2025 IEEE International Symposium on Radio-Frequency Integration Technology (RFIT2025)
August 25 – 27, 2025, Kagoshima, Japan

# RFIT2025
# Program book

August 25 – 27, 2025
Kagoshima, Japan

Sponsored by IEEE Microwave Theory and Technology Society

## Venue

SHIROYAMA HOTEL kagoshima

## Patrons

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KDDI Foundation

## Exhibitor

IMC

## Welcome Message from the General Chair

On behalf of the organizing committee, it is my great honor and pleasure to welcome you to the 2025 IEEE International Symposium on Radio-Frequency Integration Technology (RFIT 2025), which will be held in the beautiful city of Kagoshima, located in the southern region of Kyushu, Japan.

Since its inception in 2005, RFIT has established itself as a premier forum for the presentation and discussion of innovations in radio-frequency (RF), millimeter-wave, and THz integrated circuit technologies, as well as their enabling semiconductor devices and system-level applications. The symposium uniquely bridges academic research and industrial implementation, fostering collaboration across disciplines and continents.

Japan has proudly hosted RFIT twice in the past, first in Sendai in 2015 and most recently in Hiroshima in 2020. Both events were remarkable in showcasing Japan's technological leadership in RF integration field, and the RFIT 2025 in Kagoshima proudly continues this tradition. Situated in Kyushu, a region known as Japan's historical gateway to science, technology, and international exchange, Kagoshima offers an inspiring setting with a strong connection to the semiconductor, space, and quantum technology sectors.

This year's symposium is particularly timely as we face a new frontier in wireless systems, marked by the emergence of 6G communications and the rapid growth of quantum computing applications. These advancements require new levels of performance in RF and mixed-signal circuits, including cryogenic-compatible devices, high-efficiency amplifiers, and ultra-integrated semiconductor platforms.

The RFIT 2025 will feature a comprehensive technical program including keynote speeches by global leaders, invited sessions, oral and poster presentations, and special sessions addressing frontier topics such as 6G system-on-chip architectures, RF for quantum computing, and advanced packaging and integration technologies. We especially welcome the participation of early-career researchers and students, as their vision and creativity are essential to driving future innovation.

We are confident that RFIT 2025 in Kagoshima will be a truly rewarding experience—technically, professionally, and culturally. We look forward to seeing you in Japan's southern gateway for a memorable and impactful symposium.

With warmest regards,

Kenjiro Nishikawa
General Chair,
2025 IEEE International Symposium on Radio-Frequency Integration Technology

## Message from Technical Program Committee Chairs

On behalf of the IEEE RFIT 2025 Technical Program Committee (TPC), it is our great pleasure and an honor to welcome all the participants in the RFIT series. RFIT 2025 TPC received 97 submissions, including invited papers. After careful review, 22 invited papers and 56 regular papers were selected to form 12 high-level technical sessions (10 oral and 2 poster sessions). We would like to express my gratitude to all the reviewers and TPC members for their enthusiasm and dedication in developing an outstanding technical program on time. We would also like to extend my personal and deepest gratitude to the members of Organizing committee.

RFIT 2025 begins with 2 workshops titled “Enabling 6G: Devices, Systems, and Measurement Techniques” and “Microwave/RF Technologies for Quantum Computing” on August 25$^{th}$. Following the opening, the plenary session will feature two talks titled “Toward the Realization of the “New Silicon Island Kyushu"” and “New Concept of Industry-Level Large-Scale Quantum Computer”, delivered by Mr. Yoshinori Taguchi and Dr. Masahiro Horibe, respectively on August 26$^{th}$.

We hope you will enjoy this engaging symposium and participate in fruitful technical discussions.

With warmest regards,

Yasunori Suzuki and Shintaro Shinjo
Technical Program Committee Chairs,
2025 IEEE International Symposium on Radio-Frequency Integration Technology

## RFIT2025 Organizing Committee

| | |
|---|---|
| General Chair | Kenjiro Nishikawa, Kagoshima Univ., Japan |
| Vice-Chair | Hiroshi Okazaki, Tokyo Information Design Professional Univ., Japan |
| Vice-Chair | Kensuke Okubo, Okayama Prefectural Univ., Japan |
| General Affairs Chair | Haruichi Kanaya, Kyushu Univ., Japan |
| General Affairs Vice-Chair | Kyoya Takano, Tokyo Univ. of Science, Japan |
| Technical Program Committee Chair | Yasunori Suzuki, Okayama Prefectural Univ., Japan |
| Technical Program Committee Vice-Chair | Shintaro Shinjo, Mitsubishi Electric Corp., Japan |
| Workshop Chair | Hiroyuki Kayano, AIST, Japan |
| Workshop Vice-Chair | Masataka Ohira, Doshisha Univ., Japan |
| Finance/Registration Chair | Tomohiko Mitani, Kyoto Univ., Japan |
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| Publication Chair | Ramesh Pokharel, Binghamton University, USA |
| Local Arrangement Chair | Satoshi Yoshida, Ryukoku Univ., Japan |
| Local Arrangement Vice-Chair | Yumi Aono, Kagoshima Univ., Japan |
| Exhibition Chair | Takashi Shimizu, Utsunomiya Univ., Japan |
| Award Chair | Minoru Fujishima, Hiroshima Univ., Japan |
| Web Master | Atsushi Sanada, The Univ. of Osaka, Japan |

