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Technical Program

Session Title	[S-B14] Multiscale Multiphysics Techniques and Applications
Date and Time	August 22 (Mon.) / 13:30~15:30
Room	Room A (Emerald A)
Session Organizer	Qing Huo Liu (Duke University)
Session Chair	Qing Huo Liu (Duke University)

[S-B14-1] 13:30~13:50

[Invited] The Efficient Finite Element Method with Impedance Transmission Boundary Condition for Computing Optical Waveguide Modes.....1

Na Liu¹, Guoxiong Cai¹, and Qing Huo Liu²

¹Xiamen University, China, ²Duke University, USA

[S-B14-2] 13:50~14:10

[Invited] Multiphysics Coupling of Fluid Flow and Electromagnetic fields for Subsurface Sensing.....N/A

Yunyun Hu and Qing Huo Liu

Duke University, USA

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Air Force Engineering University, China

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[Invited] Numerical Verification of Magnetization Reversal Process of Bit-Patterned Media.....N/A

Shinichiro Ohnuki, Ryota Oida, and Akira Kuma

Nihon University, Japan

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[Invited] Transmission of a Single Rectangular Hole Filled with Dispersive Material.....N/A

Hengxin Ruan, Longgang Wang, and Lianlin Li

Peking University, China

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Room	Room B (Emerald B)
Session Organizer	Kazuya Kobayashi (Chuo University) Yury Shestopalov (University of Gävle)
Session Chairs	Keiji Goto (National Defense Academy) Tsuneki Yamasaki (Nihon University)

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Woo Jin Byun¹, Y. S. Lee¹, B. S. Kim¹, K. S. Kim¹, M. S. Kang¹, M. S. Song¹, and Yong Heui Cho²
¹Electronics and Telecommunications Research Institute, Korea, ²Mokwon University, Korea

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 National Defense Academy, Japan

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Yasumitsu Miyazaki
 Aichi Mathematical Technology Laboratory, Japan

[S-B12a-5]	14:50~15:10
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[Invited] Optical Functional Characteristics of Transverse A-O Waveguide With SAW By FDTD Analysis.....N/A

Rakkappan Balasubramanian¹, Yasumitsu Miyazaki², and Nobuo Goto³
¹Synclayer, Inc., Japan, ²Aichi Mathematical Tech. Lab., Japan, ³The University of Tokushima, Japan

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Ryosuke Ozaki and Tsuneki Yamasaki
 Nihon University, Japan

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Date and Time	August 22 (Mon.) / 13:30~15:10
Room	Room C (Diamond)
Session Organizer	Do Young Byun (Korea Astronomy and Space Science Institute) Z.-Q. Shen (Chinese Academy of Science)
Session Chair	Jongsoo Kim (Korea Astronomy and Space Science Institute)

[S-J1-1] 13:30~13:50

[Invited] The KaVA (KVN and VERA Array) : Status and Recent Activities.....N/A

Do-Young Byun¹, Mareki Honma², Hyun-Goo Kim¹, Katsunori M. Shibata², Sang-Sung Lee¹, Hideyuki Kobayashi², Kiyooki Wajima¹, Tomoya Hirota², Taehyun Jung¹, JeongSook Kim², Kee-Tae Kim¹, Bon Won Sohn¹, Motoki Kino¹, Se-Jin Oh¹, Duk-Gyoo Roh¹, Seog-Tae Han¹, Chungsik Oh¹, Jongsoo Kim¹, Se-Hyung Cho¹, and Tomoaki Oyama²

¹Korea Astronomy and Space Science Institute, Korea, ²National Astronomy Observatory of Japan, Japan

[S-J1-2] 13:50~14:10

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R. Dodson¹, T. Jung², M. Rioja^{1,3,4}, J. Stevens³, M. Honma⁵, B. W. Sohn², and P. de Vicente⁴

¹University of Western Australia, Australia, ²Korea Astronomy and Space Science Institute, Korea, ³Commonwealth Scientific and Industrial Research Organisation, Australia, ⁴OAN (IGN), ⁵National Astronomy Observatory of Japan, Japan

[S-J1-3] 14:10~14:30

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M. Rioja^{1,2,3}, R. Dodson¹, T. Jung⁴, and B.W. Sohn⁴

¹University of Western Australia, Australia, ²Commonwealth Scientific and Industrial Research Organisation, Australia, ³OAN (IGN), ⁴Korea Astronomy and Space Science Institute, Korea

[S-J1-4] 14:30~14:50

Wide-band VLBI Observations of Multiple SiO Maser Lines using the OCTAVE System.....N/A

Hiroshi Imai¹, Sho Kuwahara¹, Amane Kano¹, Miyako Oyadomari¹, Sze-Ning Chong¹, Tomoaki Oyama², Yusuke Oyama², Tomoya Hirota², Syunsaku Suzuki², Masahiro Kanaguchi², Takashi Nishikawa², Noriyuki Kawaguchi², Takumi Nagayama², and Hideyuki Kobayashi²

¹Kagoshima University, Japan, ²National Astronomical Observatory of Japan, Japan

[S-J1-5] 14:50~15:10

[Invited] Greenland Telescope Project Current Status and Collaboration in East Asia.....N/A

Makoto Inoue

Academia Sinica Institute of Astronomy and Astrophysics, Taiwan

Session Title	[S-K1a] Biological Effects of EMF (1)
Date and Time	August 22 (Mon.) / 13:30~15:30
Room	Room D (Convention A)
Session Organizer	Young-Hwan Ahn (Ajou University) Xu Zhengping (Zhejiang University)
Session Chairs	Young-Hwan Ahn (Ajou University) Xu Zhengping (Zhejiang University)

[S-K1a-1] **13:30~14:10**

[Keynote] The Effects of RF-EMF in Animal Models.....N/A

Jeong-Ki Pack¹, Nam Kim², Jong Hwa Kwon³, Hyung-Do Choi³, Yun-Sil Lee⁴, and Hae-June Lee⁵
¹Chungnam National University, Korea, ²Chungbuk National University, Korea, ³Electronics and Telecommunications Research Institute, Korea, ⁴Ewha Womans University, Korea, ⁵Korea Institute of Radiological and Medical Sciences, Korea

[S-K1a-2] **14:10~14:30**

[Invited] Children's Health Following Prenatal Radiofrequency Radiation Exposure.....N/A

Mina Ha
 Dankook University, Korea

[S-K1a-3] **14:30~14:50**

[Invited] Biologic Influence of RFID-EMF on Brain: In vivo Study.....N/A

Young Hwan Ahn¹, Hye Sun Kim¹, Man-Jeong Paik², Yun-Sil Lee³, Hyung Do Choi⁴, Jong Hwa Kwon⁴, Jeong-Ki Pack⁵, and Nam Kim⁶
¹Ajou University, Korea, ²Sunchon National University, Korea, ³Ewha Women's University, Korea, ⁴Electronics and Telecommunications Research Institute, Korea, ⁵Chungnam National University, Korea, ⁶Chungbuk National University, Korea

[S-K1a-4] **14:50~15:10**

[Invited] Differential Genotoxic Responses of Different Cells to Radiofrequency Electromagnetic Fields.....N/A

Chuan Sun, Liling Su, Guangdi Chen, and Zhengping Xu
 Zhejiang University, China

[S-K1a-5] **15:10~15:30**

[Invited] Study on Bioeffects of Electromagnetic Field Exposure in China.....N/A

Zhengping Yu
 Third Military Medical University, China

Session Title	SPC Special Session
Date and Time	August 22 (Mon.) / 13:30~15:10
Room	Room E (Convention B)
Session Chairs	Peter Van Daele (URSI Assistant Secretary-General, Ghent University) Paul S. Cannon (URSI President, University of Birmingham) Jeong-Hae Lee (Hongik University) Ikmo Park (Ajou University)

[SPC-1] 13:30~13:50

[Invited] Transmission and Resonance of a Single Rectangular Hole Filled with Anisotropic Material.....N/A

Hengxin Ruan¹, Lianlin Li¹, and Tie Jun Cui²

¹Peking University, China, ²Southeast University, China

[SPC-2] 13:50~14:10

Output Power Enhancement by Optical Pulse Compression in Photonic-Based RF Generation.....N/A

Takashi Yamaguchi, Hiroki Morimoto, and Hiroyuki Toda

Doshisha University, Japan

[SPC-3] 14:10~14:30

Investigation of Optical Path Functional for High and Low Ionospheric Radio Rays.....N/A

Igor A. Nosikov¹, Maxim V. Klimenko², Pavel F. Bessarab³, and Gennady A. Zhibankov⁴

¹Immanuel Kant Baltic Federal University, Russia, ²West Department of IZMIRAN, Russia, ³Royal Institute of Technology KTH, Sweden, ⁴Southern Federal University, Russia

[SPC-4] 14:30~14:50

Suppression of Multi-Path Coupling in Scaled-Down Experiment using Cross-Borehole Pulse Radar.....N/A

Jae-Hyoung Cho^{1,2}, Ji-Hyun Jung³, Jong-Gwan Yook², and Se-Yun Kim¹

¹Korea Institute of Science and Technology, Korea, ²Yonsei University, Korea, ³Hanwha Thales, Korea

[SPC-5] 14:50~15:10

Thermal Modelling of Coaxial line for Cryogenic Noise Measurements.....N/A

Ahmed Soliman, Andrew Janzen, and Sander Weinreb

California Institute of Technology, USA

Session Title	[S-C3] Wireless Network
Date and Time	August 22 (Mon.) / 13:30~15:10
Room	Room F (Convention C)
Session Organizer	Seung-Hoon Hwang (Dongguk University) Jangwon Lee (Yonsei University)
Session Chair	Seung-Hoon Hwang (Dongguk University)

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[Invited] 5G Cellular Systems with D2D Assisted NOMA Relay.....N/A

Young Bae Song, Hyeon Su Kang, and Duk Kyung Kim
Inha University, Korea

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[Invited] Performance Evaluation of Heterogeneous Networks with Cell ID Operation of Small Cell.....77

Kyungsik Min¹, Taehyoung Kim¹, Takki Yuy², Hano Wang³, Daesik Hong¹, and Sooyong Choi¹
¹*Yonsei University, Korea*, ²*SK Telecom, Co., Ltd., Korea*, ³*Sangmyung University, Korea*

[S-C3-3] 14:10~14:30

[Invited] Joint Cell Association and Resource Scheduling for OFDMA Multi-Cell HetNets.....N/A

Jeong-Ahn Kwon and Jang-Won Lee
Yonsei University, Korea

[S-C3-4] 14:30~14:50

[Invited] Uplink Open Loop Power Control for LTE HetNet.....N/A

Amir Haider¹, Seong-Hee Lee¹, Seung-Hoon Hwang¹, Dae Ik Kim², and Jee Hyeon Na²
¹*Dongguk University, Korea*, ²*Electronics and Telecommunications Research Institute, Korea*

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Kyungwoo Yoo¹, Joohwan Chun¹, Seungoh Yoo², and ChungHo Ryu²
¹*Korea Advanced Institute of Science and Technology, Korea*, ²*Agency for Defense Development, Korea*

Session Title	[S-G1] GPS/GNSS Monitoring of the Ionosphere
Date and Time	August 22 (Mon.) / 13:30~15:10
Room	Room G (Convention D)
Session Organizer	Kwan-Dong Park (Inha University) Shuanggen Jin (Chinese Academy of Sciences)
Session Chairs	Shuanggen Jin (Chinese Academy of Sciences) Kwan-Dong Park (Inha University)

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Baiqi Ning, Guozhu Li, and Kangkang Liu
Chinese Academy of Sciences, China

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Cheng Wang
Wuhan University, China

[S-G1-3] 14:10~14:30

Hemispheric and Annual Asymmetry of NmF2 Observed by FORMOSAT-3/COSMIC Radio Occultation Observations.....N/A

V. Sai Gowtam and S. Tulasi Ram
Indian Institute of Geomagnetism, India

[S-G1-4] 14:30~14:50

On the Variation of TEC Over the Equatorial, Mid and High Latitudes During a Long Duration Positive Ionospheric Storm.....N/A

Shredevi P. R.¹, Smitha V. Thampi¹, D. Chakrabarty², Rajkumar Choudhary¹, and Tarun Kumar Pant¹
¹*Indian Space Research Organisation, India*, ²*Physical Research Laboratory, India*

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Win Zaw Hein, Yusuke Kashiwa, Yoshitaka Goto, and Yoshiya Kasahara
Kanazawa University, Japan

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Room	Room H (Convention E)
Session Organizer	Myoung-Jae Lee (Hanyang University) Hae June Lee (Pusan National University)
Session Chair	Myoung-Jae Lee (Hanyang University)

[S-H1-1] **13:30~13:50**

[Invited] Gyrokinetic Simulation of Micro-Turbulence and Intrinsic Rotation in Tokamak Plasma.....N/A

J. M. Kwon¹, S. Yi¹, T. Rhee¹, and P.H. Diamond²

¹National Fusion Research Institute, Korea, ²University of California, USA

[S-H1-2] **13:50~14:10**

[Invited] Magnetic Field Generation and Particle Acceleration by Weibel and Filamentation Instabilities.....N/A

C. M. Ryu and C. T. Huynh

Pohang University of Science and Technology, Korea

[S-H1-3] **14:10~14:30**

[Invited] Implications of a Non-Modal Theory for the L-H Transition in Tokamaks.....N/A

V. S. Mikhailenko, V. V. Mikhailenko, and H. J. Lee

Pusan National University, Korea

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Nonlinear Dynamics of Electrons Interacting with Oblique Whistler Mode Waves in the Magnetosphere.....116

Yikai Hsieh and Yoshiharu Omura

Kyoto University, Japan

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[Invited] Studies of the Self-Modulation and Other Instabilities in Proton Beam-Driven Plasma Wakefield Accelerators.....N/A

Moses Chung¹, Kookjin Moon¹, Seongyeol Kim¹, HaeJune Lee², V. V. Mikhailenko², and V. S. Mikhailenko²

¹Ulsan National Institute of Science and Technology, Korea, ²Pusan National University, Korea

Session Title	[S-E1] Common-Mode Issues Related to Power Electronics
Date and Time	August 22 (Mon.) / 13:30~15:10
Room	Room I (Crane)
Session Organizer	Yoshitaka Toyota (Okayama University) Wansoo Nah (Sungkyunkwan University)
Session Chairs	Yoshitaka Toyota (Okayama University) Wansoo Nah (Sungkyunkwan University)

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Farhan Mahmood¹, Ken Okamoto¹, Yuichiro Okugawa¹, Kazuhiro Takaya¹, Takaaki Ibuchi², and Tsuyoshi Funaki²
¹NTT Network Technology Laboratories, Japan, ²Osaka University, Japan

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Tokyo Metropolitan University, Japan

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Okayama University, Japan

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Sungkyunkwan University, Korea

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Y. Yano¹, H. Geshi¹, K. Iokibe¹, Y. Toyota¹, and T. Watanabe²
¹Okayama University, Japan, ²Industrial Technology Center of Okayama Prefecture, Japan

Session Title	[S-D1] Microwave and THz photonics
Date and Time	August 22 (Mon.) / 13:30~15:30
Room	Room J (Swan)
Session Organizer	Jungwon Kim (Korea Advanced Institute of Science and Technology) Shilong Pan (Nanjing University of Aeronautics and Astronautics)
Session Chairs	Min Xue (Nanjing University of Aeronautics and Astronautics) Jungwon Kim (Korea Advanced Institute of Science and Technology)

[S-D1-1] 13:30~14:10

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Tadao Nagatsuma
Osaka University, Japan

[S-D1-2] 14:10~14:30

[Invited] Photonics-based Ultra-Low Phase Noise Microwave Generation.....N/A

S. Lecomte, E. Portuondo-Campa, S. Kundermann, and G. Buchs
Centre Suisse d'Electronique et de Microtechnique, Switzerland

[S-D1-3] 14:30~14:50

[Invited] Ultrahigh-Resolution Optical Vector Analysis based on Single-Sideband Modulation.....N/A

Min Xue and Shilong Pan
Nanjing University of Aeronautics and Astronautics, China

[S-D1-4] 14:50~15:10

[Invited] All-Optical Central-Frequency-Programmable and Bandwidth-Tailorable Radar Architecture.....N/A

Weiwen Zou, Siteng Zhang, Kan Wu, and Jianping Chen
Shanghai Jiao Tong University, China

[S-D1-5] 15:10~15:30

[Invited] Optimisation of Fiber-Wireless Networks.....N/A

Ampalavanapillai Nirmalathas, Chaturika Ranaweera, Chamil Jayasundara, Christina Lim, and Elaine Wong
The University of Melbourne, Australia

Session Title	[S-F1] Wave Propagation and Scattering
Date and Time	August 22 (Mon.) / 13:30~15:10
Room	Room K (White Heron)
Session Organizer	Yisok Oh (Hongik University) Yang Du (Zhejiang University)
Session Chair	Yisok Oh (Hongik University)

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Il-Suek Koh¹, Hyung-Ha Yoo¹, Joonsuk Kim², and Yongshik Lee²

¹Inha University, Korea, ²Yonsei University, Korea

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Sinmyong Park and Yisok Oh

Hongik University, Korea

[S-F1-3] 14:10~14:30

[Invited] EM Wave Scattering Characteristics of Mobile and Ground based TACAN.....N/A

Jin-Young Hong

Korea Airport Corporation, Korea

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[Invited] Polarimetric Simulations of Bistatic Scattering from Sea Surfaces at Low Wind Speed at L Band.....N/A

Jingsong Yang, Yang Du, Jiancheng Shi, and Dejun Li

Zhejiang University, China

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Yasuyuki Maekawa

Osaka Electro-Communication University, Japan

Session Title	[S-B2] Reconfigurable Antennas and Miniaturized Antennas
Date and Time	August 22 (Mon.) / 16:00~18:20
Room	Room A (Emerald A)
Session Organizer	Sungjoon Lim (Chung-Ang University)
Session Chair	Sungjoon Lim (Chung-Ang University)

[S-B2-1] 16:00~16:20

[Invited] Microfluidics for Reconfigurable Antenna.....N/A

Muhammad Usman Memon and Yunsik Seo
Chung-Ang University, Korea

[S-B2-2] 16:20~16:40

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Myeongjun Kong¹, Geonyeong Shin¹, Sung-Hee Lee², and Ick-Jae Yoon¹
¹*Chungnam National University, Korea*, ²*Korea Institute of Industrial Technology, Korea*

[S-B2-3] 16:40~17:00

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Macquarie University, Australia

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Susilo Ady Saputro and Jae-Young Chung
Seoul National University of Science and Technology, Korea

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John Patton¹ and Amir I. Zaghloul^{1,2}
¹*Virginia Tech, USA*, ²*US Army Research Lab., USA*

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Seyyedehelnaz Ershadi^{1,2}, Asghar Keshtkar¹, Ahmed H. Abdelrahman², Xiaoju Yu², and Hao Xin²
¹*Imam Khomeini International University, Iran*, ²*University of Arizona, USA*

[S-B2-7] 18:00~18:20

[Invited] On Use of Focusing Media for Elimination of Inverse Problem Ill-Posedness in Microwave Tomography.....188

Vladimir Okhmatovski and Lotfollah Shafai
University of Manitoba, Canada

Session Title	[S-B12b] Novel Mathematical Methods in Electromagnetics (2)
Date and Time	August 22 (Mon.) / 16:00~18:20
Room	Room B (Emerald B)
Session Organizer	Kazuya Kobayashi (Chuo University) Yury Shestopalov (University of Gävle)
Session Chairs	Said Mikki (University of New Haven) Rachid Talhi (CNRS - LPCEE)

[S-B12b-1] 16:00~16:20

[Invited] Physical Fields and Radiations from the Human Body: New Type of Noninvasive Medical Diagnostics.....N/A

Yury V. Gulyaev

Kotel'nikov Institute of Radio-engineering and Electronics, Russian Academy of Sciences, Russia

[S-B12b-2] 16:20~16:40

[Invited] Volume Singular Integro-Differential Equations in the Electromagnetic Diffraction Problem.....192

Yury Smirnov, Aleksei Tsupak, and Dmitry Valovik

Penza State University, Russia

[S-B12b-3] 16:40~17:00

[Invited] Nonlocal Electromagnetics: The Physics of New Behaviour in Engineering Applications.....N/A

Said M. Mikki¹ and Yahia Antar²

¹*University of New Haven, USA*, ²*Royal Military College, Canada*

[S-B12b-4] 17:00~17:20

[Invited] Stochastic Wave Theory Applied to SEISMIC CODA Waves of P (pressure), S (shear), and Rayleigh Surface Waves in Random Media.....N/A

