matching Circuit</td>
<td>Bojun Zheng, Koki Nakamura and Tsugumichi Shibata</td>
</tr>
<tr>
<td>13:05</td>
<td>Time-Domain Analysis and Design of GCPW Vertical Transition Using Eccentric Via-Hole in Multilayer PCB</td>
<td>Yizhou Zhao, Hao Shen, Hongxin Zhao and Xiaoxing Yin</td>
</tr>
<tr>
<td>13:25</td>
<td>A Novel Mode-Selective Transmission Line With Low Loss Using Glide-Symmetric Holey Structure</td>
<td>Tingting Xie, Xiaohe Cheng, Yuan Yao, Junsheng Yu and Xiaodong Chen</td>
</tr>
<tr>
<td>13:45</td>
<td>Frequency Characteristics of Transmission by the Waveguide With Random Shape Boundary</td>
<td>Kiyofumi Katayama, Kazuo Tanaka and Masahiro Tanaka</td>
</tr>
</tbody>
</table>

**Tuesday, November 30 14:20 - 14:40**

**Industrial_2: EMVision**  
Room: Auditorium  
Chair: Sasan Ahdi Rezaeieh

**Tuesday, November 30 15:00 - 16:40**

**S2-08: Modelling of Devices and Circuits**

Room: Conference Hall 1  
Chairs: Liang Chen, Tadashi Kawai
15:00 Physics-Enforced Modeling for Insertion Loss of Transmission Lines by Deep Neural Networks
   Liang Chen and Lesley Tan

15:20 Numerical Calculation of High Power RF-DC Cyclotron Rectifier for Wireless Power Transfer
   Maho Matsukura, Kohei Shimamura and Shigeru Yokota

15:40 Comparison of X-Parameter De-Embedding Techniques for Intrinsic Large-Signal Characterization of Power FinFETs
   Kun-Ming Chen, Jia-Ding Han, Hsin-Hui Hu, Bo-Yuan Chen, Chia-Wei Chuang and Guo-Wei Huang

16:00 Circuit Performance Analysis of Analog RF LNA Designed With Negative Capacitance FET
   Hossein Eslahi

16:20 Theoretical Analysis of Ideal Full-Bridge Rectifier With High-Frequency Input
   Takashi Hirakawa, Yoshichika Ohta, Naoki Hasegawa and Yuta Nakamoto

S2-09: Rectifiers/DACs/Mixers
Room: Boardroom 1
   Chairs: Kenjiro Nishikawa, James Scott

15:00 Full-Range Three-Stage 16GSa/s Riemann Pump RF-Power DAC in GaN HEMT
   Tomoyuki Furuichi, Rui Ma, Toshiaki Koike-Akino and Yuji Komatsuzaki

15:20 A Miniaturized Wilkinson Power Divider for MMIC Applications
   Nethini T Weerathunge, Sudipta Chakraborty and Michael Heimlich

15:40 19 Gbps 60-GHz CMOS OOK Demodulator With 0.3 pJ/Bit Based on Asymmetric Inverters
   Helmuth Morath, Mengqi Cui, Paolo Valerio Testa, Jens Wagner and Frank Ellinger

16:00 A WR3.4 x12 Frequency Multiplier Chain Based on InP HBT Technology
   Gihyun Lim, Junghwan Yoo, Heekang Son, Doyoon Kim and Jae-Sung Rieh

16:20 Design of 94GHz High Efficiency Rectifier MMIC
   Ren Furumoto, Hayato Shimizu and Kenjiro Nishikawa

S2-10: Circularly Polarized and Dual-Polarized Antennas
15:00 *Design of a Ka-Band Low-Profile Wideband Circularly Polarized Magneto-Electric Dipole Antenna With Parasitic Patches and Its Array*  
Luoqing Wang and Zeljko Zilic

15:20 *Circularly Polarized Monopulse Antenna Based on Sequential Rotation Array Using Cross-Polarization*  
Qiuyi Zhang, Tongtong Zhang, Jinlun Li, Shunli Li, Hongxin Zhao and Xiaoxing Yin

15:40 *Cosecant Squared Pattern for Wide-Band Dual-Polarized Antenna Array Using Orthogonal Feeding Technique*  
Anh Trinh-Ngoc, Cong Kien Dinh, Binh Nguyen, Manh Linh Nguyen and Tien Manh Nguyen

16:00 *Design of Dual-Polarization Dual-Band High-Gain Microstrip Patch Antenna Based on High-Order Modes*  
Long Jin and Zhibin He