## RFIT2025 Technical Program Committee

A. EM Field, Design and Measurement Techniques

Takuichi Hirano, Tokyo City University
Akito Iguchi, Muroran Institute of Technology
Ryosuke Ozaki, Nihon University
Keisuke Konno, Tohoku University
Jun Shibayama, Hosei University
Takuji Arima, Tokyo University of Agriculture Technology
Masahiro Hanazawa, Taisei Corporation
Naoki Sakai, Kanazawa Institute of Technology
Shirou Ozaki, Fujitsu Limited

B. Passive Components and Packaging

Masataka Ohira, Doshisha University
Tetsuya Ueda Kyoto Insitute of Technology
Satoshi Yoshida, Ryukoku University
Takuma Nishimura, Mitsubishi Electric Corporation
Girdhari Chaudhary, Jeonbuk National University
Hiroyuki Kayano, National Institute of Advanced Industrial Science and Technology

C. Active Devices and Circuits

Ryo Ishikawa, The University of Electro-Communications
Suguru Kameda, Hiroshima University
Shuhei Amakawa, Hiroshima University
Takeshi Yoshida, Hiroshima University
Nobuyuki Itoh, Okayama Prefectural University
Hideyuki Nosaka, Ritsumeikan University
Tomoyuki Furuichi, Tohoku University
Shuichi Sakata, Mitsubishi Electric Corporation
Jun Enomoto Murata Manufacturing Co., Ltd.
Shihai He, Beijing Onmicro Electronics Co., Ltd.
Boxun Yan, UCLA
Akio Wakejima, Kumamoto University

D. System and Applications

Masashi Nakatsugawa, National Institute of Tachnology, Hakodate College
Hiroto Yamamoto, NTT
Tatsuya Hagiwara, Mitsubishi Electric Corporation
Atsushi Fukuda, NTT DOCOMO
Yafei Hou, Okayama University
Hideaki Kimura, Chubu University

E. Emerging Technologies

Hiroyuki Kayano National Institute of Advanced Industrial Science and Technology (AIST)
Shuhei Amakawa, Hiroshima University
Tomonori Arakawa, National Institute of Advanced Industrial Science and Technology (AIST)
Kyoya Takano, Tokyo University of Science
Yoshiaki Narusue The University of Tokyo
Kunihiro Kazuaki, Institute of Science Tokyo
Akihito Hirai, Mitsubishi Electric Corporation

## Advisory

## Program at a Grance

| | | Aug. 25th | | | Aug. 26th | | | | | Aug. 27th | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Room1 | Room2 | | Room1 | Room2 | | | | Room1 | Room2 | | |
| | | Pearl 4F | Iris 4F | Rainbow 4F | Pearl 4F | Irtis 4F | Pearl Foyer 4F | Rainbow 4F | Emerald 4F | Pearl 4F | Iris 4F | Pearl Foyer 4F | Rainbow 4F |
| AM | 0800-0830 | Workshop1 | Workshop2 | | Opening | | | | | Session_5 | Session_6 | | |
| | 0830-1000 | | | | Plenary Session | | | | | | | | |
| | 1000-1020 | Break | Break | | Break | Break | Break | | | Break | Break | Break | |
| | 1020-1200 | Workshop1 | Workshop2 | | Session_1 | Session_2 | | | | Session_7 | Session_8 | | |
| | 1200-1330 | | | Lunch | | | | Lunch | | | | | Lunch |
| PM | 1330-1510 | Workshop1 | Workshop2 | | | | Poster Session 1 | | | | | Poster Session 2 | |
| | 1510-1550 | Break | Break | | Break | Break | Break | | | Break | Break | Break | |
| | 1550-1730 | Workshop1 | Workshop2 | | Session_3 | Session_4 | | | | Session_9 | Session_10 | | |
| | 1730-1800 | | | | | | | | | Closing | | | |
| | 18:00 | | | Welcome reception | | | | | Banquet | | | | |

## Registration Opening Hour

Registration desk is located at Pearl 4F Foyer.

Aug. 25th 07:00 – 17:30

Aug. 26th 07:00 – 17:30

Aug. 27th 07:00 – 16:00

# The RFIT2025 Award Finalists

**An X-Band over 250 W GaN-on-GaN HEMT Power Amplifier with PAE of Higher than 50%**

*Kenji Mukai (not student), Jun Kamioka, Shintaro Shinjo, Tsutomu Matsuura, Shingo Tomohisa, and Eiji Yagyu (Mitsubishi Electric Corporation)*

**A 0.35-THz Binary Coding Metasurface Using Glass Integrated Passive Device Technology**

*Shuping Li (student), Rutgers University, Te-Yen Chiu (National Tsing Hua Univ.), Chun-Hsing Li, and Chung-Tse Michael Wu (National Taiwan Univ.)*

**1-Bit DAC for Image Enhancement of Q-Band Direct Digital RF Transmitter**

*Yuki Fujiya(student), Koki Furuuchi, Junhao Zhang, Tomoyuki Furuichi, Satoshi Tsukamoto, and Noriharu Suematsu (Tohoku University)*

**A Nonlinear Rectifying Diode Modeling Approach for High-Efficiency Single-Shunt Rectifier Design**

*Qingkun LYU (student) and Kenjiro NISHIKAWA (Kagoshima Univ.)*

**D-band Beamforming Transceiver Modules Using Wafer-Level Packaging Technologies**

*Seung-Uk Choi (student), S. Bahrami, I. Choi, J. Kang, S. Lee, and H.-J. Song (Pohang University of Science and Technology)*

**A Highly Efficient Dual-Band Rectenna with a Double-Loop Antenna for Low Power Operation**

*Taiki Hirase(student), Naoki Sakai, and Kenji Itoh (Kanazawa Institute of Technology), Takehsi Yamagishi and Satoshi Furuta (Samsung R&D Institute Japan), Jaehyoung Park, Yeonsik Yu, and Jeongnam Cheon, (Samsung Electronics Co., Ltd)*