Akira Ishimaru, Yasuo Kuga, and Ce Zhang

University of Washington, USA

[S-B12b-5] 17:20~17:40

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Dmitry Valovik and Yury Smirnov

Penza State University, Russia

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[Invited] Propagation and Scattering of E.M Waves in Complex Media : Numerical Treatment and Some Open Questions.....N/A

Rachid Talhi

CNRS - LPC2E and University of Tours

[S-B12b-7] 18:00~18:20

[Invited] Numerical Modeling of Thick Conducting Irises using FDTD Method-Comparison with the Modified Residue-Calculus Method-.....212

Shota Arai¹, Toshihiko Shibasaki¹, and Teruhiro Kinoshita²

¹*Tokyo Metropolitan College of Industrial Technology, Japan*, ²*Tokyo Polytechnic University, Japan*

Session Title	[S-J2] Science and Technology of the Square Kilometer Array
Date and Time	August 22 (Mon.) / 16:00~18:00
Room	Room C (Diamond)
Session Organizer	Bong-Won Sohn (Korea Astronomy and Space Science Institute) Hideyuki Kobayashi (National Astronomy Observatory of Japan)
Session Chairs	Bong-Won Sohn (Korea Astronomy and Space Science Institute) Hideyuki Kobayashi (National Astronomy Observatory of Japan)

[S-J2-1]	16:00~16:20
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Science with the Square Kilometre Array.....N/A

Jeff Wagg, Robert Braun, Tyler Bourke, and Evan Keane
Square Kilometre Array Organization, UK

[S-J2-2]	16:20~16:40
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[Invited] Radio Astrometry Towards the Nearby Universe with the Square Kilometre Array.....N/A

Hiroshi Imai¹, Ross Burns², Gabor Orosz¹, Yoshiyuki Yamada³, Tahei Yano⁴, Naoteru Gouda⁴, Kotaro Niinuma⁵, and Kenji Bekki⁶

¹Kagoshima University, Japan, ²Joint Institute for VLBI in Europe, Netherlands, ³Kyoto University, Japan, ⁴National Astronomical Observatory of Japan, Japan, ⁵Yamaguchi University, Japan, ⁶University of Western Australia, Australia

[S-J2-3]	16:40~17:00
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[Invited] Recent SKA Related Activities in Korea.....N/A

Bong Won Sohn
Korea Astronomy and Space Science Institute, Korea

[S-J2-4]	17:00~17:20
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[Invited] Recent SKA-Related Activities in Japan.....N/A

Takuya Akahori
Kagoshima University, Japan

[S-J2-5]	17:20~17:40
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[Invited] The Suitability of Cloud, Massive and Moderate Computing Environments for SKA Scale Data.....N/A

Richard Dodson¹, Kevin Vinsen¹, Chen Wu¹, Attila Popping¹, Martin Meyer¹, Andreas Wicenc¹, Peter Quinn¹, Jacqueline van Gorkom², and Emmanuel Momjian³

¹International Centre for Radio Astronomy Research, Australia, ²Columbia University, USA, ³National Radio Astronomy Observatory, USA

[S-J2-6]	17:40~18:00
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[Invited] UAV-Aided Calibration for Commissioning of Phased Array Radio Telescopes.....228

Stefan J. Wijnholds¹, Giuseppe Pupillo², Pietro Bolli², and Giuseppe Virone³

¹Netherlands Institute for Radio Astronomy, Netherlands, ²National Institute for Astrophysics, Italy, ³National Research Council, Italy

Session Title	[S-K1b] Biological Effects of EMF (2)
Date and Time	August 22 (Mon.) / 16:00~18:00
Room	Room D (Convention A)
Session Organizer	Young-Hwan Ahn (Ajou University) Xu Zhengping (Zhejiang University)
Session Chairs	Young-Hwan Ahn (Ajou University) Xu Zhengping (Zhejiang University)

[S-K1b-1] **16:00~16:20**

EM Fields in the Model of Biological Cell.....232

Ö. Hazar, S. S. Şeker, and O. Cerezci
Bogazici University

[S-K1b-2] **16:20~16:40**

Investigations on the Biological Effects of Wearable Antennas at UHF and UWB Frequencies Utilizing Infra-red Thermography.....N/A

Varshini Karthik and T.Rama Rao
SRM University, India

[S-K1b-3] **16:40~17:00**

Analysis of Temperature Elevation on Human Body at 60 GHz with Antipodal Linear Tapered Slot Antenna.....N/A

T. Rama Rao and Purva Shrivastava
SRM University, India

[S-K1b-4] **17:00~17:20**

Biochemical and Morphological Changes of Rat brain Cells Chronically Exposed to Microwave Radiation.....N/A

Paulraj R.¹ and J. Behari²
¹*Jawaharlal Nehru University, India*, ²*Amity University, India*

[S-K1b-5] **17:20~17:40**

Extremely Low-Frequency Electromagnetic Fields Promote in Vitro Neuronal Differentiation and Neurite Outgrowth of Embryonic Neural Stem Cells via Up-Regulating TRPC1.....N/A

Qinlong Ma, Chunhai Chen, Ping Deng, Lei Zhang, Shangcheng Xu, and Zhou Zhou
Third Military Medical University, China

[S-K1b-6] **17:40~18:00**

Hints of Media: An Experimental Study of Effect of Media Warnings About Health Hazards of MP Use on Self-Reported Symptoms.....N/A

Feizhou Zheng, Peng Gao, Mindi He, and Lei Zhang
Third Military Medical University, China

Session Title	[C1] Spectrum Engineering Technology
Date and Time	August 22 (Mon.) / 16:00~17:20
Room	Room E (Convention B)
Session Chair	Feng Zhang (Beijing Institute of Technology)

[C1-1]	16:00~16:20
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Worst Case Signal to Interference Ratio using Different Beamforming Techniques for Frequency Reuse Cellular Systems.....N/A

Osama H. Elgzar¹, Imbaby I. Mahmoud¹, Sherief M. Hashima¹, and H. A. Konber²
¹Egyptian Atomic Energy Authority, Egypt, ²Al Azhar University, Egypt

[C1-2]	16:20~16:40
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Analysis of Downlink Sectored Frequency Reuse Cellular Systems Combined with Different Beamforming Techniques.....N/A

Osama Elgzar¹, Imbaby Mahmoud¹, Sherief Hashima¹, and Hussien Konber²
¹Egyptian Atomic Energy Authority, Egypt, ²Al Azhar University, Egypt

[C1-3]	16:40~17:00
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Frequency Interference Test-Bed Considering both Interferer's Frequency and Time Domain Parameters.....266

Jisu Yun¹, Jin-Soo Park¹, Hyungoo Yoon², and Byung-Jun Jang¹
¹Kookmin University, Korea, ²Myongji College, Korea

[C1-4]	17:00~17:20
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Analysis of Clustered SC-FDMA Intermodulation Distortion on LTE Spectrum.....269

Heechang Seong, Seongsoo Bae, Seungmo Cho, and Jinhyo Park
SK Telecom, Korea

Session Title	[S-C4] Radio Localization Techniques
Date and Time	August 22 (Mon.) / 16:00~17:40
Room	Room F (Convention C)
Session Organizer	Dongsoo Han (Korea Advanced Institute of Science and Technology) Sunwoo Kim (Hanyang University)
Session Chairs	Dongsoo Han (Korea Advanced Institute of Science and Technology) Sunwoo Kim (Hanyang University)

[S-C4-1] 16:00~16:20

[Invited] Performance Evaluation of Maring Beacons for Ship Indoor Positioning System.....N/A

Taehyun Park and Hyuk-Soon Kwon
NET Co., Ltd, Korea

[S-C4-2] 16:20~16:40

[Invited] Kalman Tracking of Mobile Devices Considering Range-Free Localization Accuracy.....274

Hyowon Kim, Jaehoon Lee, Junhyuk Kim, and Sunwoo Kim
Hanyang University, Korea

[S-C4-3] 16:40~17:00

[Invited] Hierarchical Asset Tracking System using IEEE 802.15.4a Radio in Container Terminals.....276

Sanghyun Son, Beomjun Kim, Heejin Park, and Yunju Baek
Pusan National University, Korea

[S-C4-4] 17:00~17:20

[Invited] A Method of Single-Direction Calibration for Accurate DoA Estimation.....N/A

Gangil Byun¹, Haengik Kang², Seungmok Han², and Hosung Choo¹
¹*Hongik University, Korea,* ²*LIG NEXI Co., Ltd, Korea*

[S-C4-5] 17:20~17:40

[Invited] Cellular Based Non-Line-of-Sight Positioning.....N/A

Jai Hyung Cho
Electronics and Telecommunications Research Institute, Korea

Session Title	[S-G3] Radar Probing for the Ionospheric Variability
Date and Time	August 22 (Mon.) / 16:00~18:00
Room	Room G (Convention D)
Session Organizer	Young-Sil Kwak (Korea Astronomy and Space Science Institute) Yuichi Otsuka (Nagoya University)
Session Chairs	Young-Sil Kwak (Korea Astronomy and Space Science Institute) Yuichi Otsuka (Nagoya University)

[S-G3-1] 16:00~16:20

[Invited] Irregularity Observation with Multiple VHF Coherent Radars in China.....285

Guozhu Li¹, Baiqi Ning¹, Jinsong Chen², and Chen Zhou³

¹Chinese Academy of Sciences, China, ²Research Institute of Radio Wave Propagation, China, ³Wuhan University, China

[S-G3-2] 16:20~16:40

[Invited] Study of Magnetosphere-Ionosphere-Thermosphere Coupling Processes using the SuperDARN Hokkaido Pair of (HOP) Radars.....N/A

Nozomu Nishitani

Nagoya University, Japan

[S-G3-3] 16:40~17:00

[Invited] The Daejeon 40.8 MHz VHF Radar Observations of the E- and F-Region Field-Aligned Irregularities in the Middle Latitude.....N/A

Young-Sil Kwak^{1,2}, Tae-Yong Yang^{1,2}, and Hyosub Kil³

¹Korea Astronomy and Space Science Institute, Korea, ²University of Science and Technology, Korea, ³The Johns Hopkins University Applied Physics Laboratory, USA

[S-G3-4] 17:00~17:20

[Invited] Study of Ionospheric Field-Aligned Irregularity over Japan by using the MU Radar and Other Instruments.....N/A

Mamoru Yamamoto

Kyoto University, Japan

[S-G3-5] 17:20~17:40

[Invited] The Case Study on the Causal Relationship of the Occurrence of the Electron Density Irregularities in the Middle-Latitude F-Region Observed by VHF Radar in Korea.....N/A

Seung Jun Oh¹, Hyosub Kil², Young-Sil Kwak³, and Taeyong Yang³

¹SELab, Inc., Korea, ²The Johns Hopkins University Applied Physics Laboratory, USA, ³Korea Astronomy and Space Science Institute, Korea

[S-G3-6] 17:40~18:00

[Invited] Simultaneous Imaging Observations of Post-Midnight Field-Aligned Irregularities and 630-nm Airglow.....N/A

Yuichi Otsuka¹, Tam Dao¹, and Kazuo Shiokawa¹, and Mamoru Yamamoto²

¹Nagoya University, Japan, ²Kyoto University, Japan

Session Title	[S-H2] Generation and Characteristics of Waves in Space
Date and Time	August 22 (Mon.) / 16:00~18:00
Room	Room H (Convention E)
Session Organizer	Dae-Young Lee (Chungbuk National University) Ensang Lee (Kyung Hee University)
Session Chairs	Dae-Young Lee (Chungbuk National University) Ensang Lee (Kyung Hee University)

[S-H2-1] 16:00~16:20

[Invited] Characteristics of Nonlinear Waves in Space Plasmas: Accuracy Issues.....N/A

Dong-Hun Lee¹, Kyung-Im Kim¹, Jaehun Kim¹, KiChang Yoon², and Young Yun Kim²

¹Kyung Hee University, Korea, ²Korean Space Weather Center, Korea

[S-H2-2] 16:20~16:40

[Invited] Linear and Nonlinear Theory of Upper-Hybrid Wave Excitation in the Auroral Ionosphere.....N/A

Peter Yoon^{1,2}

¹University of Maryland, USA, ²Kyung Hee University, Korea

[S-H2-3] 16:40~17:00

[Invited] Magnetosonic Wave Discrete and Continuous Spectrum Characteristics.....N/A

Lunjin Chen¹, Jicheng Sun², Quanming Lu², and Xinliang Gao²

¹University of Texas, USA, ²University of Science and Technology of China, China

[S-H2-4] 17:00~17:20

[Invited] Generation of Non-Propagating Alfvénic Electromagnetic Plasma Structures by Nonlinear Interaction of Alfvén Wave Packets and the Acceleration of Auroral Particles.....N/A

Yan Song and Robert L. Lysak

University of Minnesota, USA

[S-H2-5] 17:20~17:40

[Invited] Nonlinear Generation Mechanisms of Whistler-Mode Chorus and Hiss Emissions.....N/A

Yoshiharu Omura

Kyoto University, Japan

[S-H2-6] 17:40~18:00

[Invited] MHD Waves in the Solar Corona.....N/A

Valery M. Nakariakov^{1,2}

¹University of Warwick, UK, ²Kyung Hee University, Korea

Session Title	[S-E2] Signal Integrity and EMI of Chip, Package, and PCB
Date and Time	August 22 (Mon.) / 16:00~18:00
Room	Room I (Crane)
Session Organizer	Joungho Kim (Korea Advanced Institute of Science and Technology) Wen-Yan Yin (Zhejiang University)
Session Chair	Seungyoung Ahn (Korea Advanced Institute of Science and Technology)

[S-E2-1] 16:00~16:40

[Keynote] Pulsed Antennas for Applications in High-Power Electromagnetics (HPEM).....N/A

D. V. Giri
University of New Mexico, USA

[S-E2-2] 16:40~17:00

[Invited] PCB-Package to Chip Wireless Power Transfer using Magnetic-Field Resonance Coupling for Area and Cost Reduction in 3-D IC.....N/A

Jinwook Song, Seungtak Jung, Shinyoung Park, Hongseok Kim, and Joungho Kim
Korea Advanced Institute of Science and Technology, Korea

[S-E2-3] 17:00~17:20

[Invited] An Efficient Crosstalk-Included Eye-Diagram Estimation Method using Equivalent Circuit Model of Coupled Microstrip Channel for 2.5D and 3D IC.....N/A

Sumin Choi, Heegon Kim, Daniel H. Jung, Jonghoon J. Kim, Jaemin Lim, Hyunsuk Lee, Kyungjun Cho, and Joungho Kim
Korea Advanced Institute of Science and Technology, Korea

[S-E2-4] 17:20~17:40

Wireless Power and Data Transfer System for Internet of Things Over Metal Walls and Metal Shielded Environments.....318

Sai Kiran Oruganti, Olzhas Kaiyrakhmet, and Franklin Bien
Ulsan National Institute of Science and Technology, Korea

[S-E2-5] 17:40~18:00

Conductive RFI Noise Reduction using Antenna Ground Isolation for Mobile Devices.....N/A

Jaejin Lee, Hao-han Hsu, Joseph Chen, and Ying Ern Ho
Intel Corporation, USA

Session Title	[S-D3] Terahertz Electronics and Photonics
Date and Time	August 22 (Mon.) / 16:00~18:00
Room	Room J (Swan)
Session Organizer	Jae-Sung Rieh (Korea University) Minoru Fujishima (Hiroshima University)
Session Chairs	Jae-Sung Rieh (Korea University) Minoru Fujishima (Hiroshima University)

[S-D3-1] 16:00~16:20

[Invited] Transistor-based Electronic THz Sources and Detectors.....N/A

Jae-Sung Rieh
Korea University, Korea

[S-D3-2] 16:20~16:40

[Invited] 20-Gbit/s ASK Wireless System in 300-GHz-Band and Front-Ends with InP MMICs.....326

Hiroshi Hamada¹, Toshihiko Kosugi¹, Ho-Jin Song¹, Hideaki Matsuzaki¹, Amine El Moutaouakil¹, Hiroki Sugiyama¹, Makoto Yaita¹, Takuro Tajima¹, Hideyuki Nosaka¹, Osamu Kagami¹, Yoichi Kawano², Tsuyoshi Takahashi², Yasuhiro Nakasha², Naoki Hara², Katsumi Fujii³, Issei Watanabe³, and Akifumi Kasamatsu³
¹NTT Corporation, Japan, ²Fujitsu Limited, Japan, ³National Institute of Information and Communications Technology, Japan

[S-D3-3] 16:40~17:00

[Invited] Channel Allocation of 300GHz Band for Fiber-Optic-Speed Wireless Communication.....330

Minoru Fujishima
Hiroshima University, Japan

[S-D3-4] 17:00~17:20

[Invited] Giant THz Electric Field Enhancement.....N/A

Salvatore Bagiante¹, Hans Sigg¹, Yannik Waeber², and Thomas Feurer²
¹Paul Scherrer Institute, Switzerland, ²University of Bern, Switzerland

[S-D3-5] 17:20~17:40

[Invited] Nonlinear Terahertz-Wave Generation using Graphene Metadevices.....N/A

Chihun In^{1,2} and Hyunyong Choi¹
¹Yonsei University, Korea, ²Korea Atomic Energy Research Institute, Korea

[S-D3-6] 17:40~18:00

[Invited] Graphene-Ferroelectric Memory Metadevices.....N/A

Woo Young Kim¹, Hyeon-Don Kim¹, Teun-Teun Kim¹, Hyun-Sung Park¹, Kanghee Lee¹, Hyun Joo Choi¹, Seung Hoon Lee¹, Jaehyeon Son¹, Bumki Min¹, and Namkyoo Park²
¹Korea Advanced Institute of Science and Technology, Korea, ²Seoul National University, Korea

Session Title	[S-F2a] Remote Sensing for Land and Sea (1)
Date and Time	August 22 (Mon.) / 16:00~18:00
Room	Room K (White Heron)
Session Organizer	Duk-Jin Kim (Seoul National University) Kazuo Ouchi (National Defense Academy)
Session Chair	Duk-Jin Kim (Seoul National University)

[S-F2a-1] **16:00~16:20**

[Invited] Global Surface Soil Moisture Monitoring with L-band Spaceborne Monostatic Synthetic Aperture Radar.....N/A

S. Kim¹, A. Colliander¹, J. van Zyl¹, S. Yueh¹, and D. Entekhabi²
¹Jet Propulsion Laboratory, USA, ²Massachusetts Institute of Technology, USA

[S-F2a-2] **16:20~16:40**

[Invited] Seasonal Changes of ALOS PALSAR Polarimetric Signatures in Eastern Siberia.....N/A

Sang-Eun Park
 Sejong University, Korea

[S-F2a-3] **16:40~17:00**

[Invited] A Long Baseline Airborne SAR Interferometry for Tidal Flat Mapping.....350

Duk-jin Kim, Jungkyo Jung, Changhyun Choi, Ki-mook Kang, Seung Hee Kim, and Ji-Hwan Hwang
 Seoul National University, Korea

[S-F2a-4] **17:00~17:20**

[Invited] A Co-Polarization Ratio-Based Parameter for Urban Man-made Target Detection.....N/A

Junjun Yin¹ and Jian Yang²
¹University of Science and Technology Beijing, China, ²Tsinghua University, China

[S-F2a-5] **17:20~17:40**

[Invited] Flooding Area Detection By ALOS-2 Fully Polarimetric Data.....357

Yoshio Yamaguchi, Nana Takahashi, and Hiroyoshi Yamada
 Niigata University, Japan

[S-F2a-6] **17:40~18:00**

[Invited] Urban Growth Extraction using Landsat Time Series Data and Random Forest Classifier: A Case Study of Beijing Area.....N/A

Peijun Li¹ and Jun Zhang²
¹Peking University, China, ²National Geomatics Center of China, China

Session Title	[S-B3] Groundwave Propagation Modeling, Simulation and Measurement
Date and Time	August 23 (Tue.) / 08:30~09:50
Room	Room A (Emerald A)
Session Organizer	Il-Suek Koh (Inha University) Levent Sevgi (Okan University)
Session Chair	Il-Suek Koh (Inha University)

[S-B3-1] **08:30~08:50**

[Invited] Analysis of Inverse Source Algorithms for Different Propagation Mechanisms.....N/A

Zeina El-Ahdab, Funda Akleman, and Özgür Özdemir
Istanbul Technical University, Turkey

[S-B3-2] **08:50~09:10**

[Invited] Mechanism of Radio Wave Propagation in Cellular Wireless Communication.....N/A

Tapan K Sarkar¹ and Magdalena Salazar Palma²
¹Syracuse University, USA, ²University Carlos III, Spain

[S-B3-3] **09:10~09:30**

[Invited] Propagation Characteristics Prediction and Experimental Measurement of LF Radio Waves Near the Earth Surface.....N/A