16:20 *Investigation of a Button Antenna Performance in Wearing Scenarios*  
Xiaoyang Yin, Shengjian Jammy Chen and Christophe Fumeaux

**S2-11: Microwaves in Agriculture and Environment**

Room: Boardroom 3  
Chairs: Alexe Bojovschi, Kimberley W. Eccleston

15:00 *Microwave Microfluidic Sensor for Detecting Heavy Metal Pollution in Water*  
Haneen Hassan Abdelwahab, Amir Ebrahimi, Francisco Tovar-Lopez, Greg Beziuk and Kamran Ghorbani

15:20 *Fabrication of Resonance Type of Electrode Sensor to Detect Bamboo Shoot Growing in Agricultural Soil*  
Kouta Iwamoto, Subaru Iwaki, Masaya Sakamoto and Futoshi Kuroki

15:40 *Analysis and Design of High Frequency Electromagnetic Plasma Generator for Infectious Waste Disposal*  
Watcharapong Bunpradit

16:00 *A Buried Cavity Backed Slot Antenna for Agriculture and Infrastructure Monitoring*  
Arslan A Nizami, Yana Salchak, Noor Albadri, Mohamed Adel Ezzat Elqunawy Radwan, Hugo G Espinosa and David V Thiel
16:20 Estimation of Propagation Performance Between IoT Terminals and Gateway Using UHF-Bands for Landslides Prediction System
Takuma Kinoshita, Daiya Miyamoto, Subaru Iwaki, Kouta Iwamoto, Masaya Sakamoto, Kazuya Miyamoto and Futoshi Kuroki

S2-SS5: Advanced Terahertz Technologies for Next-Generation Communications and Sensing
Room: Conference Hall 2
Chairs: Withawat Withayachumnankul, Yang Yang

15:00 3D-Printed Sub-Terahertz Lens for Manipulation of Deflective Quasi-Non-Diffractive OAM Waves
Xiaoyuan He, Li Deng and Yang Yang

15:20 Leaky-Mode Analysis of Micro-Structured Dielectric Waveguides Toward Integrated Tunneling Multiplexers With Enhanced Bandwidth
Daniel Headland and Withawat Withayachumnankul

15:40 Advanced Terahertz Devices Based on Photonic Crystal and Resonant Tunneling Diode
Masayuki Fujita

16:00 Dynamic Phase Measurement for Vibrometry Based on Leaky-Wave Terahertz Radar
Yuki Ito and Yasuaki Monnai

16:20 Internal Structure Visualization by Terahertz Computed Tomography With Carbon Nanotube Photo-Scanner Toward Multi-Frequency Image Reconstruction
Tomoya Furukawa, Takeru Q. Suyama, Kou Li, Imari Sato and Yukio Kawano

Tuesday, November 30 17:00 - 19:00
S-I3: Recent Advances in Active Devices and Systems
Room: Conference Hall 1
Chair: Sourabh Khandelwal

17:00 Recent Advance of Far-Field Wireless Power Transfer Technology and Regulation in Japan
Naoki Shinohara

17:30 Silicon ICs for Sub Millimeter-Wave Signal Generation and Detection
Mona Hella
Wednesday, December 1

Wednesday, December 1 10:00 - 11:00

**Keynote 3: Cross-Band PIM Generation in Collocated Cellular Base Stations**

*Ms Christine Blair*

Room: Auditorium
Chair: Amin Abbosh

Wednesday, December 1 11:15 - 12:35

**S3-01: RCS reduction and Cloaking**

Room: Conference Hall 1
Chair: Shen Shou Max Chung

11:15 **Reflecting Phase-Gradient Metasurface for Radar Cross Section Reduction**

Khushboo Singh, Muhammad Usman Afzal, Ali Lalbakhsh and Karu Esselle
11:35 Multi-Band SIW Cavity Based Metamaterial Perfect Absorber
Majid Amiri, Mehran Abolhasan, Negin Shariati and Justin Lipman

11:55 Changing the Radar Cross Section of Quadcopter by Shape Modification
Shen Shou Max Chung and Shih-Chung Tuan

12:15 Design of a Broadband Carpet Cloak by Using an One-Dimensional Distributed Transmission-Line Model
Tsutomu Nagayama, Akihiro Toshima, Yuki Sonoda, Seiji Fukushima and Toshio Watanabe

S3-02: Metasurfaces and Metastructures
Room: Boardroom 1
Chair: Amir Ebrahimi

11:15 Focused Transmissive Metasurface for Microwave Power Transmission
Xianjin Yi, Xing Chen and Jie Li