## Table of Content

## Plenary Session

Date: Aug. 26th

Time: 08:30-10:00

Room: Pearl 4F

Session Chair: Prof. Kenjiro Nishikawa (Kagoshima University)

(1) Toward the Realization of the “New Silicon Island Kyushu"

--- To realize a vibrant regional economy and society with semiconductors from Kyushu ---

*Mr. Yoshinori Taguchi (Kyushu Bureau of Economy, Trade and Industry)*

(2) New Concept of Industry-Level Large-Scale Quantum Computer

*Dr. Masahiro Horibe (The National Institute of Advanced Industrial Science and Technology)*

## Session_1: CMOS Amplifiers

Date: Aug. 26th

Time: 10:20-12:00

Room: Pearl 4F

Session Co-Chairs: *Prof. Nobuyuki Itoh (Okayama Prefectural University, Japan) and Prof. Tian-Wei Huang (National Taiwan University, Taiwan)*

(1) (Invited) Study on MOSFET's Operating Region for Fully-Integrated Sub-1-GHz LNA Under Scaling
*Nobuyuki Itoh, Kiyotaka Komoku, Jun Furuta and Yasunori Suzuki (Okayama Prefectural University, Japan)*

(2) (Invited) A 40.8% FBW Full D-Band Receiver Front-End Fabricated in 40 nm CMOS
*Yi-Wen Wang, Shih-Chun Yeh, Kai-Jie Chuang and Tian-Wei Huang (National Taiwan University, Taiwan)*

(3) A Ku-Band CMOS Power Amplifier with 37.6 % Peak PAE and 22.5 dBm P_sat for 6G Applications
*Subin Lim, Wonseob Lee, Eunsu Mo and Euijin Oh (Chonnam National University, Korea); Sunwoo Kong (Electronics and Telecommunications Research Institute, Korea); Hui Dong Lee (Electonics and Telecommunications Research Institute, Korea); Bonghyuk Park (ETRI, Korea); Seungchan Lee and Jinseok Park (Chonnam National University, Korea)*

(4) A Wideband Bi-Directional Variable-Gain Amplifier with Low Phase Variation for Phased Array System
*Chun-Hsiang Yang and Tzyh-Ghuang Ma (National Taiwan University of Science and Technology, Taiwan); Kun-You Lin (National Taiwan University, Taiwan)*

(5) A Miniaturized 31-69 GHz Wideband Amplifier with Multi-Band Gain Tuning in 40nm CMOS
*Zhen Yan, Satoshi Tanaka, Takeshi Yoshida and Minoru Fujishima (Hiroshima University, Japan)*

## Session_2: Device Characterization

Date: Aug. 26th

Time: 10:20-12:00

Room: Iris 4F

Session Co-Chairs: *Dr. Osman Ceylan (Maury Microwave, USA) and Prof. Takuichi Hirano (Tokyo City University, Japan)*

(1) (Invited) A Review of Test Fixtures for RF Device Characterization

*Osman Ceylan (Maury Microwave, USA)*

(2) Frequency Dependence of Complex Permittivity in Commercial Dielectric Substrates for Millimeter-Wave Circuit Design

*Takashi Shimizu and Ryo Sakata (Utsunomiya University, Japan)*

(3) Geometrical Optimization Approach of MSL Bend Shapes to Minimize Reflection Coefficient

*Yutaka Mimino and Takuichi Hirano (Tokyo City University, Japan); Shiro Ozaki (Fujitsu Limited, Japan)*

(4) A Nonlinear Rectifying Diode Modeling Approach for High-Efficiency Single-Shunt Rectifier Design

*Qingkun Lyu and Kenjiro Nishikawa (Kagoshima University, Japan)*

(5) A Novel Eight-Port Wave Probe for Closed-Loop Bi-Directional Reflection Coefficients

*Yaun-Tzu Lee (National Yang Chiao Tung University, Taiwan); Robert (Shu-I) Hu (National Chiao Tung University, Taiwan); Ying Chen (University of California at Davis, USA)*

## Session_3: Si-Based Components

Date: Aug. 26th

Time: 15:50-17:30

Room: Pearl 4F

Session Co-Chairs: *Dr. Tomoyuki Furuichi (Tohoku University, Japan) and Prof. Kyungsik Choi (Yonsei University, Korea)*

(1) (Invited) A D-Band Low-Noise and High-Gain Receiver Front-End Adopting Gmax-Driven Active Mixer

*Kyungsik Choi (Yonsei University, Korea)*

(2) A 66-82 GHz VCO with Dual-Tuning and Phase Noise Reduction Techniques in 40 nm CMOS

*Yi-Cheng Liu, Pei-Hsuan Wang, Yu-Yuan Huang and Tsung-Hsien Lin (National Taiwan University, Taiwan)*

(3) A 5.8 dBm 55.2-67 GHz Frequency Sixtupler with 37 dB Conversion Gain in 130-nm SiGe BiCMOS

*Yu Zhu (Technische Universität Dresden & Chair of Circuit Design and Network Theory, Germany); Tilo Meister and Frank Ellinger (Technische Universität Dresden, Germany)*

(4) A Q-Band -3dBm Output Power Tripler Using Self-Biased anti-Parallel Diode-Connected nMOS Transistor

*Ryunosuke Saito, Ryosei Miyagawa, Yuki Fujiya, Tomoyuki Furuichi and Noriharu Suematsu (Tohoku University, Japan)*