Lili Zhou^{1,2}, Xiaoli Xi², Yurong Pu², and Dandan Wang²
¹Shaanxi University of Science and Technology, China, ²Xi'an University of Technology, China

[S-B3-4] **09:30~09:50**

[Invited] Frequency Characteristics of Changes in Received Levels by Human Body Blockage in Indoor Environment.....373

Koshiro Kitao, Ngochao Tran, Tetsuro Imai, and Yukihiko Okumura
NTT Docomo, Inc., Japan

Session Title	[S-B12c] Novel Mathematical Methods in Electromagnetics (3)
Date and Time	August 23 (Tue.) / 08:30~10:30
Room	Room B (Emerald B)
Session Organizer	Kazuya Kobayashi (Chuo University) Yury Shestopalov (University of Gävle)
Session Chairs	Tadashi Takano (Nihon University) Debatosh Guha (University of Calcutta)

[S-B12c-1] **08:30~08:50**

[Invited] Generation of a Beamed Wave using a Phased Array Antenna.....377

Tadashi Takano, Takashi Uno, Kuniaki Shibata, and Kenji Saegusa
Nihon University, Japan

[S-B12c-2] **08:50~09:10**

[Invited] Rigorous Calculation of Scattered Field by Conductive Disk using Multiple Precision Arithmetic -Calculation Precision and Parameter Selection-.....380

Takashi Kuroki¹, Keisuke Fukunaga¹, Toshihiko Shibazaki¹, and Teruhiro Kinoshita²
¹Tokyo Metropolitan College of Industrial Technology, Japan, ²Tokyo Polytechnic University, Japan

[S-B12c-3] **09:10~09:30**

[Invited] Measurement and Visualization of Radio Waves Incident on Thin Metamaterial Absorber.....384

Satoshi Yagitani¹, Mitsunori Ozaki¹, Tomohiko Imachi¹, Ryohei Hayashi¹, Ryohei Kanaura¹, Yoshiyuki Yoshimura², and Hirokazu Sugiura²
¹Kanazawa University, Japan, ²Industrial Research Institute of Ishikawa, Japan

[S-B12c-4] **09:30~09:50**

[Invited] New Theory for Fabry-Perot Cavity Antenna.....N/A

Debatosh Guha¹, Koushik Dutta², and Chandrakanta Kumar³
¹University of Calcutta, India, ²Netaji Subhash Engineering College, India, ³Indian Space Research Organisation, India

[S-B12c-5] **09:50~10:10**

[Invited] Anharmonic Microwaves in Nonlinear Gradient Transmission Lines.....N/A

A. B. Shvartsburg^{1,2,3}, N. V. Silin³, and Iu. G. Nesterov³
¹Joint Institute for High Temperatures, Russia, ²Institute for Space Researches, Russia, ³Far Eastern Federal University, Russia

[S-B12c-6] **10:10~10:30**

[Invited] Composites with Radially Anisotropic Cylinders.....394

Henrik Wallén and Ari Sihvola
Aalto University, Finland

Session Title	[S-J3] Science and Technology of Atacama Large Millimeter/ Submillimeter Array
Date and Time	August 23 (Tue.) / 08:30~10:30
Room	Room C (Diamond)
Session Organizer	Jongsoo Kim (Korea Astronomy and Space Science Institute) Satoru Iguchi (National Astronomy Observatory of Japan)
Session Chairs	Jongsoo Kim (Korea Astronomy and Space Science Institute) Satoru Iguchi (National Astronomy Observatory of Japan)

[S-J3-1] 08:30~09:10

[Keynote] Development of Highly Sensitive Superconducting Receivers for ALMA Band 10 and Future Prospects.....N/A

Y. Uzawa^{1,2}, K. Makise¹, S. Saito¹, H. Terai¹, Z. Wang¹, T. Kojima², M. Kroug², Y. Fujii², A. Gonzalez², and K. Kaneko²

¹National Institute of Information and Communications Technology, Japan, ²National Astronomical Observatory of Japan, Japan

[S-J3-2] 09:10~09:30

[Invited] East Asian ALMA Future Development.....N/A

Daisuke Iono, Satoru Iguchi, and Shin'ichiro Asayama
National Astronomical Observatory of Japan, Japan

[S-J3-3] 09:30~09:50

[Invited] The Atacama Large Millimeter/Submillimeter Array (ALMA) Band-1 Receiver.....N/A

Yau De(Ted) Huang, Oscar Morata, Patrick Michel Koch, Ciska Kemper, Yuh-Jing Hwang, Chau-Ching Chiong, Eddie Huang, Bill Liu, Shou-Hsien Weng, Chin-Ting Ho, Po-Han Chiang, Hsiao-Ling Wu, Chih-Cheng Chang, Shou-Ting Jian, Chien-Feng Lee, Yi-Wei Lee, Satoru Iguchi, Shin'ichiro Asayama, Daisuke Iono, Alvaro Gonzalez, John Effland, Kamaljeet Saini, Marian Pospieszalski, Doug Henke, Keith Yeung, Ricardo Finger, Valeria Tapia, and Nicolas Reyes

Institute of Astronomy and Astrophysics, Academia Sinica, Taiwan

[S-J3-4] 09:50~10:10

ALMA Band 2 Optics: Design, Constraints, Implementation and Measurements.....N/A

Sivasankaran Srikanth and Alvaro Gonzalez

¹National Radio Astronomy Observatory, USA, ²National Astronomical Observatory of Japan, Japan

[S-J3-5] 10:10~10:30

[Invited] ASTE Focal Plane Array as Prototype FPA for ALMA TP Array.....412

Jung-Won Lee¹, Do-Heung Je¹, Bangwon Lee¹, Hyunwoo Kang¹, Jongsoo Kim¹, Jan Wagner¹, Shin'ichiro Asayama², Alvaro Gonzalez², Matthias Kroug², Takafumi Kojima², Wenlei Shan², Satoru Iguchi², and Daisuke Iono²

¹Korea Astronomy and Space Science Institute, Korea, ²National Observatory of Japan, Japan

Session Title	[S-K2a] Exposure Assessment and EMF Standards (1)
Date and Time	August 23 (Tue.) / 08:30~10:30
Room	Room D (Convention A)
Session Organizer	Soichi Watanabe (National Institute of Information and Communications Technology) Niels Kuster (ETH Zurich)
Session Chairs	Lira Hamada (National Institute of Information and Communications Technology) Niels Kuster (ETH Zurich)

[S-K2a-1] **08:30~08:50**

[Invited] Development of Multi-Band Personal Dosimeter for RF and ELF Exposure Monitoring.....414

J. H. Hwang, S. I. Kwak, J. H. Kwon, and H. D. Choi
Electronics and Telecommunications Research Institute, Korea

[S-K2a-2] **08:50~09:10**

[Invited] Technical and Biological Electromagnetic Field Assessment for RF Safety Standard Regulation and Harmonization.....N/A

Sergey Perov¹, Quirino Balzano², and Niels Kuster³
¹*Research Institute of Occupational Health, Russia*, ²*University of Maryland, USA*, ³*Foundation for Research on Information Technologies in Society, Switzerland*

[S-K2a-3] **09:10~09:30**

[Invited] Hygienic Standardization of EMF in the Russian Federation. History, Modern State, Perspectives.....N/A

N. B. Rubtsova
Research Institute of Occupational Health, Russia

[S-K2a-4] **09:30~09:50**

[Invited] Application of the Specific Absorption Rate measurement for base station antennas.....N/A

Takahiro Iyama¹, Teruo Onishi¹, Yoshiaki Tarusawa¹, Lira Hamada², and Soichi Watanabe²
¹*NTT Docomo, Inc., Japan*, ²*National Institute of Information and Communications Technology, Japan*

[S-K2a-5] **09:50~10:10**

[Invited] Compliance Evaluations for Radio Regulations of the Human Exposure in Japan.....N/A

Lira Hamada and Soichi Watanabe
National Institute of Information and Communications Technology, Japan

[S-K2a-6] **10:10~10:30**

[Invited] Past, Present, and Future of SAR Evaluations.....426

Mark Douglas¹, Niels Kuster^{1,2}, and Katja Pokovic³
¹*ITIS Foundation, Switzerland*, ²*Swiss Federal Institute of Technology, Switzerland*, ³*Schmid & Partner Engineering AG, Switzerland*

Session Title	[S-C6] IoT and green communications
Date and Time	August 23 (Tue.) / 08:30~10:30
Room	Room F (Convention C)
Session Organizer	Byounghyo Shim (Seoul National University)
Session Chair	Byounghyo Shim (Seoul National University)

[S-C6-1] **08:30~08:50**

[Invited] Internet of Things Localizaton: Matrix Completion Approach.....N/A

Luong Trung Nguyen, Sangtae Kim, and Byonghyo Shim
Seoul National University, Korea

[S-C6-2] **08:50~09:10**

[Invited] Dynamic Multi-User Detection Based on Structured Compressive Sensing for IoT-Oriented 5G Systems.....431

Bichai Wang, Talha Mir, Ruicheng Jiao, and Linglong Dai
Tsinghua University, China

[S-C6-3] **09:10~09:30**

[Invited] Crosstalk-Free Magnetic MIMO Communication using Heterogeneous Antenna Array.....N/A

Han-Joon Kim and Ji-Woong Choi
Daegu Gyeongbuk Institute of Science & Technology, Korea

[S-C6-4] **09:30~09:50**

[Invited] Time-Switching Based In-Band Full Duplex Wireless Powered Two-Way Relay.....438

Jong Jin Park, Jong Ho Moon, and Dong In Kim
Sungkyunkwan University, Korea

[S-C6-5] **09:50~10:10**

[Invited] Energy Signal Design and Decoding Procedure for Full-Duplex Two-Way Wireless Powered Relay.....442

Jong Ho Moon, Jong Jin Park, and Dong In Kim
Sungkyunkwan University, Korea

[S-C6-6] **10:10~10:30**

[Invited] Opportunistic Transmission and Harvesting in RF Powered Cognitive Radio Network.....N/A

Shanai Wu, Yoan Shin, Jin Young Kim, and Dong In Kim
¹Soongsil University, Korea, ²Kwangwoon University, Korea, ³Sungkyunkwan University, Korea

Session Title	[S-G2] Ionospheric Density Variability in the Polar Region
Date and Time	August 23 (Tue.) / 08:30~10:30
Room	Room G (Convention D)
Session Organizer	Geonhwa Jee (Korea Polar Research Institute) Qian Wu (National Center for Atmospheric Research)
Session Chairs	Geonhwa Jee (Korea Polar Research Institute) Qian Wu (National Center for Atmospheric Research)

[S-G2-1] 08:30~08:50

[Invited] CCMC High-Latitude Driver Swapping Tool for MI Coupling Study - Preliminary Results.....N/A

J. S. Shim¹, M. Kuznetsova², and L. Rastaetter²

¹CUA/NASA GSFC, USA, ²NASA/GSFC, USA

[S-G2-2] 08:50~09:10

[Invited] New Results from High Latitude Thermospheric Wind Observation and Simulation.....N/A

Qian Wu¹, Geonhwa Jee², Changsup Lee², and William Ward³

¹National Center for Atmospheric Research, USA, ²Korea Polar Research Institute, Korea, ³University of New Brunswick, Canada

[S-G2-3] 09:10~09:30

[Invited] The Variation of Electron Temperature and Density Induced by Ionospheric Heating Near Fifth Electron Gyrofrequency.....N/A

Jun Wu, Jian Wu, Haisheng zhao, and Zhengwen Xu

China Research Institute of Radio Wave Propagation, China

[S-G2-4] 09:30~09:50

[Invited] Magnetospheric and Ionospheric Responses to the Passage of the Interplanetary Shock.....N/A

Hyuck-Jin Kwon¹, Khan-Hyuk Kim², Su-in Kim², Nozomu Nishitani³, and Tomoaki Hori³

¹Korea Polar Research Institute, Korea, ²Korea, ³Kyung-Hee University, Korea ³Nagoya University, Japan

[S-G2-5] 09:50~10:10

[Invited] The First Korean Antarctic Ionosonde for Ionospheric Studies in the Polar Cap Region.....N/A

Changsup Lee¹, Geonhwa Jee¹, Jeong-Han Kim¹, HyuckJin Kwon¹, Young-Bae, Ham¹, Terry Bullett², Nikolay Zabolotin², and Robert Livingston³

¹Korea Polar Research Institute, Korea, ²University of Colorado, USA, ³Scion Associates, USA

[S-G2-6] 10:10~10:30

[Invited] Dynamics of the Neutral Thermosphere: Probing Coupling Between the Mesopause and Lower Thermosphere.....N/A

William E. Ward¹, Qian Wu², Marianna Shepherd³, Wayne Hocking⁴, Alan Manson⁵, Chris Meek⁵, Sam Kristoffersen¹, Chris Vail¹, and Caroline Gi⁴

¹University of New Brunswick, Canada, ²National Center for Atmospheric Research, USA, ³York University, Canada, ⁴Western University, Canada, ⁵University of Saskatchewan, Canada

Session Title	[S-H3a] Radio Science for Space Weather (1)
Date and Time	August 23 (Tue.) / 08:30~09:50
Room	Room H (Convention E)
Session Organizer	Viviane Pierrard (Belgian Institute for Space Aeronomy) Mauro Messerotti (INAF–Astronomical Observatory of Trieste)
Session Chairs	Yuriy Voitenko (Royal Belgian Institute for Space Aeronomy) Mauro Messerotti (INAF–Astronomical Observatory of Trieste)

[S-H3a-1] 08:30~08:50

[Invited] Radio Science for Space Weather.....459

Mauro Messerotti
University of Trieste, Italy

[S-H3a-2] 08:50~09:10

[Invited] Role of Solar Radio Observations in Space Weather.....N/A

Dale E. Gary
New Jersey Institute of Technology, USA

[S-H3a-3] 09:10~09:30

[Invited] Radio Imaging and Spectroscopy Tools for Space Weather Applications.....N/A

Nicole Vilmer
LESIA-Paris Observatory, France

[S-H3a-4] 09:30~09:50

[Invited] Low-Frequency Radio Bursts and Space Weather.....471

N. Gopalswamy
NASA Goddard Space Flight Center, USA

Session Title	[S-A1] EM Basic Metrology
Date and Time	August 23 (Tue.) / 08:30~10:30
Room	Room I (Crane)
Session Organizer	Tae-Weon Kang (Korea Research Institute of Standards and Science) Shan Yueyan (Agency for Science, Technology and Research)
Session Chair	Tae-Weon Kang (Korea Research Institute of Standards and Science)

[S-A1-1] **08:30~08:50**

[Invited] Waveguide Microcalorimeters for Millimeter-wave Power Standards.....N/A

Jae-Yong Kwon^{1,2}, Tae-Weon Kang^{1,2}, and No-Weon Kang¹

¹Korea Research Institute of Standards and Science, Korea, ²University of Science and Technology, Korea

[S-A1-2] **08:50~09:10**

[Invited] Development of a National WR-10 (75 to 110 GHz) Microcalorimeter.....478

Xiaohai Cui¹, Wenze Yuan¹, Yong Li¹, Chao Jia¹, and Yu Song Meng²

¹National Institute of Metrology, China, ²Agency for Science, Technology and Research, Singapore

[S-A1-3] **09:10~09:30**

[Invited] Evaluation of Verification Devices with Precise Probe Measurement System in NMIJ.....481

Ryo Sakamaki and Masahiro Horibe

National Institute of Advanced Industrial Science and Technology, Japan

[S-A1-4] **09:30~09:50**

[Invited] Connector Conversion Technique for General-Purpose Connectors in S-parameter Calibration.....483

Shintaro Nakamura¹, Ryoko Kishikawa², Keiko Sato¹, and Masahiro Horibe²

¹Japan Quality Assurance Organization, Japan, ²National Institute of Advanced Industrial Science and Technology, Japan

[S-A1-5] **09:50~10:10**

Connection Repeatability of Waveguide Verification Standards for VNA System.....485

Nosherwan Shoaib¹, Marco Sellone², Luciano Brunetti², and Luca Oberto²

¹Petroleum Institute, United Arab Emirates, ²Istituto Nazionale di Ricerca Metrologica, Italy

[S-A1-6] **10:10~10:30**

[Invited] Measurement of Traceable Error Vector Magnitude using a Real-Time Digital Oscilloscope.....N/A

Chihyun Cho, Dongju Kim, and Joo-Gawng Lee

Korea Research Institute of Standards and Science, Korea

Session Title	[S-D2] Ultrafast Photonics
Date and Time	August 23 (Tue.) / 08:30~10:30
Room	Room J (Swan)
Session Organizer	Uwe Griebner (Max Born Institute) Fabian Rotermund (Korea Advanced Institute of Science and Technology)
Session Chairs	Uwe Griebner (Max Born Institute) Fabian Rotermund (Korea Advanced Institute of Science and Technology)

[S-D2-1] 08:30~08:50

[Invited] Bulk-Structured Topological Insulators for 2- μ m Pulsed Fiber Lasers.....N/A

Ju Han Lee, Joonhoi Koo, and Junsu Lee
University of Seoul, Korea

[S-D2-2] 08:50~09:10

[Invited] Research on Graphene Optical Devices for Ultrafast Fiber Laser Applications.....N/A

Dong-II Yeom
Ajou University, Korea

[S-D2-3] 09:10~09:30

[Invited] High-Energy, kilohertz Repetition Rate Ho:YLF Regenerative Amplifiers at 2050 nm.....N/A

Uwe Griebner, Lorenz von Grafenstein, Martin Bock, and Thomas Elsaesser
Max Born Institute, Germany

[S-D2-4] 09:30~09:50

[Invited] Femtosecond Lasers for Precision Metrology in Space.....N/A

Young-Jin Kim¹ and Seung-Woo Kim²
¹*Nanyang Technological University, Singapore*, ²*Korea Advanced Institute of Science and Technology, Korea*

[S-D2-5] 09:50~10:10

[Invited] Development of Yb:KGW Femtosecond Laser System for Industrial Applications.....N/A

G. H. Kim¹, J. Yang¹, B. Lee¹, S. A. Chizhov¹, E. G. Sall¹, and V. E. Yashin²
¹*Korea Electrotechnology Research Institute, Korea*, ²*State Optical Institute, Russia*

[S-D2-6] 10:10~10:30

[Invited] Broadband Photoresponse of Novel Ultrafast Optical Materials.....N/A

Fengqiu (Frank) Wang
Nanjing University, China

Session Title	[S-F2b] Remote Sensing for Land and Sea (2)
Date and Time	August 23 (Tue.) / 08:30~09:50
Room	Room K (White Heron)
Session Organizer	Duk-Jin Kim (Seoul National University) Kazuo Ouchi (National Defense Academy)
Session Chair	Yoshio Yamaguchi (Niigata University)

[S-F2b-1] 08:30~08:50

Polarimetric SAR Scattering Mechanism Modeling and Interpretation for Urban Damage Level Mapping.....N/A

Si-Wei Chen and Xue-Song Wang
National University of Defense Technology, China

[S-F2b-2] 08:50~09:10

Experimental Study on Polarimetric Scattering for Grasping State of Stricken Bridge.....507

R. Sato, T. Yajima, M. Masaka, Y. Yamaguchi, and H. Yamada
Niigata University, Japan

[S-F2b-3] 09:10~09:30

Coherence Change Detection using Temporal Decorrelation Model for Multi-temporal SAR Data.....N/A

Jungkyo Jung and Duk-jin Kim
Seoul National University

[S-F2b-4] 09:30~09:50

Fundamental Study on Multi-baseline SAR Tomography by Pi-SAR-L2.....514

Fumiki Urasawa, Hiroyoshi Yamada, Yoshio Yamaguchi, and Ryoichi Sato
Niigata University, Japan

Session Title	[S-B4] Metamaterials & FSS
Date and Time	August 23 (Tue.) / 13:30~15:30
Room	Room A (Emerald A)
Session Organizer	Sungtek Kahng (Incheon National University) Hisamatsu Nakano (Hosei University)
Session Chairs	Sungtek Kahng (Incheon National University) Junji Yamauchi (Hosei University)

[S-B4-1] 13:30~13:50

[Invited] Circularly Polarized Reconfigurable Metaline Antenna.....516

H. Nakano, T. Yoshida, K. Anjo, K. Sakata, Y. Kameta, and J. Yamauchi
Hosei University, Japan

[S-B4-2] 13:50~14:10

[Invited] Recent Topic of Magnet-Less Non-Reciprocal Metamaterial, Performance Enhancement and Antenna Application.....518

Toshiro Kodaera
Meisei University, Japan

[S-B4-3] 14:10~14:30

[Invited] Dispersion Engineering of Nonreciprocal Metamaterials and Their Applications to Leaky Wave Antennas.....522