11:35 3D-Printed Reflective Dielectric Coding Metamaterials for Terahertz Waves Manipulation
Jingye Sun, Yang Gao, Kai Luo and Fangjing Hu

11:55 Polarization-Insensitive Metasurface Based Switchable Absorber/ Rassorber
Priyanka Tiwari and Surya Pathak

12:15 Mutual Coupling Reduction in THz Integrated Circuits Using Cubic Micropillar Array
Ashish Kumar Verma and Rahul Singhal

S3-03: Filters I
Room: Boardroom 2
Chair: Rakhesh Singh Kshetrimayum

11:15 Broadband Input Quasi-Reflectionless BPF and BSF for 5G Applications
Sunanda Lakkimsetti, Rakhesh Singh Kshetrimayum and Matthew Morgan

11:35 Compact, Shielded Microstrip Filter With High Selectivity for 5G N78 Application
Lin Gu and Yuandan Dong

11:55 Miniaturized, Multilayer, Shielded, and Surface-Mountable 5G N79 Bandpass Filter
Danyu Yang and Yuandan Dong
12:15 *Simulation Modeling and Analysis of FBAR RF Filters Considering Different Configurations of Grounding Bond-Wires*

Huaiqiang Yu

**S3-04: Horns and Reflector Antennas**

**Room:** Boardroom 3  
**Chairs:** Trevor S. Bird, Ken Smart

11:15 *Effective Phase Center Adjustment Method for Pyramid Horn Antenna*

Jiuyang Xiao and Yangmiao Lin

11:35 *Theoretical Design of A Simultaneous S/X Feed System for an F/D=0.45 Parabolic Reflector*

Christophe Granet, John Kot, Ken Smart, Howard D’Costa and Robert Shaw

11:55 *Manufacture and Test of a Simultaneous S/X Feed System for a Satellite Ground Station*

Ken Smart, Robert Shaw, Michael Bourne, Michael Death, Christophe Granet and John Kot

12:15 *Design and Measurement of a 17.3 - 21.2 GHz Corrugated Horn as a Feed for a CATR*

Christophe Granet, Eric Arnaud and Cyrille Menudier

**S3-SS6: Wearable Antennas, Sensors and Material Characterisation Techniques**

**Room:** Conference Hall 2  
**Chair:** Shengjian Jammy Chen

11:15 *Wireless Implantable Medical Device: In-Body EM Losses for a Multilayer Body Model*

Mélusine Pigeon, John Laurence Buckley and John Barton

11:35 *Textile Planar Wideband Omnidirectional Antenna for Wearable Applications*

Shengjian Jammy Chen, Quoc Hung Dang and Christophe Fumeaux

11:55 *Screen Printed Epidermal Antenna for IoT Health Monitoring*

Roy B. V. B. Simorangkir, Dinesh R. Gawade, Sanjeev Kumar, Brendan O’Flynn, John Laurence Buckley, Tim Hannon, Paul Donovan and Robert Newberry

12:15 *Analysis of Microfluidic Pipes in a W-Band Waveguide for Determining*
Wednesday, December 1 12:45 - 14:05

**S_WiM: Women in Microwaves**
- **Room:** Boardroom 1
  - **Chair:** Rodica Ramer

**S3-05: Power Amplifiers and Transmitter Systems**
- **Room:** Conference Hall 1
  - **Chair:** Robabeh Antiohos

12:45 *Design of RF Powered ZigBee Sensor Node and Sub 1GHz RF Power Transmitter for Asset Tracking*
  - **Mohamed Rabeek Sarbudeen**

13:05 *A Compact Wideband Reconfigurable Power Amplifier Using PIN Diodes*
  - Xinchen Zou, Cuiping Yu, Shulan Li and Yuanan Liu

13:25 *A Hybrid Energy Harvesting System Using Meandered Square Loop Rectenna for IoT Devices*
  - Ankita Deo

13:45 *Input-Output Harmonic Controlled Broadband Class-B/J Power Amplifier*
  - Vivek Tamrakar, Sagar Kumar Dhar, Tushar Sharma and Jayanta Mukherjee

**S3-06: Filters II**
- **Room:** Boardroom 2
  - **Chairs:** Girdhari Chaudhary, Xiaolong You

12:45 *A Planar Crossover With Dual-Band Bandpass Response*
  - Yu-Chi Chiu and Yi-Hsin Pang