(5) A Broadband Downconversion Mixer with Linearity-Improved Active IF Balun in 90-nm CMOS Process

*Xin-Hao Huang, Yunshan Wang and Huei Wang (National Taiwan University, Taiwan)*

## Session_4: WPT and Sustainability

Date: Aug. 26th

Time: 15:50-17:30

Room: Iris 4F

Session Co-Chairs: *Prof. Mamiko Inamori (Tokai University, Japan) and Prof. Tamami Maruyama (Hiroshima Institute of Technology, Japan)*

(1) (Invited) Energy-Efficient Wireless Systems for Biomedical Applications

*Minyoung Song (Daegu Gyeongbuk Institute of Science and Technology, Korea)*

(2) (Invited) Experimental Investigation of Underwater Wireless Power Transmission System

*Mamiko Inamori and Sora Anzai (Tokai University, Japan)*

(3) (Invited) Effects of Metamaterial Applications on Microwave Snow Melting

*Tamami Maruyama (Hiroshima Institute of Technology, Japan); Koyo Hatazawa (N.I.T Hakodate college, Japan); Kota Unyu (Muroran Institute of Technology, Japan); Masashi Nakatsugawa (National Institute of Technology, Hakodate College, Japan); Tsunayuki Yamamoto (National Institute of Technology, Tsuyama College, Japan); Keiichi Ito (National Institute of Technology, Akita College, Japan); Manabu Omiya (Hokkaido University, Japan); Noriharu Suematsu (Tohoku University, Japan)*

(4) Battery-Free Smart Water Meter Powered by TV Broadcast EM Waves in Cast-Iron Box with Slit

*Eiichi Tateishi (Kyushu University & Hinode Holdings Co. Ltd., Japan); Yuta Ide and Nobuhiro Kai (Hinode Holdings Ltd., Japan); Tatsuya Yamaguchi (HINODE, Ltd., Japan); Novuya Tagawa, Hayato Tanaka, Kaito Nakabuchi and Haruichi Kanaya (Kyushu University, Japan)*

(5) Compact Decoupling Power Layout for High-Frequency CMOS Integrated Circuits

*Yudai Miyoshi, Satoshi Tanaka, Takeshi Yoshida and Minoru Fujishima (Hiroshima University, Japan)*

## Session_5: Beamforming

Date: Aug. 27th

Time: 08:00-10:00

Room: Pearl 4F

Session Co-Chairs: *Dr. Hiroyuki Takahashi (NTT Device Technology Laboratories, Japan) and Prof. Kyoya Takano (Tokyo University of Science, Japan)*

(1) (Invited) Built-in Self Test and Calibration Techniques for Millimeter-Wave CMOS Transceivers

*Ho-Jin Song (POSTECH, Korea)*

(2) 1-Bit DAC for Image Enhancement of Q-Band Direct Digital RF Transmitter

*Yuki Fujiya, Koki Furuuchi, Junhao Zhang, Tomoyuki Furuichi, Satoshi Tsukamoto and Noriharu Suematsu (Tohoku University, Japan)*

(3) D-Band Beamforming Transceiver Modules Using Wafer-Level Packaging Technologies

*Seung-Uk Choi and Sirous Bahrami (Pohang University of Science and Technology, Korea); Inho Choi (Pohang University of Science and Technology, Korea); Jiwon Kang (Pohang University of Science and Technology, Korea); Seunghoon Lee and Ho-Jin Song (POSTECH, Korea)*

(4) (Invited) A Ka-Band VGA and Its Application to Four-Element Beamforming IC for LEO Satellite Communication

*Hyeonwon Song, Wonseob Lee, Mingyu Lee and Hyungju Kim (Chonnam National University, Korea); Seunghun Wang and Hui Dong Lee (Electonics and Telecommunications Research Institute, Korea); Bonghyuk Park (ETRI, Korea); Seungchan Lee and Jinseok Park (Chonnam National University, Korea)*

(5) A Ku-Band Beam-Steerable Linear-Polarized Transmitter with 29 dBW Peak EIRP for SATCOM Applications

*Yi-Fan Tsao, Heng-Tung Hsu and Jiun-Jie Huang (National Yang Ming Chiao Tung University, Taiwan); Arpan Desai (Pandit Deendayal Energy University, India); Hao-Yu Luo and Po-Han Chen (National Yang Ming Chiao Tung University, Taiwan); Hsi-Tseng Chou (National Taiwan University, Taiwan)*

## Session_6: Advanced Theory and Technologies in RF to THz Devices and Antennas

Date: Aug. 27th

Time: 08:00-10:00

Room: Iris 4F

Session Co-Chairs: *Dr. Satoshi Yoshida (Ryukoku University, Japan) and Prof. Chung-Tse Michael Wu (National Taiwan University, Taiwan)*

(1) (Invited) Signal-Flow-Graph Representation of Weakly Nonlinear Networks and Its Applications

*Shuhei Amakawa (Hiroshima University, Japan)*

(2) (Invited) Reflection-Mode Terahertz Imaging Using Concurrent Transceiver Pixel Arrays in CMOS

Wooyeol Choi (Seoul National University, Korea); Kenneth O (The University of Texas at Dallas, USA)

(3) A 0.35-THz Binary Coding Metasurface Using Glass Integrated Passive Device Technology

*Shuping Li (Rutgers University, USA); Te-Yen Chiu (National Tsing Hua University, Taiwan); Chun-Hsing Li (National Taiwan University, Taiwan); Chung-Tse Michael Wu (Rutgers University, USA)*

(4) (Invited) Smith Chart-Based Graphical Design of a Two-Section Transmission Line Matching Circuits