Tetsuya Ueda¹ and Tatsuo Itoh²
¹*Kyoto Institute of Technology, Japan*, ²*University of California, USA*

[S-B4-4] 14:30~14:50

[Invited] Investigating Electromagnetic Power Transfer Ratio of Circular Polarizing Planar Metasurface Lens.....524

M. K. Khattak¹, C. Lee¹, D. Han¹, S. Kahng¹, and K. Kahng²
¹*Incheon National University, Korea*, ²*Acetechonology, Korea*

[S-B4-5] 14:50~15:10

[Invited] Effective Modeling Method of Metamaterials in FDTD Method by Utilizing Surface Impedance Boundary Conditions.....N/A

Takuji Arima, Masahiro Gunji, and Toru Uno
Tokyo University of Agriculture and Technology, Japan

[S-B4-6] 15:10~15:30

[Invited] Microwave Analogues of Multi-ordered Metatronic Filters with Waveguide Metamaterials.....530

Yue Li¹ and Nader Engheta²
¹*Tsinghua University, China*, ²*University of Pennsylvania, USA*

Session Title	[S-B13a] Advances in Super- and High- Resolution Electromagnetic Imaging (1)
Date and Time	August 23 (Tue.) / 13:30~15:30
Room	Room B (Emerald B)
Session Organizer	Lianlin Li (Peking University) Weixiang Jiang (Southeast University)
Session Chairs	Lianlin Li (Peking University) Weixiang Jiang (Southeast University)

[S-B13a-1] 13:30~13:50

[Invited] Knowledge-aided Object-Oriented ThreeDimensional Microwave Imaging.....534

Longgang Wang¹, Lianlin Li¹, Xiaoyang Zhou², Tiejun Cui², and Arye Nehorai³

¹Peking University, China, ²Southeast University, China, ³Washington University, USA

[S-B13a-2] 13:50~14:10

[Invited] Microwave Imaging Based on Holographic Metasurfaces.....N/A

Qiang Cheng, Jun Yan Dai, and Yun Bo Li

Southeast University, China

[S-B13a-3] 14:10~14:30

[Invited] Acoustic Planar Magnifying Hyperlens.....540

Zhaojun Wang and Xiaoming Zhou

Beijing Institute of Technology, China

[S-B13a-4] 14:30~14:50

[Invited] A Novel Physics-driven Fast Parallel Three-Dimension Radar Imaging Method.....543

Lianlin Li¹, Longgang Wang¹, Xiaoyang Zhou², Tiejun Cui², and Arye Nehorai³

¹Peking University, China, ²Southeast University, China, ³Washington University, USA

[S-B13a-5] 14:50~15:10

[Invited] Sparsity Reconstruction Algorithm for Nonlinear Microwave Problems.....547

Hidayet Zaimaga¹ and Marc Lambert²

¹Laboratoire Des Signaux et Systèmes, France, ²GeePs -Group of Electrical Engineering, France

[S-B13a-6] 15:10~15:30

[Invited] Strong Extrinsic 2D-Chiral Response in Symmetric Achiral Metasurface.....N/A

L. Mao, Y. Zou, and T. Cao

Dalian University of Technology, China

Session Title	[S-J5a] Receivers for Radio Astronomy (1) (Joint with The 17th Workshop on Submillimeter-Wave Receiver Technologies in Eastern Asia)
Date and Time	August 23 (Tue.) / 13:30~15:30
Room	Room C (Diamond)
Session Organizer	Jungwon Lee (Korea Astronomy and Space Science Institute) Sheng-Cai Shi (Chinese Academy of Sciences)
Session Chair	Sheng-Cai Shi (Chinese Academy of Sciences)

[S-J5a-1] 13:30~13:50

Gravity Loading Effect Analysis of the 5 Meter Terahertz Antenna for Dome A, Antarctica.....N/A

Hairen Wang, Jingquan Cheng, Zheng Lou, Yuan Qian, Yingxi Zuo, and Ji Yang
Chinese Academy of Sciences, China

[S-J5a-2] 13:50~14:10

Research on High Precision Antenna For DATE5.....N/A

Yuan Qian, Zheng Lou, Yingxi Zuo, Hairen Wang, and Ji Yang
Chinese Academy of Sciences, China

[S-J5a-3] 14:10~14:30

[Invited] An 8×8 CPW MKIDs Developed for Terahertz Superconducting Imaging Array....561

Jing Li, Qing Shi, Jin-Ping Yang, Dong Liu, Zheng Wang, Zhen-Hui Lin, Wen-Ying Duan, Zheng Lou, Wei Miao, Wen Zhang, and Sheng-Cai Shi
Chinese Academy of Sciences, China

[S-J5a-4] 14:30~14:50

[Invited] Current and Near-Term Instrumentation at the James Clerk Maxwell Telescope.....563

J. T. Dempsey¹, P. T. P. Ho¹, P. Friberg¹, D. Bintley¹, C. Walther¹, and M.-T. Chen²
¹*East Asia Observatory, USA*, ²*Academia Sinica Institute of Astronomy and Astrophysics, Taiwan*

[S-J5a-5] 14:50~15:10

[Invited] Next Generation Heterodyne Array for JCMT.....N/A

M.-T. Chen, P. T. P. Ho, J. Dempsey, P. Friberg, D. Bintley, and C. Walther
¹*Academia Sinica Institute of Astronomy & Astrophysics, Taiwan*, ²*East Asia Observatory, USA*

[S-J5a-6] 15:10~15:30

Development of 1.5 THz Cartridge-type Multi-pixel Receiver Based on HEB Mixers.....569

Yen-Ru Huang, Chuang-Ping Chiu, Wei-Chun Lu, Hsian-Hong Chang, Yen-Yu Chiang, and Ming-Jye Wang
Institute of Astronomy and Astrophysics, Academia Sinica, Taiwan

Session Title	[S-K2b] Exposure Assessment and EMF Standards (2)
Date and Time	August 23 (Tue.) / 13:30~15:30
Room	Room D (Convention A)
Session Organizer	Soichi Watanabe (National Institute of Information and Communications Technology) Niels Kuster (ETH Zurich)
Session Chairs	Lira Hamada (National Institute of Information and Communications Technology) Niels Kuster (ETH Zurich)

[S-K2b-1] 13:30~13:50

[Invited] Probe Calibration of SAR Measurement System Below 300 MHz.....N/A

Yoon Myoung Gimm
Dankook University

[S-K2b-2] 13:50~14:10

[Invited] Numerical Study of EMF Exposure for a 60 GHz Application.....N/A

Joyner Ken
Samsung Electronics Co. Ltd., Korea

[S-K2b-3] 14:10~14:30

[Invited] Protecting and Educating the Australian Public: Environmental Level RF Exposure Assessments.....N/A

Stuart Henderson
Australian Radiation Protection and Nuclear Safety Agency, Australia

[S-K2b-4] 14:30~14:50

[Invited] Dosimetry of Infant's Exposure to EMF from ELF to RF.....N/A

Tongning Wu and Congsheng Li
China Academy of Telecommunication Research, China

[S-K2b-5] 14:50~15:10

[Invited] Revision of IEC 62232 - Determination of Radio-Frequency (RF) Field Strength and Specific Absorption Rate (SAR) in the Vicinity of Radiocommunication Base Stations (RBS) for the Purpose of Evaluating Human Exposure.....N/A

Takahiro Iyama¹ and Mike Wood²
¹NTT Docomo, Inc., Japan, ²Telstra, Australia

[S-K2b-6] 15:10~15:30

Dosimetry of Ultra-High Voltage Transmission Power Lines With AC-750 Kv.....578

Mai Lu and Shoogo Ueno
¹Lanzhou Jiaotong University, China, ²Kyushu University, Japan

Session Title	[S-K7] EM Biomedical Imaging
Date and Time	August 23 (Tue.) / 13:30~15:10
Room	Room E (Convention B)
Session Organizer	Soon-Ik Jeon (Electronics and Telecommunications Research Institute) Puyan Mojabi (University of Manitoba)
Session Chairs	Soon-Ik Jeon (Electronics and Telecommunications Research Institute) Puyan Mojabi (University of Manitoba)

[S-K7-1] **13:30~13:50**

[Invited] Recent Advances in Biomagnetic Stimulation and Imaging by Electromagnetic Techniques.....N/A

Shoogo Ueno^{1,2}

¹The University of Tokyo, Japan, ²Kyushu University, Japan

[S-K7-2] **13:50~14:10**

[Invited] Study of the Contrast Source Inversion Method for Image Reconstruction in Focusing Media.....N/A

A. Menshov¹ and V. Okhmatovski²

¹The University of Texas, USA, ²University of Manitoba, Canada

[S-K7-3] **14:10~14:30**

[Invited] Electromagnetic Inversion for Biomedical Imaging, Antenna Characterization, and Sea Ice Remote Sensing Applications.....586

Puyan Mojabi, Nariman Firoozy, Nozhan Bayat, Trevor Brown, Chaitanya Narendra, Pedram Mojabi, Chen Niu, Tyler Tiede, Thomas Neusitzer, Xiang Li, Ian Jeffrey, Joe LoVetri, and David Barber
University of Manitoba, Canada

[S-K7-4] **14:30~14:50**

[Invited] Acceleration of Electromagnetic Solver for Microwave Tomography.....590

Nikolai Simonov, Soon-Ik Jeon, Bo-Ra Kim, Kwang-Jae Lee, and Seong-Ho Son

Electronics and Telecommunications Research Institute, Korea

[S-K7-5] **14:50~15:10**

[Invited] Clinical Trial of Microwave Tomography Imaging.....N/A

Soon-Ik Jeon, Bo-Ra Kim, and Seong-Ho Son

Electronics and Telecommunications Research Institute, Korea

Session Title	[S-C7] Massive MIMO and millimeter wave communications
Date and Time	August 23 (Tue.) / 13:30~15:30
Room	Room F (Convention C)
Session Organizer	Y.-W. Peter Hong (National Tsing Hua University) Hyun Kyu Chung (Electronics and Telecommunications Research Institute) Youngchul Sung (Korea Advanced Institute of Science and Technology)
Session Chair	Juyul Lee (Electronics and Telecommunications Research Institute)

[S-C7-1] 13:30~13:50

[Invited] On the Mutual Information of OFDM with Low-Resolution ADC.....N/A

Chao-Kai Wen¹, Shi Jin², Hanqing Wang², and Pangan Ting³

¹National Sun Yat-sen University, Taiwan, ²Southeast University, China, ³Industrial Technology Research Institute, Taiwan

[S-C7-2] 13:50~14:10

[Invited] Random Beamforming Combined with Receive Beamforming in mmWave Multiuser MIMO Downlink.....600

Gilwon Lee and Youngchul Sung

Korea Advanced Institute of Science and Technology, Korea

[S-C7-3] 14:10~14:30

[Invited] Multiuser Hybrid Beamforming for Non-Orthogonal Multiple Access in Millimeter Wave Systems.....N/A

Che-Yuan Hu, Yung-Shun Wang, and Y.-W. Peter Hong

National Tsing Hua University, Taiwan

[S-C7-4] 14:30~14:50

[Invited] Compressed Sensing-Based Channel Estimation for Wideband Millimeter Wave Systems.....N/A

Yonghee Han and Jungwoo Lee

Seoul National University, Korea

[S-C7-5] 14:50~15:10

[Invited] Power Losses Due to Steering Beam Mis-Alignment in Directional-Antenna Millimeter-Wave Systems.....609

Juyul Lee, Jinyi Liang, Myung-Don Kim, Jae-Joon Park, Bonghyuk Park, and Hyun Kyu Chung

Electronics and Telecommunications Research Institute, Korea

[S-C7-6] 15:10~15:30

[Invited] Investigating the Effect of Antenna Beamwidth on Millimeter-wave Channel Characterization.....N/A

Myung-Don Kim, Jinyi Liang, Juyul Lee, Jaejoon Park, Bonghyuk Park and Hyun Kyu Chung

Electronics and Telecommunications Research Institute, Korea

Session Title	[S-G4] Satellite Probing for the Ionospheric Variability
Date and Time	August 23 (Tue.) / 13:30~15:30
Room	Room G (Convention D)
Session Organizer	Jaeheung Park (Korea Astronomy and Space Science Institute) Charles Lin (National Cheng Kung University)
Session Chairs	Jaeheung Park (Korea Astronomy and Space Science Institute) Charles Lin (National Cheng Kung University)

[S-G4-1] 13:30~13:50

[Invited] Numerical Simulation of Magnetic Field Variation Associated with Equatorial Plasma Bubble.....N/A

Tatsuhiro Yokoyama¹ and Claudia Stolle²

¹National Institute of Information and Communications Technology, Japan, ²German Research Centre for Geosciences, Germany

[S-G4-2] 13:50~14:10

Study of Atmosphere-Ionosphere Coupling using FORMOSAT-3/COSMIC.....N/A

Charles Lin

National Cheng Kung University, Taiwan

[S-G4-3] 14:10~14:30

Numerical Simulation on Ionospheric Electron Density Response to Currents from Lower Atmosphere and Lithosphere.....N/A

Chuan-Ping Lien¹, Charles Lin¹, Jann-Yenq Liu², and Chia-Hung Chen¹

¹National Cheng-Kung University, Taiwan, ²National Central University, Taiwan

[S-G4-4] 14:30~14:50

[Invited] Ionospheric Data Assimilation during Geomagnetic Storm Conditions.....N/A

Chia-Hung Chen¹, Charles Lin², I-Te Lee², Tomoko Matsuo³, and Jann-Yenq Liu⁴

¹National Cheng Kung University, Taiwan, ²Central Weather Bureau, Taiwan, ³University of Colorado Boulder, USA, ⁴National Central University, Taiwan

[S-G4-5] 14:50~15:10

[Invited] Satellite Observation of Ionosphere Disturbance Caused by Large Earthquakes.....N/A

K.-I. Oyama¹, L. Bankov², D. Minakshi³, T. Uozumi⁴, C. H. Chen¹, K. Ryu⁵, and J. Y. Liu⁶

¹National Cheng Kung University, Taiwan, ²Space Research and Technology Institute, Bulgaria, ³Gauhati University, India, ⁴Kyushu University, Japan, ⁵Korea Advanced Institute of Science and Technology, Korea, ⁶National Central University, Taiwan

[S-G4-6] 15:10~15:30

[Invited] Research on the Intrinsic Ionospheric Variation using Multisatellite Measurements During the Last Solar Minimum and Its Implication on Study of Lithosphere-Ionospheric Coupling.....N/A

K. Ryu¹, K. I. Oyama², J. C. Lee¹, and J. H. Park³, and K. W. Min¹

¹Korea Advanced Institute of Science and Technology, Korea, ²Kyushu University, Japan, ³Korea Astronomy and Space Science Institute, Korea

Session Title	[S-H3b] Radio Science for Space Weather (2)
Date and Time	August 23 (Tue.) / 13:30~15:30
Room	Room H (Convention E)
Session Organizer	Viviane Pierrard (Belgian Institute for Space Aeronomy) Mauro Messerotti (INAF–Astronomical Observatory of Trieste)
Session Chair	Mauro Messerotti (INAF–Astronomical Observatory of Trieste)

[S-H3b-1] **13:30~14:10**

[Keynote] Magnetosphere-Ionosphere Coupling by ULF Waves.....N/A

Robert L. Lysak
University of Minnesota, USA

[S-H3b-2] **14:10~14:30**

[Invited] Narrow-band Bursts of Solar Radio Emission at 15-30 MHz.....N/A

Yuriy Voitenko¹, Valentin Melnik², Viviane Pierrard¹, Anatoliy Brazhenko², and Anatoliy Frantsuzenko²
¹Royal Belgian Institute for Space Aeronomy, Belgium, ²The National Academy of Sciences of Ukraine, Ukraine

[S-H3b-3] **14:30~14:50**

[Invited] New Insights into the Non Thermal Continuum Radiations: The Cluster Whisper Perspective.....N/A

Patrick Canu¹, Pierrette Décréau², and Sandrine Grimald Rochel³
¹LPP/CNRS/Ecole Polytechnique, France, ²LPCEE/CNRS/Université d'Orléans, France, ³ONERA, France

[S-H3b-4] **14:50~15:10**

[Invited] Analysis of the Fine Structure of Chorus Wave Packets using Measurements of the Van Allen Probes.....N/A

Ondrej Santolik¹, Ivana Kolmasova¹, William S. Kurth², George B. Hospodarsky², Craig A. Kletzing², and Scott R. Bounds²
¹Charles University, Czech, ²The University of Iowa, USA

[S-H3b-5] **15:10~15:30**

[Invited] MLT Dependence of the Plasmopause from Satellite Observations and Quasi-Interchange Instability Mechanism.....629

Pierrard Viviane and Voitenko Yuriy
Royal Belgian Institute for Space Aeronomy, Belgium

Session Title	[S-A3] Antenna Related Metrology
Date and Time	August 23 (Tue.) / 13:30~15:30
Room	Room I (Crane)
Session Organizer	Satoru Kurokawa (National Institute of Advanced Industrial Science and Technology) Ki-Chai Kim (YeongNam University)
Session Chairs	Satoru Kurokawa (National Institute of Advanced Industrial Science and Technology) Ki-Chai Kim (YeongNam University)

[S-A3-1] 13:30~14:10

[Keynote] Antenna and Field Probe Metrology: A NIST Perspective.....N/A

Perry F. Wilson
National Institute of Standards and Technology, USA

[S-A3-2] 14:10~14:30

[Invited] Error Estimation of Far-Field Absolute Gain Pattern by 1-D Circular Near-Field to Far-Field Transformation for Elongated Radar Antenna The Case for the Shift of the Radiation Center.....N/A

Masanobu Hirose and Satoru Kurokawa
National Institute of Advanced Industrial Science and Technology, Japan

[S-A3-3] 14:30~14:50

[Invited] Beam Forming Characteristics of Antenna-Coupled-Electrode Electro-Optic Modulators Operating in Millimeter-Wave Bands.....N/A

Hiroshi Murata, Toshiyuki Inoue, Hidehisa Shiomi, and Yasuyuki Okamura
Osaka University, Japan

[S-A3-4] 14:50~15:10

[Invited] Site Attenuation Measurements using a Balun-less Dipole Antenna Pair.....N/A

Takehiro Moirioka
National Institute of Advanced Industrial Science and Technology, Japan

[S-A3-5] 15:10~15:30

[Invited] Measurement Uncertainty of Far Field Antenna Factor for Biconical Antenna using Amplitude Center Modified Equation.....N/A

Satoru Kurokawa, Masanobu Hirose, Michitaka Ameya, and Yuanfeng She
National Institute of Advanced Industrial Science and Technology, Japan

Session Title	[S-D4] Microwave and mm-wave Integrated Circuits
Date and Time	August 23 (Tue.) / 13:30~15:10
Room	Room J (Swan)
Session Organizer	Byung-Wook Min (Yonsei University) Tiku Yu (National Taipei University)
Session Chairs	Byung-Wook Min (Yonsei University) Tiku Yu (National Taipei University)

[S-D4-1] 13:30~13:50

[Invited] Recent Trends in Millimeter-Wave Phased-Array ICs.....N/A

Munkyo Seo
Sungkyunkwan University, Korea

[S-D4-2] 13:50~14:10

[Invited] A Four Channel Bi-directional CMOS T/R Chipset for Ka-band Phased Array System.....N/A

Jang-Hoon Han, Jin-Hyun Kim, Jeong-Soo Park, and Jeong-Geun Kim
Kwangwoon University, Korea

[S-D4-3] 14:10~14:30

A 117 GHz All-Parallel Sub-Harmonically Injection-Locked Quadrature CMOS Voltage-Controlled Oscillator.....647

Dongmin Kang, Chae Jun Lee, Hyuk Su Son, Haejin Lee, and Chul Soon Park
Korea Advanced Institute of Science and Technology, Korea

[S-D4-4] 14:30~14:50

DC - 38 GHz CMOS Distributed Amplifier with a Triple Stacked-FET.....N/A

Jihoon Kim, Wonho Lee, Hongjong Park, and Youngwoo Kwon
Seoul National University, Korea

[S-D4-5] 14:50~15:10

A W-band Push-Push VCO using Non-Foster Circuit for Enhanced Frequency Tuning Range.....N/A

Wonho Lee, Sangho Lee, Hongjong Park, Kwangseok Choi, Woosang Lee, and Youngwoo Kwon
Seoul National University, Korea

Session Title	[S-F3a] Remote Sensing of the Atmosphere (1)
Date and Time	August 23 (Tue.) / 13:30~15:30
Room	Room K (White Heron)
Session Organizer	Sanghun Lim (Korea Institute of Civil Engineering and Building Technology) Tomoo Ushio (Osaka University)
Session Chairs	Sanghun Lim (Korea Institute of Civil Engineering and Building Technology) Christian Kummerow (Colorado State University)