13:05 *An UHF Sharp Roll-Off and Wide Rejection Band Compact Low-Pass Filter With the Highest Figure of Merit for Merchandise*
  - Cheng-Hung Hsieh

13:25 *Design of Microstrip Sextaplexer Based on Coupled Bandpass Filters With Common Feedline Technique*
  - Cheng-Hung Hsieh
13:45 **Low-Loss Compact SIW Filters With Shielded Complementary Split-Ring Resonator**  
Yane Zheng, Yilong Zhu, Zhan Wang and Yuandan Dong

**S3-07: Metasurfaces and FSS Antennas**

Room: Boardroom 3  
Chair: Aliya A. Dewani

12:45 **Gain Enhancement in a Fabry-Perot Cavity Antenna Using Phase Correcting Miniaturised FSS**  
Garth Catton, Hugo G Espinosa, Aliya A. Dewani and Steven G O'Keefe

13:05 **One-Sided Directional Slot Unit and Its Array Antenna With AMC Reflector for 5G N257 Band Applications**  
PeiYi Qiu, feng Quanyuan and Haruichi Kanaya

13:25 **Spatial-Temporal Programmable Metasurface for Single Channel Radiation**  
Chengfan Li, Zhehao Yu, Yan Shen, Runqing Cai and Xuyang Lu

13:45 **Design of a Broadband Horizontally Polarized Omnidirectional Metasurface Antenna**  
Deqiang Yang, Tao Tingting Tao and Sihao Liu

**S3-08: Mm-wave and Terahertz Radar and Imaging**

Room: Conference Hall 2  
Chair: Haruichi Kanaya

12:45 **Deep Learning Based Concealed Object Recognition in Active Millimeter Wave Imaging**  
San Hlaing Myint, Yutaka Katsuyama, Toshio Sato, Xin Qi, Kazuhiko Tamesue, Zheng Wen, Keping Yu, Tokuda Kiyohito and Takuro Sato

13:05 **Investigation on 600-GHz-Band FMCW Photonic Radar System for a Flexible Inspection Distance**  
Ryohei Kaname, Li Yi and Tadao Nagatsuma

13:25 **300GHz Band On-Chip Vivaldi Antenna on Dual-Layer Proton Irradiated CMOS Si Substrate**  
Hans Herdian, Takeshi Inoue, Takuichi Hirano, Masatsugu Sogabe, Atsushi Shirane and Kenichi Okada
Wednesday, December 1 14:20 - 14:40

Industrial_3: LEAP Australia

Room: Auditorium
Chair: Sasan Ahdi Rezaeieh

Wednesday, December 1 15:00 - 16:40

S-Memorial: Memorial Session for Prof. Marek Bialkowski

Room: Conference Hall 1
Chair: Salman Durrani

15:00 *Phased Array Antennas and Beyond*
Nemai Karmakar

15:16 *Reflections Through Time - Remembering Professor Marek Bialkowski*
Vesa P Waris

15:33 *Our Fond Memories With Marek and His Words of Wisdom for Life*
Yifan Wang and Feng-Chi Eddie Tsai

15:50 *Reflect-Array Developments*
Ashley Robinson

16:06 *Prof. Marek Bialkowski - A Great Academic Mentor*
Salman Durrani

16:23 *From Mobile Satellite Communications to Unmanned Aerial Vehicles - How Prof. Marek Bialkowski Helped Shape My Career*
Shaun Jellett

S3-09: Wireless Power Transfer

Room: Boardroom 1
Chairs: Naoki Hasegawa, Negin Shariati

15:00 *Frequency Diversity Transmitting Array for Stable Power Reception Under Rotation in 2D Far-Field Wireless Power Transmission*
Chien-Chi Hsu, Ching-Ya Tseng, Ling-Zhu Lu and Hsin-Chia Lu

15:20 *Lightweight Rectenna Array for Demonstration of Microwave Power Transfer to Flying-Objects*
Naoki Hasegawa
15:40 Magnetic Coupling Resonant Simultaneous Wireless Power and Information Transfer System With Switched Relay Resonators
   Penghui Han, Xin Wang, Jiawei Zhang and Ji Yuefeng

16:00 Utilization of Meander Line Slots for Enhancing the WPT Efficiency and Transmission Range
   Zhanel Kudaibergenova, Kassen Dautov, Mohammad Hashmi and Muhammad Akmal Chaudhary

16:20 Miniaturized Patch Rectenna Using 3-Turn Complementary Spiral Resonator for Wireless Power Transfer
   Ali Raza, Rasool Keshavarz and Negin Shariati