*Satoshi Tanaka, Takeshi Yoshida and Minoru Fujishima (Hiroshima University, Japan)*

(5) (Invited) 600-GHz Scalable Modular CMOS Detector Arrays with Stitched Multiple Chips

*Jae-Sung Rieh (Korea University, Korea); Doyoon Kim (Samsung Electronics, Korea); Minje Cho (Anapass, Korea)*

(6) An in-Line Coupling Based Microstrip Filtering Antenna Array with Transmission Zeros

*Masataka Ohira (Doshisha University, Japan); Chiharu Ikeda and Zhewang Ma (Saitama University, Japan); Hiroyuki Deguchi (Doshisha University, Japan)*

## Session_7: Active Devices and Components

Date: Aug. 27th

Time: 10:20-12:00

Room: Pearl 4F

Session Co-Chairs: *Prof. Ryo Ishikawa (The University of Electro-Communications, Japan) and Prof. Shinji Hara (Nagoya University, Japan)*

(1) (Invited) Gain Drop Analysis of Electrically Long Gate Finger FETs and Its Improving Method

*Shinji Hara and Keiichi Sakuno (Nagoya University, Japan)*

(2) (Invited) High Output Power and Efficiency GaN and InP-Based HEMTs for Sub-THz Power Amplifiers

*Toshihiro Ohki, Shiro Ozaki, Yusuke Kumazaki, Atsushi Yamada, Masaru Sato and Yasuhiro Nakasha (Fujitsu Limited, Japan)*

(3) (Invited) Multistage 5.75-GHz High-Efficiency and High-Gain Amplifier as DC-RF Power Converter for SSPS

*Ryo Ishikawa (The University of Electro-Communications, Japan)*

(4) A Highly Efficient Dual-Band Rectenna with a Double-Loop Antenna for Low Power Operation

*Taiki Hirase, Naoki Sakai and Kenji Itoh (Kanazawa Institute of Technology, Japan); Takeshi Yamagishi, and Satoshi Furuta (Samsung R&D Institute Japan, Japan)*

(5) Linearly Controllable Infinite Phase Shifter Using Current Output DACs with Tapped Load Resistors

*Fuka Kamei, Asaka Kobayashi and Hideyuki Nosaka (Ritsumeikan University, Japan)*

## Session_8: Quantum Computing and Sensing

Date: Aug. 27th

Time: 10:20-12:00

Room: Iris 4F

Session Co-Chairs: *Dr. Akinori Taira (Mitsubishi Electric Corporation, Japan) and Dr. Hiroyuki Kayano (Advanced Industrial Science and Technology, Japan)*

(1) (Invited) An Introduction to Superconducting Quantum Computer for Microwave Engineers

*Hidehisa Shiomi (Osaka University, Japan)*

(2) (Invited) Terahertz Wave Sensing Technology for Visualizing Hidden Objects

*Akinori Taira, Michiya Hayama, Kazuaki Ishioka, Satoshi Yoshima, Ichiro Somada and Akihito Hirai (Mitsubishi Electric Corporation, Japan)*

(3) A Cryogenic Up-Conversion Single Sideband IQ Mixer for Quantum Computing

*Yu-Shih Lin (National Taiwan University, Taiwan); Che-Hao Li (Industrial Technology Research Institute, Taiwan); Mian-Yu Wu (National Taiwan University, Taiwan); Chang-Sheng Chen and Shyh-Shyuan Sheu (Industrial Technology Research Institute, Taiwan); Yih-Peng Chiou (National Taiwan University, Taiwan)*

(4) Wideband Noise Spectroscopy of Very Shallow States in Cryogenic MOSFETs

*Kenji Ohmori (Device Lab Inc., Japan); Shuhei Amakawa (Hiroshima University, Japan); Michihiro Shintani and Kazutoshi Kobayashi (Kyoto Institute of Technology, Japan)*

(5) A Sub-THz Inductive Source Degeneration Harmonic Oscillator Using 0.12-Um GaN HEMT Technology

*Jiayou Wang (University of Liverpool, United Kingdom (Great Britain) & National Tsing Hua University, Taiwan); Yin-Cheng Chang (Taiwan Semiconductor Research Institute, NIAR, Taiwan); Da-Chiang Chang (Chip Implementation Center, National Applied Research Laboratories, Taiwan); Shawn S. H. Hsu (National Tsing Hua University, Taiwan)*

## Session_9: GaN/Power Amplifiers

Date: Aug. 27th

Time: 15:50-17:30

Room: Pearl 4F

*Session Co-Chairs: Dr. Kazuya Yamamoto (Mitsubishi Electric Corporation, Japan) and Prof. Yasunori Suzuki (Okayama Prefectural University, Japan)*

(1) (Invited) High-Efficiency Wideband GaN Power Amplifier MMICs for 6G and SATCOM

*Takuma Torii, and Shintaro Shinjo (Mitsubishi Electric Corporation, Japan); Chenhao Chu, and Hua Wang (ETH Zurich, Switzerland)*

(2) (Invited) Extremely Low Power Consumption of Linear Power Amplifier for Base Station

*Yasunori Suzuki (Okayama Prefectural University, Japan)*

(3) An X-Band over 250 W GaN-on-GaN HEMT Power Amplifier with PAE of Higher than 50%

*Kenji Mukai, Jun Kamioka, Shintaro Shinjo, Tsutomu Matsuura, Shingo Tomohisa, and Yagyu Eiji (Mitsubishi Electric Corporation, Japan)*