[S-F3a-1] **13:30~14:10**

[Keynote] Global Measurement of Rainfall and Precipitation Microphysics.....N/A

V. Chandrasekar
Colorado State University, USA

[S-F3a-2] **14:10~14:30**

[Invited] Development of X-Band Polarimetric Phased Array Radar System for Weather Measurement.....N/A

Hiroshi Kikuchi¹, Ting Wu¹, Gwan Kima¹, Tomoo Ushio¹, Hideto Goto², and Fumihiko Mizutani²
¹Osaka University, Japan, ²Toshiba Corporation, Japan

[S-F3a-3] **14:30~14:50**

[Invited] RainDrop Size Distribution (DSD) Retrieval from Dual-Polarization Radar Measurements on a Bayesian Scheme.....N/A

Eiichi Yoshikawa¹, V. Chandrasekar², Tomoo Ushio³, and Takahiro Matsuda³
¹Japan Aerospace Exploration Agency, Japan, ²Colorado State University, USA, ³Osaka University, Japan

[S-F3a-4] **14:50~15:10**

[Invited] Observations of Precipitation and MIE Scattering Signatures with the CSU-CHILL Dual-wavelength Dual-polarization Weather Radar System.....N/A

Francesc Junyent and V. Chandrasekar
Colorado State University, USA

[S-F3a-5] **15:10~15:30**

[Invited] Development of a High-Resolution Wind Profiler Radar using Radar Imaging Techniques.....N/A

Masayuki K. Yamamoto¹, Seiji Kawamura¹, and Koji Nishimura²
¹National Institute of Information and Communications Technology, Japan, ²National Institute of Polar Research, Japan

Session Title	[S-B5] Electromagnetic Field Theory
Date and Time	August 23 (Tue.) / 16:00~18:20
Room	Room A (Emerald A)
Session Organizer	Soon-Soo Oh (Chosun University) Lotfollah Shafai (University of Manitoba)
Session Chairs	Soon-Soo Oh (Chosun University) Lotfollah Shafai (University of Manitoba)

[S-B5-1] 16:00~16:40

[Keynote] Challenges of Antenna Miniaturization and Performance Enhancement.....N/A

Lotfollah Shafai
University of Manitoba, Canada

[S-B5-2] 16:40~17:00

[Invited] Design of a Waveguide Short-Slot 2-Plane Coupler Including 2-D Mode Polarity in the Coupled Region.....N/A

Jiro Hirokawa and Dong-Hun Kim
Tokyo Institute of Technology, Japan

[S-B5-3] 17:00~17:20

[Invited] Two Elements Compact MIMO Antenna with Reconfigurable Lower Band and Consistent High Band for Tablet Applications.....672

Anthony Wang and Satish K. Sharma
San Diego State University, USA

[S-B5-4] 17:20~17:40

[Invited] Antenna Pattern Reconstruction of Optical Leaky Waveguide Antenna by Phase-less Measurement.....676

Hiroshi Hashiguchi, Hiroyuki Arai, Keisuke Kondo, and Toshihiko Baba
Yokohama National University, Japan

[S-B5-5] 17:40~18:00

[Invited] Image Refocusing of Targets in Oblique Layers with Gradually Changing Permittivity.....678

Haewon Jung and Kangwook Kim
Gwangju Institute of Science and Technology, Korea

[S-B5-6] 18:00~18:20

Resonance Effects in Antennas Coated with Material and MetaMaterials.....682

Lotfollah Shafai and Navid Rezazadeh
University of Manitoba, Canada

Session Title	[S-B13b] Advances in Super- and High- Resolution Electromagnetic Imaging (2)
Date and Time	August 23 (Tue.) / 16:00~17:40
Room	Room B (Emerald B)
Session Organizer	Lianlin Li (Peking University) Weixiang Jiang (Southeast University)
Session Chairs	Lianlin Li (Peking University) Weixiang Jiang (Southeast University)

[S-B13b-1] 16:00~16:20

[Invited] 3D RF Profile Detection using Zero-Padding and a GPU.....N/A

HyungTae Kim¹, KyungChan Jin¹, Jongseok Kim¹, and Seung-Bok Choi²
¹*Korea Institute of Industrial Technology, Korea*, ²*Inha University, Korea*

[S-B13b-2] 16:20~16:40

[Invited] Verification of In-Place Calibration for Time-Domain Microwave Imaging.....688

Sollip Kwon¹, Seong-Ho Son², Kwang-Jae Lee², and Seungjun Lee¹
¹*Ewha Womans University, Korea*, ²*Electronics and Telecommunications Research Institute, Korea*

[S-B13b-3] 16:40~17:00

[Invited] Transmission and Resonance of a Single Rectangular Hole Filled with Anisotropic Material.....691

Hengxin Ruan¹, Lianlin Li¹, and Tie Jun Cui²
¹*Peking University, China*, ²*Southeast University, China*

[S-B13b-4] 17:00~17:20

[Invited] Reverse Time Migration For Subsurface Imaging.....695

Hai Liu¹, Yuxian Zhang¹, Zhijun Long¹, Fen Han¹, and Qing Huo Liu²
¹*Xiamen University, China*, ²*Duke University, USA*

[S-B13b-5] 17:20~17:40

Improving the Resolution of Diagnostics of Inhomogeneous Plasma Media in Conditions of Strong Phase Variations.....697

Sergey Knizhin
¹*Institute of Solar-Terrestrial Physics SB RAS, Russia*, ²*Irkutsk State University, Russia*

Session Title	[B5] Fields and Waves Filter/Resonator/Circuit
Date and Time	August 23 (Tue.) / 16:00~18:00
Room	Room C (Diamond)
Session Chair	Chi-Hyung Ahn (Korea Railroad Research Institute)

[B5-1] 16:00~16:20

Improved Stopband Characteristics of Microstrip Lowpass Filter using Linearly Distributed Transmission Zeros.....701

Nainu P. Chaudhari¹, Rajas Khokle², Karu P. Esselle², and A. K. Verma^{1,2}
¹University of Delhi, India, ²Macquarie University, Australia

[B5-2] 16:20~16:40

A Miniaturized Wideband Bandpass Filter.....705

Vinay Kumar Killamsetty and Biswajeet Mukherjee
 Indian Institute of Information Technology, Design and Manufacturing Jabalpur, India

[B5-3] 16:40~17:00

Amplitude-Equalized Microwave C-Section.....N/A

Shulabh Gupta
 Carleton University, Canada

[B5-4] 17:00~17:20

Analysis of Loop Type Ground Radiation Antenna using Equivalent Circuit Model.....N/A

Zeeshan Zahid and Hyeongdong Kim
 Hanyang University, Korea

[B5-5] 17:20~17:40

Transparent Electrode Resonators for MR-WPT.....716

Hoon Hee Lee and Chang Won Jung
 Seoul National University of Science and Technology, Korea

[B5-6] 17:40~18:00

Avoidance of Off-switch Resonance in True Time Delay Line using Cascaded Switches.....N/A

Minyoung Yoon and Sangwook Nam
 Seoul National University, Korea

Session Title	[S-K3a] Numerical Dosimetry (EMF Dosimetry) (1)
Date and Time	August 23 (Tue.) / 16:00~18:00
Room	Room D (Convention A)
Session Organizer	Ae-Kyoung Lee (Electronics and Telecommunications Research Institute) Masao Taki (Tokyo Metropolitan University)
Session Chairs	Ae-Kyoung Lee (Electronics and Telecommunications Research Institute) Masao Taki (Tokyo Metropolitan University)

[S-K3a-1] 16:00~16:20

[Invited] Numerical Method for Exposure Assessment in the Low-Frequency Ranges.....N/A

SangWook Park¹ and MinHyuk Kim²

¹Korea Automotive Technology Institute, Korea, ²Seoul National University, Korea

[S-K3a-2] 16:20~16:40

[Invited] Specific Absorption Rates in Human Brain for Different Length of Bar Phones.....723

Ae-Kyoung Lee, Seon-Eui Hong, and Jong-Hwa Kwon

Electronics and Telecommunications Research Institute, Korea

[S-K3a-3] 16:40~17:00

[Invited] Verification and Validation in Computational Simulations of Specific Absorption Rate for a Multiband Handheld Device.....725

Chan-Ho Jeong^{1,2}, Jong-Gwan Yook¹, and Bum-Kook Lee²

¹Yonsei University, Korea, ²LG Electronics, Korea

[S-K3a-4] 17:00~17:20

[Invited] Near Field Numerical Dosimetry using Spherical Wave Expansion and Advanced Statistical Methods.....N/A

Joe Wiart¹, Pierric Kersaudy¹, Yenny Pinto¹, Odile Picon², and Shermilla Mostarshedi²

¹Telecom ParisTech, CNRS, France, ²Universite Paris Est Marne la Vallée, France

[S-K3a-5] 17:20~17:40

[Invited] Induced Current Density Calculation for Korean Male Body Model under 60 Hz Uniform Magnetic Fields using Impedance Method.....N/A

Byeong-Yoon Lee

Korea Electrotechnology Research Institute, Korea

[S-K3a-6] 17:40~18:00

[Invited] Thresholds of Central Nervous System Stimulation at Intermediate Frequencies.....733

Ilkka Laakso¹ and Takenobu Murakami²

¹Aalto University, Finland, ²Fukushima Medical University, Japan

Session Title	[S-KE] EMC in Biomedical Applications
Date and Time	August 23 (Tue.) / 16:00~18:20
Room	Room E (Convention B)
Session Organizer	Jun-Gyu Yang (National Radio Research Agency) Eisuke Hanada (Saga University)
Session Chairs	Jun-Gyu Yang (National Radio Research Agency) Eisuke Hanada (Saga University)

[S-KE-1]	16:00~16:20
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[Invited] Managing the Availability of Hospital Wireless Communication Systems.....737

Eisuke Hanada¹ and Takato Kudou²

¹Saga University, Japan, ²Oita University, Japan

[S-KE-2]	16:20~16:40
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[Invited] Numerical Analysis of Electromagnetic Band-Stopping using Non-Metal Periodic Structures.....741

Takato Kudou¹ and Eisuke Hanada²

¹Oita University, Japan, ²Saga University, Japan

[S-KE-3]	16:40~17:00
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[Invited] Performance Evaluation on Wireless Capsule Endoscope Location Estimation.....N/A

Daisuke Anzai

Nagoya Institute of Technology, Japan

[S-KE-4]	17:00~17:20
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[Invited] Use of Wireless LAN in Medical Facilities in Japan.....N/A

Naoyuki Oda

Kanagawa Prefectural Hospital Organization, Japan

[S-KE-5]	17:20~17:40
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[Invited] Research and Analysis of Electromagnetic Field Environment in Hospitals.....N/A

Nam Kim¹, Seungwoo Lee¹, Jun-Gyu Yang², and Hong-Sik Keum³

¹Chungbuk National University, Korea, ²National Radio Research Agency, Korea, ³Korea Radio Promotion Association, Korea

[S-KE-6]	17:40~18:00
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[Invited] Electromagnetic Shielding in MRI Room.....N/A

ByungKook Lee

DaeHan Shield Engineering Co., Ltd., Korea

[S-KE-7]	18:00~18:20
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[Invited] Effects of a Patient Monitor by Radiated Susceptibility Test using a Broadband Signal.....N/A

Hongsik Keum¹, Jun-Gyu Yang², Sang-Ho Choi¹, and Heunggyoon Ryu³

¹Radio Promotion Association, Korea, ²National Radio Research Agency, Korea, ³Chungbuk National University, Korea

Session Title	[S-C8] Satellite and Terrestrial Networks
Date and Time	August 23 (Tue.) / 16:00~18:00
Room	Room F (Convention C)
Session Organizer	Jihwan Choi (Daegu Gyeongbuk Institute of Science & Technology)
Session Chair	Jihwan Choi (Daegu Gyeongbuk Institute of Science & Technology)

[S-C8-1] **16:00~16:20**

[Invited] Mutual Coupling between Dipole Antennas for RF Power Transmission.....N/A

Junhee Kim and Jihwan Choi
 Daegu Gyeongbuk Institute of Science & Technology, Korea

[S-C8-2] **16:20~16:40**

[Invited] Cancellation Performance Analysis for a Coexistence Solution in Heterogeneous Networks.....N/A

Jongyeop Kim and Jihwan P. Choi
 Daegu Gyeongbuk Institute of Science & Technology, Korea

[S-C8-3] **16:40~17:00**

[Invited] Performance Analysis of Onboard Processing Multibeam Satellites Equipped with Advanced Phased Array Antenna.....N/A

Jihwan Choi
 Daegu Gyeongbuk Institute of Science & Technology, Korea

[S-C8-4] **17:00~17:20**

[Invited] Multimedia Communications in MIMO Channels.....N/A

Seok-Ho Chang
 Dankook University, Korea

[S-C8-5] **17:20~17:40**

Enhanced Direct Path Detection using Feedback from High Resolution Algorithm for OFDM Systems.....N/A

Jung-Yong Lee, Won-Tae Yu, and Seong-Cheol Kim
 Seoul National University, Korea

[S-C8-6] **17:40~18:00**

Millimeter Multi-User Massive MIMO Simplified using Antenna Selection and One-bit Quantized Channel Estimation.....769

Karim H. Moussa¹ and Said E. El-Khamy²
¹Alexandria Institute of Engineering and Technology, Egypt, ²Alexandria University, Egypt

Session Title	[S-G5] Observation of Ionospheric Plasma Density Variation
Date and Time	August 23 (Tue.) / 16:00~17:40
Room	Room G (Convention D)
Session Organizer	Young-Sil Kwak (Korea Astronomy and Space Science Institute) Geonhwa Jee (Korea Polar Research Institute)
Session Chairs	Young-Sil Kwak (Korea Astronomy and Space Science Institute) Geonhwa Jee (Korea Polar Research Institute)

[S-G5-1] **16:00~16:40**

[Keynote] Incoherent Scatter Radars: Present and Future.....N/A

Craig J. Heinselman
EISCAT Scientific Association, Sweden

[S-G5-2] **16:40~17:00**

[Invited] A Comparative Study on the Diurnal Variations of Electron Density in the Auroral Oval and Polar Cap Regions.....N/A

Eun-Young Ji and Geonhwa Jee
Korea Polar Research Institute, Korea

[S-G5-3] **17:00~17:20**

[Invited] ULF Pc5 Pulsation in the Summer D-Region Electron Density of Polar Mesospheric Summer Echoes Driven by Solar Wind Dynamic Pressure Enhancement and the Pc5 Pulsation.....N/A

Young-Sook Lee¹, Sheila Kirkwood², Young-Sil Kwak^{1,3}, and Kyung-Chan Kim⁴
¹*Korea Astronomy and Space Science Institute, Korea*, ²*Swedish Institute of Space Physics, Sweden*, ³*University of Science and Technology, Korea*, ⁴*Daegu University, Korea*

[S-G5-4] **17:20~17:40**

[Invited] Examples of Rocket Exhaust Depletions as Observed by Swarm Constellation.....N/A

Jaehung Park¹, Hyosub Kil², Claudia Stolle³, Hermann Lühr³, Anthea Coster⁴, and Young-Sil Kwak¹
¹*Korea Astronomy and Space Science Institute, Korea*, ²*Johns Hopkins University Applied Physics Laboratory, USA*, ³*Helmholtz Centre Potsdam GFZ German Research Centre for Geosciences, Germany*, ⁴*Massachusetts Institute of Technology, USA*

Session Title	[S-H4] Waves in Nuclear Fusion Plasmas and Laser-Plasma Accelerator
Date and Time	August 23 (Tue.) / 16:00~18:00
Room	Room H (Convention E)
Session Organizer	Young-Soon Bae (National Fusion Research Institute) Hee-Yong Suk (Gwangju Institute of Science and Technology)
Session Chairs	Young-Soon Bae (National Fusion Research Institute) Hee-Yong Suk (Gwangju Institute of Science and Technology)

[S-H4-1] 16:00~16:20

[Invited] Recent Progress on Laser Wakefield Acceleration Experiments using 200 TW Laser System at Shanghai Jiao Tong University.....N/A

Nasr A. M. Hafz, Song Li, Mohammad Mirzaie, Zhengming Sheng, and Jie Zhang
Shanghai Jiao Tong University, China

[S-H4-2] 16:20~16:40

[Invited] A Quasi-Monoenergetic Proton Beam from a Structured Foil Irradiated by an Intense Laser Pulse.....N/A

Kitae Lee¹, Kyung Nam Kim¹, Ha-Na Kim², Manoj Kumar¹, Seong Hee Park¹, Young Uk Jeong¹, and Nikolay Vinokurov¹
¹*Korea Atomic Energy Research Institute, Korea,* ²*Chungnam University, Korea*

[S-H4-3] 16:40~17:00

[Invited] Development of a Gas Cell/Plasma Source for Laser Wakefield Acceleration Research at GIST.....N/A

H. Suk, J. Kim, M. Kim, D. Jang, S. Lee, and I. Nam
Gwangju Institute of Science and Technology, Korea

[S-H4-4] 17:00~17:20

[Invited] RF Powers in KSTAR Tokamak for High Pressure Plasmas.....N/A

S. J. Wang, M. Joung, J. H. Jeong, S. U. Jeong, J. H. Kim, H. J. Kim, H. H. Wi, Y. S. Bae, and J. G. Kwak
National Fusion Research Institute, Korea

[S-H4-5] 17:20~17:40

[Invited] High Power Radio Frequency System for Long Pulse Operation In EAST.....N/A

Xinjun Zhang, Yanping Zhao, Fukun Liu, Jiafang Shan, Baonian Wan, and Jiangan Li
Chinese Academy of Sciences, China

[S-H4-6] 17:40~18:00

[Invited] Physics of Lower Hybrid Current Drive and Heating in Fusion Plasmas: Theory, Simulation, and Experiment.....N/A

P. T. Bonoli, S. Shiraiwa, J. P. Lee, G. M. Wallace, and J. C. Wright
Massachusetts Institute of Technology, USA

Session Title	[A1] Antenna
Date and Time	August 23 (Tue.) / 16:00~18:00
Room	Room I (Crane)
Session Chairs	Nozomu Ishii (Niigata University) Jin-Seob Kang (Korea Research Institute of Standards and Science)

[A1-1] 16:00~16:20

[Invited] A Study of Standard Antenna Method using Two Homogeneous Horn Antennas.....793

Jong-Hyuk Lim, Bo-Weon Lee, Sung-Hwan Park, Yun-Jo Choi, and Myung-Won Seo
National Radio Research Agency, Korea

[A1-2] 16:20~16:40

Derivation of Some Expansions of Near-Field Gain of Antennas in Lossy Medium.....796

Nozomu Ishii¹, Lira Hamada², Jerdvisanop Chakarothai², Kanako Wake², and Soichi Watanabe²
¹*Niigata University, Japan*, ²*National Institute of Information and Communications Technology, Japan*

[A1-3] 16:40~17:00

An Application of Elliptic Field Representation to Near-Field Far-Field RCS Transformation.....N/A

Shuntaro Omi¹, Toru Uno¹, Takuji Arima¹, and Takao Fujii²
¹*Tokyo University of Agriculture and Technology, Japan*, ²*Fujitsu System Integration Laboratories Ltd., Japan*

[A1-4] 17:00~17:20

High Gain Yagi-Uda Origami Antenna.....N/A

Syed Imran Hussain Shah and Sungjoon Lim
Chung-Ang University, Korea

[A1-5] 17:20~17:40

Instrumental Radar Calibration on Sea Surface.....N/A

Alexander Andreev and Ilya Shikhov
Krylov Shipbuilding Research Centre, Russia

[A1-6] 17:40~18:00

Sensitivity Analysis of Multiport S-Parameter Due to Non-Ideal TRL Calibration Standards.....805

Min Wang, Yongjiu Zhao, Yumin Jin, and Yonggang Zhou
Nanjing University of Aeronautics and Astronautics, Chiana

Session Title	[S-D5] High Power RF Devices and Circuits
Date and Time	August 23 (Tue.) / 16:00~18:00
Room	Room J (Swan)
Session Organizer	Naoki Hara (Fujitsu) Youngoo Yang (Sungkyunkwan University)
Session Chair	Youngoo Yang (Sungkyunkwan University)

[S-D5-1] **16:00~16:20**

A Reconfigurable Dual-Band CMOS Power Amplifier With an Integrated Switchable Transformer.....N/A