S3-10: Measurement Techniques

Room: Boardroom 2
   Chairs: Amir Ebrahimi, Takashi Shimizu

15:00 Site Validation for Radiated Field Measurements of High-Voltage/Large-Capacity Electrical Equipment
   Shinobu Ishigami, Tatsuru Itsukaichi, Ken Kawamata and Yasutoshi Yoshioka

15:20 Complex Permittivity and Uncertainty Evaluations for an Ultra Thin Photosensitive Insulator Film Using a Millimeter Wave Circular Cavity Resonator
   Takashi Shimizu, Kazuaki Ebisawa and Yoshinori Kogami

15:40 Complex Permittivity Measurement for Thin Dielectric Rods With High Permittivity Using a 50 GHz Band TM010 Mode Cavity
   Takashi Shimizu, Takuya Hayashi and Yoshinori Kogami

16:00 Phase Variation Reflective-Mode Displacement Sensor Using a CPW Loaded With Dumbbell-Shaped Resonator
   Zahra Mehrjoo, Amir Ebrahimi and Kamran Ghorbani

16:20 High Range Resonators for Rotation Sensing: Design and Demonstration
   Vaishnavi Bhope and A. r. Harish

S3-11: Microwave Systems

Room: Boardroom 3
   Chair: Shunichi Futatsumori

15:00 Basic Study of Electromagnetic Noise Waveform Extraction Using Independent Component Analysis
   Nao Takahashi, Shinobu Ishigami and Ken Kawamata
15:20 *Helicopter Radio Altimeter Interference Path Loss Measurement Including Adjacent 5G Mobile Telecommunications Band*  
Shunichi Futatsumori, Norihiko Miyazaki, Noriaki Hiraga, Keiji Kobayashi and Kenichi Nakafukushima

15:40 *Research on Practical Application of Product Shelves Using UHF-RFID Technology*  
Tomohiro Osaki and Yoshinobu Okano

16:00 *UMPS: Ultrasound-Microwave-Fused Phase Synchronization for UAV-Based Phased Arrays*  
Shih-Ming Huang, Wei-Cheng Chen, Yun-Ting Tsai, Ethan Fang Wu and Shih-Yuan Chen

16:20 *Blake Chart Optimization of a VHF Phased Array Using Surrogate-Based Method*  
Liang-Yu Ou Yang and Bingzhang Tsai

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**S3-SS7: Advanced Microwave Filtering Components and Circuits**

Room: Conference Hall 2  
Chair: Yang Yang

15:00 *Design of Dual-Band Power Amplifier Based on Band-Stop Input Matching Structure*  
Xian Gui, Cuiping Yu, Shulan Li, Ming Su and Yuanan Liu

15:20 *A Dual-Band Balanced Filter With High Common-Mode Suppression*  
Li YuanChun, Xin Fang, Di-Si Wu and Quan Xue

15:40 *3D Sub-Terahertz Dual-Mode Cavity Resonator and Its Application to Dual-Polarized Frequency Selective Surface*  
Jing-Yu Lin and Yang Yang

16:00 *Vertically Stacked Circular SIW Filter With Controllable Transmission Zeros and Higher-Order Mode Suppression*  
Hanyu Tian, Yane Zheng and Yuandan Dong

16:20 *Design of Mode Suppression Bandpass Filter Using Stub-Loaded Periodic Structure*  
Yiqun Liu and Kai-Da Xu

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Wednesday, December 1 17:00 - 18:30
**S-I5: Research Translation**

**Room: Conference Hall 1**  
**Chair: James Scott**

17:00 *In Praise of Electromagnetics Research: Community Needs, Now More Than Ever*  
David V Thiel

17:30 *Wi-Fi HaLow for the Internet of Things - Introduction to a State of the Art IEEE 802.11ah Compliant System on chip (SoC)*  
Peter D Bradley

18:00 *Integrating RF PLLs Into Complex SoC to Support 5G and WiFi Radios*  
Julian Jenkins

**S-I6: Microwaves in Australia**

**Room: Conference Hall 2**  
**Chair: Withawat Withayachumnankul**

17:00 *Recent Advances in Microwave Photonic Signal Processing*  
Xiaoke Yi

17:30 *Analogue Multi-Beam Antennas for 5G and 6G*  
Y. Jay Guo

18:00 *Noncontact Radar Sensors*  
Mehmet Rasit Yuce

**Wednesday, December 1 18:30 - 19:30**

**Awards and Closing Ceremony**

**Room: Auditorium**  
**Chair: Amin Abbosh**