(4) A Low Noise High Gain Amplifier MMIC for Wideband Satellite Application

*Zhijian Chen, Yang Li, Fengyuan Mao, Bin Li, Zhao Hui Wu and Quansheng Guan (South China University of Technology, China); Xiaoling Lin (China Electronic Product Reliability and Environmental Testing Research Institut, China)*

(5) A Ku-Band GaN MMIC Power Amplifier with a 47.4% Large-Signal Fractional Bandwidth

*Tsai-Rung Hu (National Tsing Hua University, Taiwan); Hsin-Chieh Lin (Taiwan Semiconductor Research Institute, Taiwan); Yin-Cheng Chang and Da-Chiang Chang (Taiwan Semiconductor Research Institute, NIAR, Taiwan); Shawn S. H. Hsu (National Tsing Hua University, Taiwan)*

## Session_10: Sub-THz Experiments and Devices

Date: Aug. 27th

Time: 15:50-17:30

Room: Iris 4F

Session Co-Chairs: *Prof. Hiroshi Okazaki (Tokyo Information Design Professional University) and Prof. Hideyuki Nosaka (Ritsumeikan University, Japan)*

(1) (Invited) 160-Gb/s RF Front-End and Metasurface Beamforming: Toward Practical Wireless Systems at 300 GHz

*Hiroyuki Takahashi, Hiroshi Hamada, Adam Pander and Teruo Jyo (NTT Device Technology Laboratories, Japan)*

(2) (Invited) Experimental Demonstrations of Long-Range Wireless Communication Using the 100 GHz Band

*Tetsuya Kawanishi (Waseda University & National Institute of Information and Communications Technology, Japan)*

(3) 28 GHz Direct-Conversion Transmitter with I/Q Imbalance Correction

*Seunghoon Lee, Inho Choi and Sangcheol Jeon (POSTECH, Korea); Sungbeom Kim (Samsung Electronics, Korea); Donghun Lee (LIG Nex1, Korea); Ho-Jin Song (POSTECH, Korea)*

(4) A Low-Loss High-Isolation Crossover Design for D-Band Phased Arrays

*Leshan Xu, Satoshi Tanaka, Takeshi Yoshida and Minoru Fujishima (Hiroshima University, Japan)*

(5) Beam Steering Characteristics of a 300 GHz Stretchable RIS with Dual-Polarization Capability

*Eiru Morimoto and Kento Seki (The University of Osaka, Japan); Yuto Kato (National Institute of Advanced Industrial Science and Technology, Japan); Yosuke Nakata and Atsushi Sanada (The University of Osaka, Japan)*

## Poster Sessions 1

Date: Aug. 26th

Time: 13:50-15:10

Room: Pearl 4F Foyer

Session Co-Chairs: *Dr. Shintaro Shinjo (Mitsubishi Electric Corporation, Japan) and Prof. Yasunori Suzuki (Okayama Prefectural University, Japan)*

(1) Multi-Path Fading Measurement of 2.4 GHz/5 GHz Band with Real-Time Wideband Spectrum Monitor

*Tomoyuki Furuichi, Eisai Nagahari, Takashi Shiba and Noriharu Suematsu (Tohoku University, Japan)*

(2) An Indoor Positioning Method Based on Distributed Single-Frequency Continuous Wave Radars

*Ruoxi Cai, Yue Yu and Lixin Ran (Zhejiang University, China)*

(3) An Approach for Estimation of Soil Moisture Content Using Coil at HF Band

*Natsuki Sato, Takato Shinhama and Futoshi Kuroki (National Institute of Technology, Kure College, Japan)*

(4) A 35% Radiation Efficiency W-Band H-Shaped on-Chip Slot Antenna

*Yu-Shao Shiao, Jia-Bin Qian, Wen-Lin Chen and Kun-Ming Chen (Taiwan Semiconductor Research Institute, Taiwan); Guo-Wei Huang (Taiwan Semiconductor Research Institute & National Yang Ming Chiao Tung University, Taiwan)*

(5) Derivation of Forward and Reverse Loop Gains for Closed-Loop Circuit Stability Analysis

*Yaun-Tzu Lee (National Yang Chiao Tung University, Taiwan); Robert (Shu-I) Hu (National Chiao Tung University, Taiwan); Ying Chen (University of California at Davis, USA)*

(6) Grounded CPW with a Longitudinal Slot at Bottom Ground for Low Loss at the Sub-THz Band on Glass IPD

*Ruei-Ze Lin, Zhi-Ting Yang and Hsin-Chia Lu (National Taiwan University, Taiwan)*

(7) Recent Experiments on Switchable Reflective Polarizer in Conformal Configuration

*Dwi Andi Nurmantris (Telkom University, Indonesia); Sabrina Megumi Ahmad (Inha University, Korea) & Wireless Communication Research Laboratory, Korea)); Achmad Munir (Institut Teknologi Bandung, Indonesia)*

(8) A Study on Dispersion Characteristics of a Gyrator-Loaded CRLH-TL with an Even Number of Unit Cells

*Kensuke Okubo, Mitsuyoshi Kishihara and Koichiro Sakaguchi (Okayama Prefectural University, Japan)*

(9) Four 2-D Rhombic Distributed TL Models Related by 90-Degree Rotations for Topological Waveguides

*Tsutomu Nagayama (Kagoshima University, Japan)*

(10) Full D-Band Waveguide-to-Microstrip Transitions on Low-Cost PCBs

*Chi-An Lin and Yu-Hsiang Cheng (National Taiwan University, Taiwan)*

(11) Low-Power Miniaturized Wideband Quadrature Differential Power Detector

*Xiao Tan (Sanechips Technology Co. Ltd, China); Jian Fu and Jianqiang Zhang (Sanechips, China); Jie Yang (Sanechips Technology Co. Ltd, China); Jie Hu (Sanechips Technology Co., Ltd, China & State Key Lavoratory of Mobile Network and Mobile Multimedia Technology, China); Guangxiang*