Jaeyong Ko and Sangwook Nam
Seoul National University, Korea

[S-D5-2] **16:20~16:40**

[Invited] High-Performance GaN-HEMT Technology for W-band Amplifier.....N/A

K. Makiyama^{1,2,3}, S. Ozaki^{1,2}, T. Ohki^{1,2}, N. Okamoto^{1,2}, Y. Minoura^{1,2}, Y. Niida^{1,2}, M. Sato^{1,2}, Y. Kamada^{1,2},
K. Joshin^{1,2}, K. Watanabe^{1,2}, and Y. Miyamoto³
¹*Fujitsu Limited, Japan*, ²*Fujitsu Laboratories Ltd., Japan*, ³*Tokyo Institute of Technology, Japan*

[S-D5-3] **16:40~17:00**

A 5.7 GHz GaN Transformer-based Doherty Power Amplifier for 40-MHz LTE-A Applications.....N/A

Bo Jin, Jung-Lin Woo, Sunghwan Park, and Youngwoo Kwon
Seoul National University, Korea

[S-D5-4] **17:00~17:20**

[Invited] Monolithically Integrated AlGaIn/GaN-on-Si Power Switching Devices.....N/A

Ho-Young Cha and Sang-Woo Han
Hongik University, Korea

[S-D5-5] **17:20~17:40**

[Invited] Overview on Linearization Techniques for Envelope Tracking Power Amplifier.....N/A

Bumman Kim¹, Kyunghoon Moon¹, Sangsu Jin², and Jooseung Kim³
¹*Pohang University of Science and Technology, Korea*, ²*Qualcomm Technologies Inc., USA*, ³*Samsung Electronics Co. Ltd., Korea*

[S-D5-6] **17:40~18:00**

[Invited] Diamond Devices for RF Applications.....828

Makoto Kasu and Toshiyuki Oishi
Saga University, Japan

Session Title	[S-F3b] Remote Sensing of the Atmosphere (2)
Date and Time	August 23 (Tue.) / 16:00~18:00
Room	Room K (White Heron)
Session Organizer	Sanghun Lim (Korea Institute of Civil Engineering and Building Technology) Tomoo Ushio (Osaka University)
Session Chairs	Dong-Bin Shin (Yonsei University) Francesc Junyent (Colorado State University)

[S-F3b-1] **16:00~16:20**

[Invited] New Products and Perspectives from the Global Precipitation Measurement (GPM) Mission.....N/A
Christian Kummerow, Veljko Petkovic, and David Randel
Colorado State University, USA

[S-F3b-2] **16:20~16:40**

[Invited] Understanding Model Precipitation Microphysics based on Observations from TRMM/GPM Microwave Imagers and Precipitation Radars.....N/A
Dong-Bin Shin and Yeji Choi
Yonsei University, Korea

[S-F3b-3] **16:40~17:00**

[Invited] Validation of NASA's Global Precipitation Measurement Mission with a High-Resolution Ground Radar Network.....836
Haonan Chen and V. Chandrasekar
Colorado State University, USA

[S-F3b-4] **17:00~17:20**

Remote Sensing of Sc Clouds Over the Arabian Sea using CloudSat Observations and Its Dynamical Aspects.....N/A
Kandula Venkata Subrahmanyam and Karanam Kishore Kumar
Indian Space Research Organisation, India

[S-F3b-5] **17:20~17:40**

Simulation of Clouds in Different Resolutions of CFS and Its Comparison with Multiple Satellite Products.....N/A
Renu Siddharth, P. M. Krishna R, and Suryachandra A. Rao
Indian Institute of Tropical Meteorology, India

[S-F3b-6] **17:40~18:00**

Initial Observation Results in the Research and Development (R&D) of Airport Lightning Avoidance Product.....N/A
Eiichi Yoshikawa¹, Satoru Yoshida², Toru Adachi², Hanako Inoue², Kenichi Kusunoki², and Tomoo Ushio³
¹Japan Aerospace Exploration Agency, Japan, ²Japan Meteorological Agency, Japan, ³Osaka University, Japan

Session Title	[S-B6] Wireless Power Transfer
Date and Time	August 24 (Wed.) / 08:30~10:10
Room	Room A (Emerald A)
Session Organizer	Franklin Bien (Ulsan National Institute of Science and Technology) Luca Roselli (University of Perugia)
Session Chair	Franklin Bien (Ulsan National Institute of Science and Technology)

[S-B6-1] **08:30~08:50**

Active Metamaterial Designs for Dynamically Controllable Wireless Power Transfer Applications.....850

A. L. A. K. Ranaweera, Thanh Son Pham, Viet Ngo, and Jong-Wook Lee
Kyung Hee University, Korea

[S-B6-2] **08:50~09:10**

High Q-factor Compact Coils Having Non-Uniform Wire Width for Wireless Power Transfer System.....854

Tae-Hyung Kim¹, Byung-Hyun Kim¹, Gi-Ho Yun², Woong Yong Lee³, and Jong-Gwan Yook¹
¹*Yonsei University, Korea*, ²*Sungkyul University, Korea*, ³*Amotech, Korea*

[S-B6-3] **09:10~09:30**

Wideband Energy Harvesting Antenna with 2 by 2 Mu-zero Array for Wireless Power Transfer.....N/A

Chang-Hyun Lee and Jeong-Hae Lee
Hongik University, Korea

[S-B6-4] **09:30~09:50**

Control of Magnetic Field Distribution by Excitation Phases of Transmitters in MIMO WPT System.....861

Bomson Lee and Sejin Kim
Kyung-Hee University, Korea

[S-B6-5] **09:50~10:10**

Wearable and Implantable Magnetic Resonant Wireless Power Transfer.....864

Seok Hyon Kang and Chang Won Jung
Seoul National University of Science and Technology, Korea

Session Title	[S-B1] Electrically Large Antennas
Date and Time	August 24 (Wed.) / 08:30~10:30
Room	Room B (Emerald B)
Session Organizer	likyu Kim (DTaQ) Shenheng Xu (Tsinghua University)
Session Chair	likyu Kim (DTaQ)

[S-B1-1] 08:30~08:50

[Invited] Trade-Off of Multibeam Reflector Antenna Configuration for Satellite Onboard Application.....867
Takashi Tomura, Michio Takikawa, Yoshio Inasawa, and Hiroaki Miyashita
Mitsubishi Electric Corporation, Japan

[S-B1-2] 08:50~09:10

[Invited] Calculation of Mutual Coupling between Two Antennas for Satellite Communication.....N/A
Ilkyu Kim¹ and Yahya Rahmat-Samii²
¹*Defense Agency for Technology and Quality, Korea*, ²*University of California, USA*

[S-B1-3] 09:10~09:30

[Invited] Simulation Model Decomposition for Large-Scale Antenna Systems.....N/A
Jaehoon Kim¹, Peter Futter², Danie le Roux², and Jordi Soler³
¹*Altair Engineering Inc., Korea*, ²*Altair Engineering Inc., South Africa*, ³*Altair Engineering Inc., Spain*

[S-B1-4] 09:30~09:50

[Invited] Performance of Solid Surface Deployable Antenna for Panel Misalignment.....877
Ji Yong Lee, Seong Sik Yoon, Sang Hee Kim, Taek-Kyung Lee, Jae Wook Lee, Jin Ho Roh, and Dong Woo Yi
Korea Aerospace University, Korea

[S-B1-5] 09:50~10:10

Design of SIW fed Antipodal Linearly Tapered Slot Antenna with Curved and Hat Shaped Dielectric Loading at 60 GHz for Inter-Satellite Communication.....N/A
T. Rama Rao¹, C. Sarath¹, Nishesh Tiwari¹, and Rajeev Jyoti²
¹*SRM University, India*, ²*Indian Space Research Organisation, India*

[S-B1-6] 10:10~10:30

[Invited] Radiation Characteristics of Corner Reflector Antenna Employing Frequency Selective Surface.....N/A
Yusuke Tanizawa, Keizo Cho, Hideya So, and Atsuya Ando
¹*Chiba Institute of Technology, Japan*, ²*NTT Corporation, Japan*

Session Title	[S-J5b] Receivers for Radio Astronomy (2) (Joint with The 17th Workshop on Submillimeter-Wave Receiver Technologies in Eastern Asia)
Date and Time	August 24 (Wed.) / 08:30~10:30
Room	Room C (Diamond)
Session Organizer	Jungwon Lee (Korea Astronomy and Space Science Institute) Sheng-Cai Shi (Chinese Academy of Sciences)
Session Chair	Jungwon Lee (Korea Astronomy and Space Science Institute)

[S-J5b-1] 08:30~08:50

[Invited] Phased Array Feed Systems for Radio Astronomy65.....N/A

Tasso Tzioumis

Commonwealth Scientific and Industrial Research Organisation, Australia

[S-J5b-2] 08:50~09:10

[Invited] Silicon Platelets Stacking Technology for Developing Multi-Pixel Submillimeter-Wave Heterodyne Receivers.....N/A

C. Lee, T. Reck, C. Jung-Kubiak, M. Alonso-delPino, K. Cooper, J. Siles, A. Peralta, E. Decrossas, I. Mehdi, and G. Chattopadhyay

Jet Propulsion Laboratory, USA

[S-J5b-3] 09:10~09:30

High Current Density SIS Mixers for the 400-500 GHz Band.....N/A

M. Kroug, K. Uemizu, S. Ezaki, Y. Niizeki, and T. Kojima

National Astronomical Observatory of Japan, Japan

[S-J5b-4] 09:30~09:50

[Invited] MMIC for Next Generation Radio Astronomical Heterodyne Receiver Front-End.....N/A

Chau-Ching Chiong

Institute of Astronomy and Astrophysics, Academia Sinica, Taiwan

[S-J5b-5] 09:50~10:10

A 24.5-50 GHz Mixer using Cascode Structure with Wide 0.5-16 GHz Intermediate Frequency Bandwidth Based on Low Noise PHEMT Process.....897

Shou-Hsien Weng¹, Chau-Ching Chiong¹, Chih-Chen Chang¹, Hsiao-Ling Wu¹, Hong-Yeh Chang², and Ming-Jye Wang¹

¹*Institute of Astronomy and Astrophysics, Academia Sinica, Taiwan,* ²*National Central University, Taiwan*

[S-J5b-6] 10:10~10:30

Thermal Modelling of Coaxial line for Cryogenic Noise Measurements.....900

Ahmed Soliman, Andrew Janzen, and Sander Weinreb

California Institute of Technology, USA

Session Title	[S-K3b] Numerical Dosimetry (EMF Dosimetry) (2)
Date and Time	August 24 (Wed.) / 08:30~10:10
Room	Room D (Convention A)
Session Organizer	Ae-Kyoung Lee (Electronics and Telecommunications Research Institute) Masao Taki (Tokyo Metropolitan University)
Session Chairs	Nam Kim (Chungbuk National University) Masao Taki (Tokyo Metropolitan University)

[S-K3b-1] 08:30~08:50

FDTD Calculations of SAR Around an Implanted Cardiac Pacemaker from Wireless Radio Terminal.....904

Ryota Akiyama, Kazuyuki Saito, Soichi Watanabe, and Koichi Ito

¹Chiba University, Japan, ²National Institute of Information and Communications Technology, Japan

[S-K3b-2] 08:50~09:10

Reduction Technique of Specific Absorption Rates by using Novel AMC Reflector.....N/A

Nam Kim and Seungwoo Lee

Chungbuk National University, Korea

[S-K3b-3] 09:10~09:30

Computational Estimation of The Induced Electric Fields in Visual Tissues by Circular-Halo Coil.....908

Mai Lu¹ and Shoogo Ueno²

¹Lanzhou Jiaotong University, China, ²Kyushu University, Japan

[S-K3b-4] 09:30~09:50

A Study on the Meander-Type Dipole Antenna for SAR Validation Test at 150 MHz Band.....N/A

Ki Hwea Kim¹, Ju Dong Jang¹, Sam Young Chung¹, and Yoon Myoung Gimm²

¹National Radio Research Agency, Korea, ²Dankook University, Korea

[S-K3b-5] 09:50~10:10

[Invited] Recent Advances in Computational Radio Frequency Bioelectromagnetics Dosimetry.....N/A

James Lin

University of Illinois, USA

Session Title	[S-E3] Modeling of Electromagnetic Immunity, EMS, and ESD
Date and Time	August 24 (Wed.) / 08:30~10:30
Room	Room E (Convention B)
Session Organizer	Jonghoon Kim (Korea Advanced Institute of Science and Technology) Jingook Kim (Ulsan National Institute of Science and Technology)
Session Chairs	Seungyoung Ahn (Korea Advanced Institute of Science and Technology) Jingook Kim (Ulsan National Institute of Science and Technology)

[S-E3-1] 08:30~08:50

[Invited] EM Noise Immunity Enhancement using Schmitt Trigger Logic Gates in CMOS Process.....915

SangHyeok Park¹, Kyungsoo Kim², Hai Au Huynh¹, Soyeon Joo¹, and SoYoung Kim¹

¹*Sungkyunkwan University, Korea*, ²*Samsung Electronics, Korea*

[S-E3-2] 08:50~09:10

[Invited] Measurement and Modeling of System-level ESD Noise Voltages in Real Mobile Products.....N/A

Myungjoon Park¹, Junsik Park¹, Manho Seung², Joungcheul Choi², Seokkiu Lee², and Jingook Kim¹

¹*Ulsan National Institute of Science and Technology, Korea*, ²*SK Hynix Inc., Korea*

[S-E3-3] 09:10~09:30

[Invited] The Reproducibility Improving Method of Systemlevel ESD Test Through Operating Program Workload Analysis.....921

JungHo Jin, ChoongPyo Jeon, JinHwan Kim, and YuChul Hwang

Samsung Electronics, Korea

[S-E3-4] 09:30~09:50

[Invited] Fast Simulation of Multilayered Power Delivery Network using Multilayered Triangular Subcell Method and Block-Type Leapfrog Scheme.....925

Ikki Arakaki, Tadatoshi Sekine, and Hideki Asai

Shizuoka University, Japan

[S-E3-5] 09:50~10:10

[Invited] Radiated Susceptibility Tests of Electromagnetic Bandgap Power Bus using a Reverberation Chamber.....N/A

Myunghoi Kim¹, Sang Il Kwak¹, and Jong Hwa Kwon²

¹*Hankyong National University, Korea*, ²*Electronics and Telecommunications Research Institute, Korea*

[S-E3-6] 10:10~10:30

[Invited] Estimation of the Worst-Case Conducted Emission Noise due to Multiple Parallel Power Converters.....931

Jaehoon Jeong, Jingook Kim, Sunghyun Kim, and Cheolsoo Kim

¹*Ulsan National Institute of Science and Technology, Korea*, ²*EMCIS Co., Ltd., Korea*

Session Title	[C2] Radio Communication Systems and New Radio Service
Date and Time	August 24 (Wed.) / 08:30~10:30
Room	Room F (Convention C)
Session Chair	Yong-Seok Choi (Electronics and Telecommunications Research Institute)

[C2-1] 08:30~08:50

Wideband Measurements in the 60 GHz Band for Short Range Communication.....N/A

S. Salous¹ and Y. Gao^{1,2}

¹Durham University, UK, ²Northwestern Polytechnical University, China

[C2-2] 08:50~09:10

SAR Image Despeckling by Employment of Multiwavelet based Hidden Markov Model.....938

Wen Long Song and Dong Seog Han

Kyungppook National University, Korea

[C2-3] 09:10~09:30

Analysis of LO-RF Amplitude Modulation Effect in FMCW Radar.....N/A

Jong-Seop Koo, Byungjoon Kim, and Sangwook Nam

Seoul National University, Korea

[C2-4] 09:30~09:50

Design of Satellite Beacon Receiver using Array-based Digital Filter.....N/A

Kyung-Soon Lee and Kyung Heon Koo

Incheon National University, Korea

[C2-5] 09:50~10:10

Position-freshness Based Intermediate Node Filtering for VANET.....N/A

Guhyoung Kwon, Sungwon Lee, Enbae Moon, and Dongkyun Kim

Kyungpook National University, Korea

[C2-6] 10:10~10:30

The Performance Analysis for the Spatial Correlated MIMO Systems in V2V.....950

Myung Chul Park and Dong Seog Han

Kyungpook National University, Korea

Session Title	[S-GH1] ULF/VLF Waves
Date and Time	August 24 (Wed.) / 08:30~10:30
Room	Room G (Convention D)
Session Organizer	Dong-Hun Lee (Kyung Hee University) Kazue Takahashi (Johns Hopkins University)
Session Chair	Kazue Takahashi (Johns Hopkins University)

[S-GH1-1] 08:30~08:50

[Invited] (B,V) Paradigm of Magnetosphere-Ionosphere Coupling.....N/A

Akimasa Yoshikawa
Kyushu University, Japan

[S-GH1-2] 08:50~09:10

[Invited] Magnetospheric ULF Waves Excited by Interplanetary Shocks and Associated Oscillations of Energetic Particle Fluxes: Van Allen Probes Observations.....N/A

Kazue Takahashi¹, Seth G. Claudepierre², David M. Malaspina³, John R. Wygant⁴, and Craig A. Kletzing⁵
¹The Johns Hopkins University Applied Physics Laboratory, USA, ²The Aerospace Corporation, USA, ³University of Colorado Boulder, USA, ⁴University of Minnesota, USA, ⁵University of Iowa, USA

[S-GH1-3] 09:10~09:30

[Invited] Spatial Structure of Compressional Pc3 Waves in the Topside Ionosphere.....N/A

Balázs Heilig¹ and Peter R. Sutcliffe²
¹Geological and Geophysical Institute of Hungary, Hungary, ²South African National Space Agency, South Africa

[S-GH1-4] 09:30~09:50

[Invited] Effects of Ionospheric Heavy Ions on EMIC Wave Propagation.....N/A

Eun-Hwa Kim, Jay R. Johnson, and Scott Keller
Princeton University, USA

[S-GH1-5] 09:50~10:10

[Invited] Simulation of Bounce Resonance ULF Wave-Particle Interactions.....956

R. Rankin¹, C. Wang¹, D. Sydorenko¹, Y. Wang², Q.-G. Zong², and X. Zhou²
¹University of Alberta, Canada, ²Peking University, China

[S-GH1-6] 10:10~10:30

[Invited] Numerical Study of Propagation Characteristics of Interplanetary Shocks.....N/A

Jinhy Hong, Kyung-Im Kim, Ensang Lee, and Dong-Hun Lee
Kyung Hee University, Korea

Session Title	[S-H5] Coherent Radiation Sources
Date and Time	August 24 (Wed.) / 08:30~10:30
Room	Room H (Convention E)
Session Organizer	EunMi Choi (Ulsan National Institute of Science and Technology) Heather Song (University of Colorado-Colorado Springs)
Session Chair	Minsup Hur (Ulsan National Institute of Science and Technology)

[S-H5-1] **08:30~08:50**

[Invited] Ultrafast Electron Diffraction System and Timeresolved Pump/Prove Experiments.....N/A
Kyu-Ha Jang, Seong Hee Park, Kitae Lee, and Young Uk Jeong
Korea Atomic Energy Institute, Korea

[S-H5-2] **08:50~09:10**

[Invited] Sub-Terahertz Slow-Wave Circuits for Coherent Radiation Sources.....963
Chan-Wook Baik¹, Ho Young Ahn¹, Yongsung Kim¹, JooHo Lee¹, Seogwoo Hong¹, Sang Hun Lee¹, Jun Hee Choi¹, Sunil Kim¹, Jong Min Kim¹, Sungwoo Hwang¹, So-Yeon Jeon², SeGi Yu², George Collins³, M. E. Read³, and R. Lawrence Ives³
¹*Samsung Advanced Institute of Technology, Korea*, ²*Hankuk University of Foreign Studies, Korea*, ³*Calabazas Creek Research, Inc., USA*

[S-H5-3] **09:10~09:30**

[Invited] Experiment of a Gyrotron Backward Wave Oscillator on Square Waveguide.....N/A
Kwang-Ho Jang and Jin-Joo Choi
Kwangwoon University, Korea

[S-H5-4] **09:30~09:50**

[Invited] Design Study of a G-band Folded Waveguide Traveling-Wave Tube Driven by a Backward-Wave Oscillator.....N/A
Ingeun Lee, Ashwini Sawant, and EunMi Choi
Ulsan National Institute of Science and Technology, Korea

[S-H5-5] **09:50~10:10**

[Invited] Selectively Enhanced Pumping of Coherent, Ultraintense THz Radiation from Laser-plasma Interaction.....N/A
Min Sup Hur
Ulsan National Institute of Science and Technology, Korea

[S-H5-6] **10:10~10:30**

[Invited] Development of Magnetrons for Industrial and Medical Applications.....N/A
Jung-Il Kim, Geun-Ju Kim, Jeong-Hun Lee, Sang-Hoon Kim, and In-Soo Kim
Korea Electrotechnology Research Institute, Korea