*Zhang, and Qi Xiao (Sanechips Technology Co. Ltd, China); Jinjie Zhang (Sanechips, China)*

## Poster Sessions 2

Date: Aug. 27th

Time: 13:50-15:10

Room: Pearl 4F Foyer

Session Co-Chairs: *Dr. Shintaro Shinjo (Mitsubishi Electric Corporation, Japan) and Prof. Yasunori Suzuki (Okayama Prefectural University, Japan)*

(1) A D-Band down-Conversion Mixer Using Transformer-Coupling Cascode Topology in 40-nm CMOS

*Jin-Hui Li, Chung-Yao Lu, Yi-Qi Lin and Yu-Hsiang Cheng (National Taiwan University, Taiwan)*

(2) Sub-6GHz Band Frequency Synthesizer with Automatic Frequency Calibration Technique

*Xin-Yu Chang (National Taipei University, Taiwan); Yue-Fang Kuo (Yuan Ze University, Taiwan)*

(3) Subharmonic Injection-Locked Push-Push Oscillator Using Two-Wavelength Ring Resonator

*Elton De Nascimento Lima, Takayuki Tanaka and Ichihiko Toyoda (Saga University, Japan)*

(4) System and Circuit Level Design Aspects of mmWave SPDT Switches on CMOS SOI

*Mikko Hietanen and Aarno Pärssinen (University of Oulu, Finland)*

(5) Broadband GaAs-mHEMT LNA and DA Design for Fusion Hot-Electron Plasma Detection

*Yaun-Tzu Lee, National Yang Chiao Tung University, Taiwan*

(6) GaN HEMT Low Noise Amplifier with an 8 Shaped Inductor for 5G Application

*Sheng-Lyang Jang, National Taiwan University of Science and Technology, Taiwan*

(7) Design and Implementation of CMOS Negative Capacitors for X-Band Applications

*Nikita Kalmykov, Saint Petersburg Electrotechnical University, Russia*

(8) A 23-33 GHz GaN HEMT LNA with High Linearity for UAV Radar Applications

*Yuan-Hung Huang, Shao-Chun Huang and Chao-Hsin Wu (National Taiwan University, Taiwan)*

(9) A 0.8-V 80.7-GHz Dual-Core-Coupled Triple-Mode VCO in 40-nm CMOS

*Yu-Yuan Huang, Pei-Hsuan Wang, Yi-Cheng Liu and Tsung-Hsien Lin (National Taiwan University, Taiwan)*

(10) Broadband X-Band GaN MMIC High Power Amplifier and Driver Amplifier Chipset

*Kento Saiki (Mitsubishi Electric, Japan)*

(11) A Ka-Band CMOS Switchless Low-Noise High-Responsivity Receiver for Sensing Applications

*Yu-Chia Su, Yi-Fu Chen and Hong-Yeh Chang (National Central University, Taiwan)*

(12) A 47 GHz-Bandwidth/47 mW LO-Split Up-Conversion Mixer for 300-GHz Self-Heterodyne Transceivers

*Taiga Noguchi and Kyoya Takano (Tokyo University of Science, Japan)*

(13) Microwave Characterization CPW Lines Using Copper Ink Based Printed Electronics

*Shin Yokomura and Daisuke Yasunobu (Kagoshima University, Japan); Hiroto Sakaki (Mitsubishi Electric Corporation, Japan); Kenjiro Nishikawa (Kagoshima University, Japan)*

(14) Characterization of Transmission Properties of Infrared Filters and Attenuators Up to 125 GHz

*Junta Igarashi, Kosuke Mizuno, Ryo Ito, Shota Norimoto, Toyofumi Ishikawa, Kunihiro Inomata, Noriyoshi Hashimoto, Nobu-hisa Kaneko and Tomonori Arakawa (National Institute of Advanced Industrial Science and Technology, Japan)*

(15) A 96-GHz 15.9-dB Gain 20.7 dBm PSAT Power Amplifier in 60-nm GaN-on-Si HEMT

*Tsai-Rung Hu (National Tsing Hua University, Taiwan); Hsin-Chieh Lin (Taiwan Semiconductor Research Institute, Taiwan); Yin-Cheng Chang and Da-Chiang Chang (Taiwan Semiconductor Research Institute, NIAR, Taiwan); Shawn S. H. Hsu (National Tsing Hua University, Taiwan)*

(16) A Method for Reducing Learning Time in ARVTDNN for NN-DPD Applications

*Yudai Shiota (Kagoshima University, Japan); Hiroto Sakaki (Mitsubishi Electric Corporation, Japan); Kenjiro Nishikawa (Kagoshima University, Japan)*

## Closing Session

Date: Aug. 27th

Time: 18:00

Room: Pearl 4F

Session Co-Chairs: *Dr. Shintaro Shinjo (Mitsubishi Electric Corporation, Japan) and Prof. Yasunori Suzuki (Okayama Prefectural University, Japan)*

(1) Award Ceremony

(2) Introduction of the RFIT 2026

(3) Closing Remarks

## Workshop

Aug. 25th, 2025,  08:00 – 17:30

**Workshop 1: Enabling 6G: Devices, Systems, and Measurement Techniques**

Room: Pearl 4F

Organizers: Prof. Yasunori Suzuki (Okayama Prefectural University) and Dr. Shintaro Shinjo (Mitsubishi Electric Corporation)

Abstract: This workshop explores the emerging technologies driving the realization of 6G, with a focus on device innovations, system-level tests, and advanced measurement methods. Featuring talks from leading experts, the session aims to provide a comprehensive view of key technical enablers and challenges shaping the 6G.