Session Title	[A2] Time and Frequency (Joint with ATF)
Date and Time	August 24 (Wed.) / 08:30~10:10
Room	Room I (Crane)
Session Chairs	Amitava Sen Gupta (The NorthCap University) Myoung-Sun Heo (Korea Research Institute of Standards and Science)

[A2-1] **08:30~08:50**

Improvement of an Yb Optical lattice Clock at KRISS.....N/A

Myoung-Sun Heo, Huidong Kim, Won-Kyu Lee, Dai-Hyuk Yu, and Chang-Yong Park
Korea Research Institute of Standards and Science, Korea

[A2-2] **08:50~09:10**

Systematic Shifts in the Frequency of NPLI-CsF1.....974

Aishik Acharya¹, Poonam Arora¹, Vattikonda Bharath¹, Shuchi Yadav¹, Ashish Agarwal¹, and Amitava Sen Gupta²
¹*CSIR National Physical Laboratory, India*, ²*The Northcap University, India*

[A2-3] **09:10~09:30**

A Novel Technique for Precise Phase and Frequency Measurement.....978

Aishik Acharya¹, Poonam Arora¹, Shuchi Yadav¹, and Amitava Sen Gupta²
¹*CSIR National Physical Laboratory, India*, ²*The Northcap University, India*

[A2-4] **09:30~09:50**

Recent Improvement of Laser System for the KRISS-F1 Cs Fountain Clock.....N/A

Sang Eon Park^{1,2}, Sangmin Lee^{1,2}, Myoung-Sun Heo¹, Taeg Yong Kwon¹, Hyun-Gue Hong¹, Sang-Bum Lee¹, and John G. Hartnett³
¹*Korea Research Institute of Standards and Science, Korea*, ²*University of Science and Technology, Korea*, ³*University of Adelaide, Australia*

[A2-5] **09:50~10:10**

Development of Standard Time and Frequency Service using Low Frequency in Korea.....N/A

Young-Kyu Lee, Dai-Hyuk Yu, Seong-Hoon Yang, Jong-Koo Lee, and Sang-Wook Hwang
Korea Research Institute of Standard and Science, Korea

Session Title	[S-D6] Low-energy Wireless Sensor Electronics
Date and Time	August 24 (Wed.) / 08:30~10:30
Room	Room J (Swan)
Session Organizer	Hyunchol Shin (Kwangwoon University) Chun Huat Heng (National University of Singapore)
Session Chairs	Hyunchol Shin (Kwangwoon University) Chun Huat Heng (National University of Singapore)

[S-D6-1] 08:30~08:50

Design Considerations for Bluetooth Low Energy CMOS RF Transceivers for IoT.....984

Shinill Chang and Hyunchol Shin
Kwangwoon University, Korea

[S-D6-2] 08:50~09:10

[Invited] Reconfigurable, Energy Efficient Transmitter with Band-Shaping and Multi-Channel Support for Biomedical Applications.....986

Chun-Huat Heng and Kok-Hin Teng
National University of Singapore, Singapore

[S-D6-3] 09:10~09:30

[Invited] Buck-Boost DC-DC Converter Integrated RF Energy Harvesting for Wireless Sensors.....N/A

Choon Sik Cho and Seyoung Baik
Korea Aerospace University, Korea

[S-D6-4] 09:30~09:50

[Invited] Reference-Less Ultra-Low-Power Wake-Up Receiver with Noise Suppression.....994

Kuang-Wei Cheng, Jhih-Syuan Lin, and Shih-En Chen
National Cheng Kung University, Taiwan

[S-D6-5] 09:50~10:10

[Invited] Low-Energy Integrated Circuits and Microsystems for Implantable Wireless Neural Recording.....998

Minkyu Je¹ and Seong-Jin Kim²
¹*Korea Advanced Institute of Science and Technology, Korea,* ²*Ulsan National Institute of Science and Technology, Korea*

[S-D6-6] 10:10~10:30

[Invited] Two 180nm CMOS Wireless Transceivers for IoT Applications.....1000

Zheng Song and Baoyong Chi
Tsinghua University Beijing, China

Session Title	[S-F4a] Advanced Sensor and Radar Technology (1)
Date and Time	August 24 (Wed.) / 08:30~10:30
Room	Room K (White Heron)
Session Organizer	Min-Ho Ka (Yonsei University) Xiongjun Fu (Beijing Institute of Technology)
Session Chair	Min-Ho Ka (Yonsei University)

[S-F4a-1] **08:30~08:50**

Multisensor SAR Image Matching Based on Object Shape.....N/A

Jie Rui^{1,2}, Chao Wang¹, Hong Zhang¹, Zhanmu Zhang², Zhi Liu², and Fei Jin²

¹Chinese Academy of Sciences, China, ²Zhengzhou Institute of Surveying and Mapping, China

[S-F4a-2] **08:50~09:10**

Ka-band Radiometric Imaging using Antennas with Pattern Synthesis.....1007

K. A. Lukin, V. V. Kudriashov, P. L. Vyplavin, Sergii Lukin, and V. P. Palamarchuk

National Academy of Sciences of Ukraine, Ukraine

[S-F4a-3] **09:10~09:30**

Assessment of Absolute Partial Discharge Intensity from a Free-space Radiometric Measurement.....1011

A. Jaber¹, P. Lazaridis¹, Y. Zhang¹, B. Saeed¹, U. Khan¹, D. Upton¹, H. Ahmed¹, P. Mather¹, M. F. Q. Vieira², R. Atkinson³, M. Judd⁴, and I. A. Glover¹

¹University of Huddersfield, UK, ²Universidade Federal de Campina Grande, Brazil, ³University of Strathclyde, UK, ⁴High Frequency Diagnostics & Engineering Ltd, UK

[S-F4a-4] **09:30~09:50**

Investigation of Calibration Aspects of Fully and Compact Polarimetric SAR Systems.....N/A

Abdullah Algafsh^{1,2}, Michael Inggysy¹, and Amit Kumar Mishraz¹

¹University of Cape Town, South Africa, ²King Abdulaziz City for Science and Technology, Saudi Arabia

[S-F4a-5] **09:50~10:10**

The Effect of Perforating the Corner Reflector on Maximum Radar Cross Section.....N/A

Abdullah Algafsh^{1,2}, Michael Inggysy¹, and Amit Kumar Mishraz¹

¹University of Cape Town, South Africa, ²King Abdulaziz City for Science and Technology, Saudi Arabia

[S-F4a-6] **10:10~10:30**

Suppression of Multi-Path Coupling in Scaled-Down Experiment using Cross-Borehole Pulse Radar.....1024

Jae-Hyoung Cho^{1,2}, Ji-Hyun Jung³, Jong-Gwan Yook², and Se-Yun Kim¹

¹Korea Institute of Science and Technology, Korea, ²Yonsei University, Korea, ³Hanwha Thales, Korea

Session Title	[S-B7] Computational Technique and EM Simulation
Date and Time	August 24 (Wed.) / 13:30~15:30
Room	Room A (Emerald A)
Session Organizer	Yong Heui Cho (Mokwon University) Do-Hoon Kwon (University of Mass)
Session Chair	Yong Heui Cho (Mokwon University)

[S-B7-1] 13:30~13:50

[Invited] FDTD Modelling on Intraband Gyrotropic Conductivity of Graphene.....N/A

Liang Yang, Khalid Z. Rajab, and Yang Hao
Queen Mary University of London London, UK

[S-B7-2] 13:50~14:10

[Invited] Parallel Computation Method for Large Metal-Only Reflectarray (MOR) Antennas.....1030

Yong Heui Cho
Mokwon University, Korea

[S-B7-3] 14:10~14:30

[Invited] Rigorous Formulation of Electromagnetic Plane-Wave Scattering by Defected Periodic Circular Cylinder Array in Conical Mounting.....N/A

Koki Watanabe
Fukuoka Institute of Technology, Japan

[S-B7-4] 14:30~14:50

[Invited] FDTD Modeling with High Degrees-of-Freedom for Dispersive Media.....N/A

Kyung-Young Jung and Sang-Gyu Ha
Hanyang University, Korea

[S-B7-5] 14:50~15:10

[Invited] Far Field Radiation Pattern Analysis of an Antenna Installed in an Automobile.....N/A

Zicai Zheng and Hiroshi Shirai
Chuo University, Japan

[S-B7-6] 15:10~15:30

Scattering by a Metallic Wedge Cylindrically Capped with Penetrable Materials.....1042

Danilo Erricolo, Marco D. Poort, and Piergiorgio L. E. Uslenghi
University of Illinois, USA

Session Title	[B1] Fields and Waves 5G and MIMO Technology
Date and Time	August 24 (Wed.) / 13:30~15:10
Room	Room B (Emerald B)
Session Chairs	Kin-Lu Wong (National Sun Yat-sen University) Chang-Joo Kim (Electronics and Telecommunications Research Institute)

[B1-1] 13:30~13:50

[Invited] Spectrum Policy for Hyper-connected Society in Korea.....N/A

Chang-Joo Kim

Electronics and Telecommunications Research Institute, Korea

[B1-2] 13:50~14:10

Isolation Improvement of 5 GHz WLAN Antenna Array using Metamaterial Absorber.....1050

Mayank Agarwal and Manoj Kumar Meshram

Indian Institute of Technology, India

[B1-3] 14:10~14:30

Compact Eight MIMO Antennas for 5G Smartphones and Their MIMO Capacity Verification.....1054

Kin-Lu Wong¹, Chih-Yu Tsai¹, Jun-Yu Lu¹, De-Ming Chian¹, and Wei-Yu Li²

¹*National Sun Yat-sen University, Taiwan*, ²*Industrial Technology Research Institute, Taiwan*

[B1-4] 14:30~14:50

Integrated MIMO Antennas for LTE and V2V Applications.....1057

Oh-Yun Kwon, Reem Song, Yu-Zhen Ma, and Byung-Sung Kim

Sungkyunkwan University, Korea

[B1-5] 14:50~15:10

Wide Scan Angle Massive MIMO Antenna for 5G Communication.....N/A

Seung-In No and Sangwook Nam

Seoul National University, Korea

Session Title	[S-J6a] Science and Technology for Solar and Heliophysics (1)
Date and Time	August 24 (Wed.) / 13:30~15:30
Room	Room C (Diamond)
Session Organizer	Kyungsuk Cho (Korea Astronomy and Space Science Institute) Yihua Yan (Chinese Academy of Sciences)
Session Chairs	Kyungsuk Cho (Korea Astronomy and Space Science Institute) Yihua Yan (Chinese Academy of Sciences)

[S-J6a-1] 13:30~13:50

[Invited] Solar Radio Observations with the Expanded Owens Valley Solar Array.....N/A

Dale E. Gary

New Jersey Institute of Technology, USA

[S-J6a-2] 13:50~14:10

[Invited] Calibration and Data Processing for MUSER.....N/A

Wei Wang, Yihua Yan, Fei Liu, Lihong Geng, Zhijun Chen, Linjie Chen, and Donghao Liu

Chinese Academy of Sciences, China

[S-J6a-3] 14:10~14:30

Reinstallation of the Korean Solar Radio Burst Locator.....N/A

Su-Chan Bong, Bi-Ho Jang, Yongjun Kwon, Do-Heung Je, and Gwanson Choe

¹*Korea Astronomy and Space Science Institute, Korea,* ²*Kyung Hee University, Korea*

[S-J6a-4] 14:30~14:50

[Invited] Solar Observations in Cycle 4 of Atacama Large Millimeter/submillimeter Array.....N/A

Masumi Shimojo

National Astronomical Observatory of Japan, Japan

[S-J6a-5] 14:50~15:10

[Invited] Solar Activity Studies using Microwave Imaging Observations.....1075

N. Gopalswamy

NASA Goddard Space Flight Center, USA

[S-J6a-6] 15:10~15:30

A 20 Year Decline in Solar Magnetic Fields and Solar Wind Micro-Turbulence Levels: Are we Heading Towards a Maunder-Like Minimum?.....1079

P. Janardhan¹, Susanta Kumar Bisoi², and S. Ananthkrishnan³

¹*Physical Research Laboratory, India,* ²*Chinese Academy of Sciences, China,* ³*Pune University, India*

Session Title	[S-K4] EMFs for New Technologies
Date and Time	August 24 (Wed.) / 13:30~15:30
Room	Room D (Convention A)
Session Organizer	Teruo Onishi (NTT Docomo) Jung-Ick Moon (Electronics and Telecommunications Research Institute)
Session Chairs	Teruo Onishi (NTT Docomo) Jung-Ick Moon (Electronics and Telecommunications Research Institute)

[S-K4-1] 13:30~13:50

[Invited] EMF Analysis of Wireless Power Transfer System with Dual-Transmitting Coils.....1083
Jung-Ick Moon, S. M. Kim, S. W. Kim, H. D. Choi, and I. K. Cho
Electronics and Telecommunications Research Institute, Korea

[S-K4-2] 13:50~14:10

[Invited] Electromagnetic Compatibility in Wireless Power Transfer System.....N/A
Jaehyoung Park, Jedok Kim, and Seungyoung Ahn
Korea Advanced Institute of Science and Technology, Korea

[S-K4-3] 14:10~14:30

[Invited] Electric Field Measurement Close to Antennas at an Upper Frequency in the SHF Band.....N/A
Kei Satoh and Teruo Onishi
NTT Docomo, Inc., Japan

[S-K4-4] 14:30~14:50

[Invited] In-vitro Assessment of Electromagnetic Interference Caused by Wireless Power Transfer Device on Active Implantable Medical Devices.....N/A
Takashi Hikage and Toshio Nojima
Hokkaido University, Japan

[S-K4-5] 14:50~15:10

[Invited] A Compliance Procedure for Wireless Power Transfer Systems in MHz Band.....N/A
Kanao Wake, Jerdvisanop Chakarothai, and Soichi Watanabe
National Institute of Information and Communication Technology, Japan

[S-K4-6] 15:10~15:30

[Invited] Wideband Textile Antenna with Low Back Radiation for Wearable Applications.....1089
Ezzaty Faridah Nor Mohd Hussin¹, Ping Jack Soh¹, Mohd Faizal Jamlos^{1,2}, Herwansyah Lago¹, and Azremi Abdullah Al-Hadi¹
¹*Universiti Malaysia Perlis, Malaysia*, ²*Universiti Malaysia Pahang, Malaysia*

Session Title	[S-E4] EMC Problems in Mobile Devices
Date and Time	August 24 (Wed.) / 13:30~15:10
Room	Room E (Convention B)
Session Organizer	Dong Gun Kam (Ajou University) Hyun Ho Park (University of Suwon)
Session Chairs	Dong Gun Kam (Ajou University) Hyun Ho Park (University of Suwon)

[S-E4-1] 13:30~13:50

[Invited] Interference Issues of Smartphones and Challenges to Model Noise from Chipsets.....N/A

Hwanwoo Shim and Jaekyu Lee
Samsung Electronics, Korea

[S-E4-2] 13:50~14:10

[Invited] Noise Immunity Property of Relaxation Oscillator.....1097

Jihoon Kim and So Young Kim
Sungkyunkwan University, Korea

[S-E4-3] 14:10~14:30

[Invited] Quantitative Analysis of the Effects of Differentialto-Common Mode Conversion on RFI.....N/A

Woocheon Park and Dong Gun Kam
Ajou University, Korea

[S-E4-4] 14:30~14:50

[Invited] Effects of PCB Design on the Shielding Effectiveness of a Shield Can.....N/A

Daho Lee and Dong Gun Kam
Ajou University, Korea

[S-E4-5] 14:50~15:10

[Invited] Study for Possibility of Information Leakage from Digital Video Display Interface.....1102

Ho Seong Lee¹, Kyuhong Sim², and Jong-Gwan Yook¹
¹*Yonsei University, Korea*, ²*LIG NEXI, Korea*

Session Title	[C3] Channel Model, Antenna and Propagation (1)
Date and Time	August 24 (Wed.) / 13:30~15:10
Room	Room F (Convention C)
Session Chair	Yoshiyuki Fujino (Toyo University)

[C3-1] **13:30~13:50**

A Comparison Between 4-bit Fixed and Reconfigurable Microwave Discriminators for Frequency Identification.....1104

M. Espinosa-Espinosa¹, I. Llamas-Garro², B. G. M. de Oliveira³, M. T. de Melo⁴, and Jung-Mu Kim⁵
¹*Asociación Nacional de Normalización y Certificación del Sector Eléctrico, Mexico*, ²*Centre Tecnològic de Telecomunicacions de Catalunya, Spain*, ³*Instituto Federal de Pernambuco, Brazil*, ⁴*Universidade Federal de Pernambuco, Brazil*, ⁵*Chonbuk National University, Korea*

[C3-2] **13:50~14:10**

RF MEMS based Inter-band Reconfigurable Antenna.....N/A

Vishal Kumar¹ and S. K. Koul²
¹*Research Centre Imarat (RCI), India*, ²*Indian Institute of Technology, India*

[C3-3] **14:10~14:30**

Comprison of Harmonics Degradation Method of a Random Rectenna Array.....N/A

Yoshiyuki Fujino and Eri Saito
Toyo University, Japan

[C3-4] **14:30~14:50**

Measurement and Analysis of Long Distance Radio Propagation Over the North Sea at 5.2 GHz.....N/A

Wei Wang, Thomas Jost, and Ronald Raulefs
German Aerospace Center, Germany

[C3-5] **14:50~15:10**

Possibility of Confidential Information Recovery from EM Field Emitted by USB-Keybaord.....N/A

Rostislav I. Sokolov and Renat R. Abdullin
Ural Federal University, Russia

Session Title	[S-GH2] Space Weather Impact and Mitigation Efforts
Date and Time	August 24 (Wed.) / 13:30~15:30
Room	Room G (Convention D)
Session Organizer	Jun-Chul Mun (National Radio Research Agency) Mamoru Ishii (National Institute of Information and Communications Technology)
Session Chair	Mamoru Ishii (National Institute of Information and Communications Technology)

[S-GH2-1] 13:30~13:50

[Invited] Measurement of Ionosphere Over the Western Pacific Ocean.....1120

Mamoru Ishii, Hidekatsu Jin, Tatsuhiro Yokoyama, Takuya Tsugawa, Michi Nishioka, and Takashi Maruyama
National Institute of Information and Communications Technology, Japan

[S-GH2-2] 13:50~14:10

[Invited] Establishment of Oblique Ionospheric Sounding Measurement System for Long Distance.....N/A

Jae Woo Park¹, Ho-Cheol Jeon¹, and Jun-Chul Mun²
¹*Radar & Space Co. Ltd., Korea*, ²*Korea Space Weather Center, Korea*

[S-GH2-3] 14:10~14:30

[Invited] Development of a HF Forecast System based on Realtime Regional Ionospheric Conditions.....N/A

Kyungmin Song¹, Dongho Cha¹, and Jun-Chul Mun²
¹*WIBTEL Co., Ltd, Korea*, ²*Korea Space Weather Center, Korea*

[S-GH2-4] 14:30~14:50

[Invited] Application of Multi-constellation GNSS Network in Ionospheric Monitoring Over China.....N/A

Lianhuan Hu and Baiqi Ning
Chinese Academy of Sciences, China

[S-GH2-5] 14:50~15:10

[Invited] Adjusted Matrix of Monitoring & Prediction of Selected Space Weather Elements for Space Situation Awareness.....N/A

Iwona Stanislawska, Beata Dziak-Jankowska, Lukasz Tomasik, and Mariusz Pozoga
Polish Academy of Sciences, Poland

[S-GH2-6] 15:10~15:30

Space Weather Studies of Ionolab Group.....1136

Feza Arikan¹, Orhan Arikan², Tamara L. Gulyaeva⁴, Umut Sezen¹, Cenk Toker¹, Harun Artuner¹, Gurhan Bulu¹, Secil Karatay³, Zbysek Mosna⁵, Hakan Tuna², Uygur Demir¹, and Esra Erdem¹
¹*Hacettepe University, Turkey*, ²*Bilkent University, Turkey*, ³*Kastamonu University, Turkey*, ⁴*IZMIRAN, Russia*, ⁵*Institute of Atmospheric Physics, Czech*

Session Title	[S-HG1a] Effects of Wave-Particle Interactions in Earth's Magnetosphere and Upper Atmosphere (1)
Date and Time	August 24 (Wed.) / 13:30~15:30
Room	Room H (Convention E)
Session Organizer	Wen Li (University of California) Ondrej Santolik (The Czech Academy of Sciences)
Session Chairs	Wen Li (University of California) Ondrej Santolik (The Czech Academy of Sciences)