***5G evolution and 6G***

Mr. Takehiro Nakamura (NTT docomo, Japan)

***Digital RF Technologies for Q/V-Band LEO SATCOM Constellation***

Dr. Akihito Hirai (Mitsubishi Electric Corporation, Japan)

***Innovative GaN HEMT-Based S-LMBA Design for Wideband, High-Efficiency, and High-Power Performance***

Dr. Hirotaka Asami (Sumitomo Electric  Industries, Ltd., Japan)

***Demonstration of a Sub-Terahertz Channel-Bonded Transmission System with Potential for Over 100 Gbps***

Dr. Atsushi Fukuda (NTT docomo, Japan)

***Terahertz Beam Engineering: A New Quality Productive Force***

Prof. Chong Han (Shanghai Jiao Tong University, China)

***Modern Methods for Component Measurements using Vector Network Analyzers for 6G Test***

Dr. Joel Dunsmore (Keysight Technologies)

**Workshop 2: Microwave/RF Technologies for Quantum Computing**

Room: Iris 4F

Organizers: Dr. Hiroyuki Kayano (The National Institute of Advanced industrial Science and Technology, AIST)

Abstract: This workshop highlights recent advances in microwave and RF technologies essential for superconducting quantum computing. Topics include cryogenic amplifiers, superconducting circuits and cables, and scalable qubit control techniques, offering a comprehensive view of key components enabling next-generation quantum systems.

***Superconducting Digital Circuits for Quantum Computer***

Prof. Akira Fujimaki (Nagoya University)

***Basic Operation for Quantum Computer***

Dr. Shuhei Tamate (Riken)

***Cryogenic Low Noise Amplifier***

Dr. Niklas Wadefalk (LNF)

***Challenges and Opportunities in Cultivating an Emerging Quantum Ecosystem in Japan: the Quantum Control Journey for 1000 qubits***

Mr. Koji Sato (Keysight Technologies)

***Qbit Control for Superconducting Quantum Computer***

Prof. Makoto Negoro (The University of Osaka)

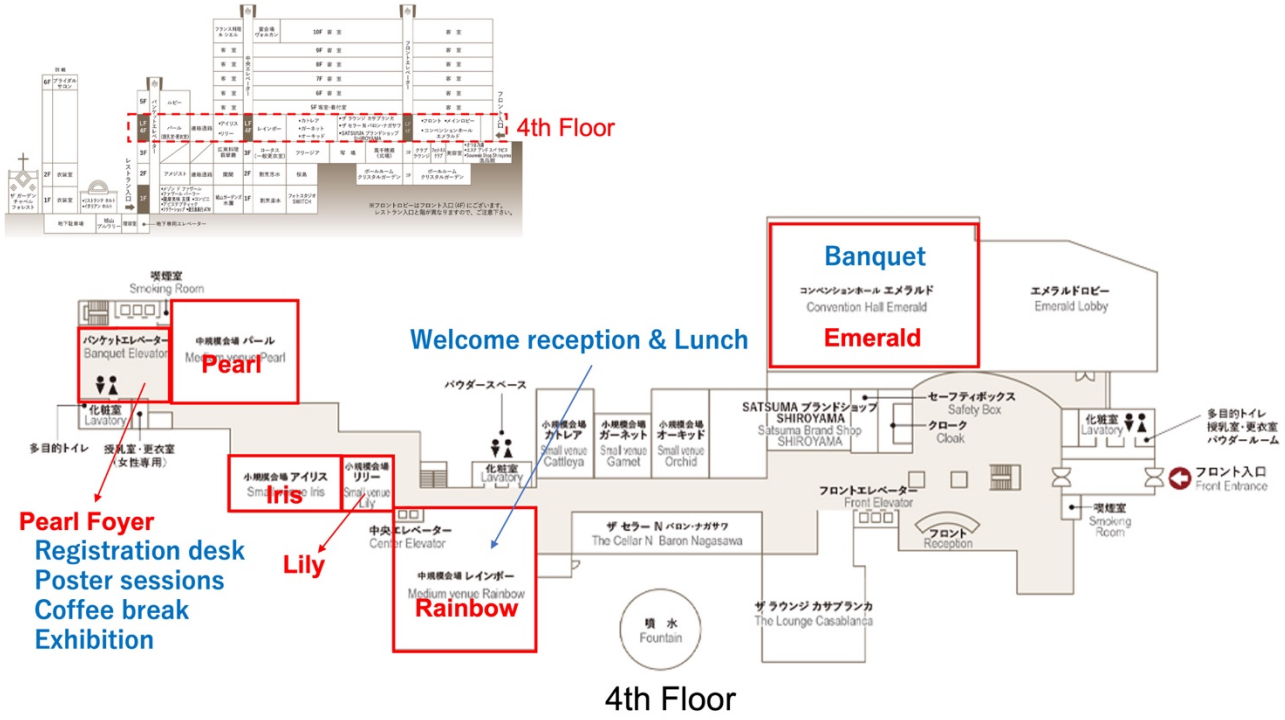
***Superconducting Cable for Quantum Computer***

Dr. Yuki Tanaka (Fujikura)

***Microwave Circuits for Quantum Computer***

Dr. Kunihiro Inomata (AIST)

# Floor Plan




4th Floor