[S-HG1a-1] 13:30~13:50

[Invited] The Role of Magnetosonic Waves in Earth's Magnetosphere.....N/A

Lunjin Chen¹, Armando Maldonado¹, Jacob Bortnik², and Richard M. Thorne²

¹University of Texas, USA, ²University of California, USA

[S-HG1a-2] 13:50~14:10

[Invited] Van Allen Probes Observations of EMIC Waves and Associated Particles.....N/A

Dae-Young Lee

Chungbuk National University, Korea

[S-HG1a-3] 14:10~14:30

[Invited] Simulation of Radiation Belt Electron Dynamics in Earth's Inner Magnetosphere.....1143

Qianli Ma, Wen Li, Richard M. Thorne, and Jacob Bortnik

University of California, USA

[S-HG1a-4] 14:30~14:50

[Invited] EMIC Waves in the Earth's Inner Magnetosphere.....N/A

Maria E. Usanova¹, Ian R. Mann², and Fabien Darrouzet³

¹University of Colorado Boulder, USA, ²University of Alberta, Canada, ³Belgian Institute for Space Aeronomy, Belgium

[S-HG1a-5] 14:50~15:10

[Invited] ULF Variations in Atmospheric Precipitation of Energetic Electrons.....N/A

Scot R. Elkington¹, Thiago Brito², Alexa Halford³, James McCollough⁴, and Michael J. Wiltberger⁵

¹University of Colorado, USA, ²Los Alamos National Laboratory, USA, ³Dartmouth College, USA, ⁴Air Force Research Laboratory, USA, ⁵High Altitude Observatory/NCAR, USA

[S-HG1a-6] 15:10~15:30

[Invited] Whistler Wave Energy Flow in the Plasmasphere.....N/A

C. A. Kletzing¹, I. W. Christopher¹, Ondrej Santolik², W. S. Kurth¹, G. Hospodarsky¹, and S. R. Bounds¹

¹The University of Iowa, USA, ²Charles University, Czech

Session Title	[A3] Material measurement & Network Analysis
Date and Time	August 24 (Wed.) / 13:30~15:30
Room	Room I (Crane)
Session Chairs	Kouji Shibata (Hachinohe Institute of Technology) Tah-HsiungChu (National Taiwan University)

[A3-1] 13:30~13:50

A Study on Measurement System for Electrical Characteristics of Anisotropic Composite Material.....1150

Seong Sik Yoon¹, Jae W. Lee¹, Taek K. Lee¹, and Dong Woo Yi²

¹Korea Aerospace University, Korea, ²Agency for Defense Development, Korea

[A3-2] 13:50~14:10

Measurement of Properties of Ferrites at Partially Magnetized State using Cylindrical Resonator.....N/A

Tae-Wan Kim and Seong-Ook Park

Korea Advanced Institute of Science and Technology, Korea

[A3-3] 14:10~14:30

A Study on Measurement of Complex Permittivity in Liquids based on a Combination of the Open-ended Cut-off Waveguide Reflection Method and Comparison of Expressions with Reference Material.....1154

Kouji Shibata and Masaki Kobayashi

Hachinohe Institute of Technology, Japan

[A3-4] 14:30~14:50

Analysis of the Advanced Cavity Perturbation Method for Microwave Properties.....N/A

Chul-Ki Kim and Seong-Ook Park

Korea Advanced Institute of Science and Technology, Korea

[A3-5] 14:50~15:10

A Digital Sampling Measurement System of AC Current.....N/A

Chen Shaohua and Huang Xiaoding

Beijing Orient Institute of Measurement and Test, China

[A3-6] 15:10~15:30

Reconstruction of Multiport Scattering Matrix from One-port Measurements.....N/A

Yean-Chung Lin and Tah-Hsiung Chu

National Taiwan University, Taiwan

Session Title	[S-D7] Photonic/Electromagnetic Metamaterials and Metadevices
Date and Time	August 24 (Wed.) / 13:30~15:10
Room	Room J (Swan)
Session Organizer	Bumki Min (Korea Advanced Institute of Science and Technology) Junsuk Rho (Pohang University of Science and Technology)
Session Chairs	Bumki Min (Korea Advanced Institute of Science and Technology) Junsuk Rho (Pohang University of Science and Technology)

[S-D7-1] 13:30~13:50

[Invited] Gradient Nonlinear Metasurfaces with Giant Nonlinear Optical Response.....N/A

Jongwon Lee¹, Nishant Nookala², Mykhailo Tymchenko², J. Sebastian Gomez-Diaz², Andrea Alu², and Mikhail A. Belkin²

¹Ulsan National Institute of Science and Technology, Korea, ²University of Texas, USA

[S-D7-2] 13:50~14:10

[Invited] Spatial and Frequency Domain Engineering of Multiple Resonances for Absorption and Scattering Control.....N/A

Jong Uk Kim, Myung Joon Kim, and Jonghwa Shin

Korea Advanced Institute of Science and Technology, Korea

[S-D7-3] 14:10~14:30

[Invited] Direct Measurement of Far-Field Scattering Characteristics of a Single Metal Nano-Rod.....N/A

Jinhyung Kim¹, Donghyeong Kim¹, Min-Kyo Seo¹, Kwang-Yong Jeong², and Hong-Gyu Park²

¹Korea Advanced Institute of Science and Technology, Korea, ²Korea University, Korea

[S-D7-4] 14:30~14:50

[Invited] Infrared Metamaterials for High-Sensitive Surface-Enhanced Molecular Detection.....N/A

Atsushi Ishikawa

Okayama University, Japan

[S-D7-5] 14:50~15:10

[Invited] A Numerical Study for Sensitivity Enhancements of a Plasmon Coupled Whispering Gallery Modes Sensor.....N/A

Tae Young Kang and Kyujung Kim

Puan National University, Korea

Session Title	[S-F4b] Advanced Sensor and Radar Technology (2)
Date and Time	August 24 (Wed.) / 13:30~15:10
Room	Room K (White Heron)
Session Organizer	Min-Ho Ka (Yonsei University) Xiongjun Fu (Beijing Institute of Technology)
Session Chair	Min-Ho Ka (Yonsei University)

[S-F4b-1] 13:30~13:50

Single-Chip Software Defined Radio Used As Pulse-Doppler Radar.....N/A

Se-Yeon Jeon, Sumin Kim, Jungwhan Han, Konstantin Nikitin, and Min-Ho Ka
Yonsei University, Korea

[S-F4b-2] 13:50~14:10

Multi-Band Multi-Mode SDR Radar Platform for Traffic and Security Applications.....1182

Young-Kil Kwag and In-Sang Woo
Korea Aerospace University, Korea

[S-F4b-3] 14:10~14:30

EGain-Injected Multiresonator using SubstrateIntegrated-Waveguide.....N/A

Muhammad Usman Memon and Sungjoon Lim
Chung-Ang University, Korea

[S-F4b-4] 14:30~14:50

A Dual PLL FMCW Radar with a Digital Time Control Technique for High-Resolution Wall-Penetration Applications.....N/A

Byungjoon Kim, Jong-seop Koo, Duksoo Kim, and Sangwook Nam
Seoul National University, Korea

[S-F4b-5] 14:50~15:10

Simulation of UWB Returns From a Computer-Animated Walking Human.....N/A

Youngwook Kim¹, Jaideep Chowdhury¹, and Gangil Byun²
¹*California State University, USA*, ²*Hongik University, Korea*

Session Title	[S-B8] Negative Group Delay (NGD) Devices and Its Applications
Date and Time	August 25 (Thu.) / 08:30~10:30
Room	Room A (Emerald A)
Session Organizer	Blaise Ravelo (ESIGELEC) Yongchae Jeong (Chonbuk National University)
Session Chairs	Blaise Ravelo (ESIGELEC) Yongchae Jeong (Chonbuk National University)

[S-B8-1] 08:30~08:50

[Invited] Resistive and Distributed Multiband NGD Active Circuit.....N/A

B. Ravelo
IRSEEM, France

[S-B8-2] 08:50~09:10

[Invited] A Power Divider with Positive and Negative Group Delay Characteristics.....1195

Girdhari Chaudhary, Phirun Kim, Junhyung Jeong, and Yongchae Jeong
Chonbuk National University, Korea

[S-B8-3] 09:10~09:30

[Invited] Microwave Transversal and Recursive-filter based Negative Group Delay Circuits and Non-Foster Elements.....N/A

Chung-Tse Michael Wu
Wayne State University, USA

[S-B8-4] 09:30~09:50

[Invited] A Compact MIMO Antenna with High Isolation for S, C and V Band Applications.....N/A

Malay R. Tripathy¹, Vipin Choudhary¹, Aastha Gupta¹, and Yongchae Jeong²
¹*Amity University, India*, ²*Chonbuk National University, Korea*

[S-B8-5] 09:50~10:10

[Invited] Millimeter-Wave Negative Group Delay Network.....1205

William J. Otter, Stephen M. Hanham, Norbert Klein, and Stepan Lucyszyn
Imperial College London, UK

[S-B8-6] 10:10~10:30

[Invited] Precision E-field Uniformity Measurement of a Probe Loaded TEM Cell using an Optical Probe.....N/A

Takehiro Moirioka¹, Satoru Kurokawa¹, Yoshikazu Toba², and Jun Ichijyo²
¹*National Institute of Industrial Science and Technology, Japan*, ²*Seikoh Giken Co., Ltd., Japan*

Session Title	[B2] Fields and Waves Metamaterials
Date and Time	August 25 (Thu.) / 08:30~10:10
Room	Room B (Emerald B)
Session Chair	Sungtek Kahng (Incheon National University)

[B2-1] **08:30~08:50**

A High Gain Wideband Patch Antenna using Zero-Index Based Multilayer Metamaterial Structure.....N/A

B. Majumder¹, Krishnamoorthy K.¹, J. Mukherjee¹, and K. P. Ray²

¹Indian Institute of Technology, India, ²Society for Applied Microwave Electronic Engineering and Research, India

[B2-2] **08:50~09:10**

A Microwave Metamaterial Absorber with Wide Bandwidth.....1215

Somak Bhattacharyya¹, Saptarshi Ghosh², and Kumar Vaibhav Srivastva²

¹Indian Institute of Information Technology, India, ²Indian Institute of Technology, India

[B2-3] **09:10~09:30**

Broadband Characterization of Efficient Subwavelength-Profile Circularly Polarized Crossed Dipole Antenna on a Finite EBG Surface.....N/A

Son Xuat Ta and Ikmo Park

Ajou University, Korea

[B2-4] **09:30~09:50**

A Compact Wideband Concentric SRR-based Metamaterial Antenna with Dual-band Characteristics.....1223

Sameer Kumar Sharma¹, Chan-Wang Park², and Raghvendra Kumar Chaudhary¹

¹Indian School of Mines Dhanbad, India, ²University of Quebec, Canada

[B2-5] **09:50~10:10**

Thin AMC-Backed Printed Loop Antenna for ISM Band with Improved Antenna Performance and Lower SAR.....1227

Muhammad Kamran Khattak and Sungtek Kahng

Incheon National University, Korea

Session Title	[S-J6b] Science and Technology for Solar and Heliophysics (2)
Date and Time	August 25 (Thu.) / 08:30~10:30
Room	Room C (Diamond)
Session Organizer	Kyungsuk Cho (Korea Astronomy and Space Science Institute) Yihua Yan (Chinese Academy of Sciences)
Session Chairs	Kyungsuk Cho (Korea Astronomy and Space Science Institute) Yihua Yan (Chinese Academy of Sciences)

[S-J6b-1] **08:30~08:50**

[Invited] Current Trends in Solar Radiophysics.....N/A

Valery M. Nakariakov
University of Warwick, UK

[S-J6b-2] **08:50~09:10**

[Invited] Solar Type III Bursts Observed with LOFAR.....1235

Hamish A. S. Reid
University of Glasgow, UK

[S-J6b-3] **09:10~09:30**

Characteristics of Radio-Loud CMEs.....N/A

Pankaj Kumar¹, P. K. Manoharan², and K. S. Cho¹
¹*Korea Astronomy and Space Science Institute, Korea,* ²*The National Centre for Radio Astrophysics, India*

[S-J6b-4] **09:30~09:50**

Coronal Electron Density Distributions Estimated from Coronal Mass Ejections, Deca-Hectometric Type II Radio Bursts, and Polarized Brightness Measurements.....N/A

Jae-Ok Lee and Y. -J. Moon
Kyung Hee University, Korea

[S-J6b-5] **09:50~10:10**

On the Directivity of Low-Frequency Type IV Radio Bursts.....1247

N. Gopalswamy¹, S. Akiyama¹, P. Mäkelä¹, S. Yashiro¹, and I. H. Cairns²
¹*NASA Goddard Space Flight Center, USA,* ²*University of Sydney, Australia*

[S-J6b-6] **10:10~10:30**

A Study of the 2012 January 19 Complex Type II Radio Burst using Wind, SOHO, and STEREO Observations.....1250

T. B. Teklu¹, N. Gopalswamy², A. V. Gholap¹, S. Yashiro², P. Mäkelä², S. Akiyama², N. Thakur², and H. Xie²
¹*Addis Ababa University, Ethiopia,* ²*NASA Goddard Space Flight Center, USA*

Session Title	[S-K5a] Biomedical Applications of EM Wave (1)
Date and Time	August 25 (Thu.) / 08:30~10:30
Room	Room D (Convention A)
Session Organizer	Jeong-Ki Pack (Chungnam National University) Jianqing Wang (Nagoya Institute of Technology)
Session Chairs	Jeong-Ki Pack (Chungnam National University) Jianqing Wang (Nagoya Institute of Technology)

[S-K5a-1] **08:30~08:50**

[Invited] BER Performance Improvement for 30 MHz Band Implant Communication using Equalization Technique.....N/A

Kohei Nomura, Daisuke Anzai, and Jianqing Wang
Nagoya Institute of Technology, Japan

[S-K5a-2] **08:50~09:10**

[Invited] Design of Wireless Transmitter of Myoelectric Signal for Myoelectric Hand Control.....N/A

Hidenao Ando, Daisuke Anzai, and Jianqing Wang
Nagoya Institute of Technology, Japan

[S-K5a-3] **09:10~09:30**

[Invited] Development of Microwave Surgical Devices with Tissue Coagulation Detecting Mechanism.....N/A

Kazuyuki Saito, Naoyuki Ogasawara, and Koichi Ito
Chiba University, Japan

[S-K5a-4] **09:30~09:50**

[Invited] RF Biosensor for Biomolecule Detection.....N/A

Hee-Jo Lee¹ and Jong-Gwan Yook²
¹*Daegu University, Korea*, ²*Yonsei University, Korea*

[S-K5a-5] **09:50~10:10**

[Invited] Design of An Antenna for Brain Stroke Localization.....1265

Juneseok Lee, Seongkyu Lee, and Jaehoon Choi
Hanyang University, Korea

[S-K5a-6] **10:10~10:30**

[Invited] Realization of a Portable Breast-Cancer Detection System using Microwave.....N/A

Woo-Geun Kang¹, Soon-Ik Jeon², Hyuk-Je Kim², and Jeong-Ki Pack¹
¹*Chungnam National University, Korea*, ²*Electronics and Telecommunications Research Institute, Korea*

Session Title	[S-E5] EMC and Information Security
Date and Time	August 25 (Thu.) / 08:30~10:30
Room	Room E (Convention B)
Session Organizer	Jong-Gwan Yook (Yonsei University) Yu-Ichi Hayashi (Tohoku Gakuin University)
Session Chairs	Jong-Gwan Yook (Yonsei University) Yu-Ichi Hayashi (Tohoku Gakuin University)

[S-E5-1] 08:30~08:50

[Invited] Circuit-Level Information Leakage Prevention for Fault Detection.....1271

Kazuo Sakiyama, Reina Yagasaki, Takanori Machida, and Tatsuya Fujii
The University of Electro-Communications, Japan

[S-E5-2] 08:50~09:10

[Invited] Introduction to a Special Session on EMC and Information Security.....1275

Yu-ichi Hayashi¹ and Jong-Gwan Yook²
¹*Tohoku Gakuin University, Japan*, ²*Yonsei University, Korea*

[S-E5-3] 09:10~09:30

[Invited] Analysis of Information Leakage from Display Devices with LCD.....1277

Ho Seong Lee¹, Kyuhong Sim², and Jong-Gwan Yook¹
¹*Yonsei University, Korea*, ²*LIG NEXI, Korea*

[S-E5-4] 09:30~09:50

[Invited] Reconstruction of Leaked Signal from USB Keyboards.....1281

Hyo-Joon Choi¹, Ho Seong Lee¹, Dongjoo Sim¹, Kyuhong Sim², and Jong-Gwan Yook¹
¹*Yonsei University, Korea*, ²*LIG NEXI, Korea*

[S-E5-5] 09:50~10:10

[Invited] Security Deterioration of Advanced Encryption Standard Circuit by Fluctuations of Side-Channel Traces in Fault Analysis Attack.....N/A

Shinsuke Horinouchi¹, Kengo Iokibe¹, Hiroto Kagotani¹, Tetsushi Watanabe², and Yoshitaka Toyota¹
¹*Okayama University, Japan*, ²*Okayama Prefecture, Japan*

[S-E5-6] 10:10~10:30

[Invited] New Metric for Side-Channel Information Leakage: Case Study on EM Radiation from AES Hardware.....1288

Momoka Kasuya, Takanori Machida, and Kazuo Sakiyama
The University of Electro-Communications, Japan

Session Title	[C4] Channel Model, Antenna and Propagation (2)
Date and Time	August 25 (Thu.) / 08:30~10:30
Room	Room F (Convention C)
Session Chairs	Minseok Kim (Niigata University) Dongho Kim (Sejong University)

[C4-1] 08:30~08:50

Simulation Based Mm-Wave Channel Model For Outdoor Open Area Access Scenarios.....1292
 Minseok Kim¹, Tatsuki Iwata¹, Kento Umeki¹, Karma Wangchuk², Jun-ichi Takada², and Shigenobu Sasaki¹
¹Niigata University, Japan, ²Tokyo Institute of Technology, Japan

[C4-2] 08:50~09:10

A Novel Method to Reduce Physical Dimensions of Reflectarray Antennas using Near-field Feeding.....1296
 Soo-Bean Cho, Eon-Seok Jo, and Dongho Kim
 Sejong University, Korea

[C4-3] 09:10~09:30

Comparative Study of Broadcasting Antenna Array Optimization using Evolutionary Algorithms.....1299
 Pavlos I. Lazaridis¹, Emmanouil Tziris², Zaharias D. Zaharis³, Thomas Xenos³, Violeta Holmes¹, John P. Cosmas²,
 and Ian A. Glover¹
¹University of Huddersfield, UK, ²Brunel University, UK, ³Aristotle University of Thessaloniki, Greece

[C4-4] 09:30~09:50

Performance Analysis of LTE Multi-Antenna Technology in Live Network.....1302
 Yunesung Kim, Ohyeoul Choi, Younglak Kim, and Jinhyo Park
 SK Telecom, Korea

[C4-5] 09:50~10:30

[Keynote] Measurement-Based Millimeter-Wave Wideband Channel Characteristics for 5G
 Communication Systems.....N/A
 Hyun Kyu Chung
 Electronics and Telecommunications Research Institute, Korea

Session Title	[G1] Radio Wave Propagation
Date and Time	August 25 (Thu.) / 08:30~09:50
Room	Room G (Convention D)
Session Chair	Iwona Stanislawska (Polish Academy of Sciences)

[G1-1]	08:30~08:50
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VLF Modal Interference Distance for a West-East Propagation Path to Fiji.....1306

Atishnal Elvin Chand and Sushil Kumar
The University of the South Pacific, Fiji

[G1-2]	08:50~09:10
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Estimation of the Nighttime Height of the Lower Ionosphere using VLF Waves Propagation.....1310

Jorge Samanes¹, Jean-Pierre Raulin², and Cao Jinbin¹
¹*Beihang University, China*, ²*Universidade Presbiteriana Mackenzie, Brazil*

[G1-3]	09:10~09:30
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Wide-Angle Generalization of Integral Representation as Double Weighted Fourier Transform in the Problem of Wave Reflection from a Randomly Inhomogeneous Ionospheric Layer.....N/A

Mikhail V. Tinin¹ and Sergei I. Knizhin²
¹*Institute of Solar-Terrestrial Physics, Russia*, ²*Irkutsk State University, Russia*

[G1-4]	09:30~09:50
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Investigation of Optical Path Functional for High and Low Ionospheric Radio Rays.....1317

Igor A. Nosikov¹, Maxim V. Klimenko², Pavel F. Bessarab³, and Gennady A. Zhbakov⁴
¹*Immanuel Kant Baltic Federal University, Russia*, ²*West Department of IZMIRAN, Russia*, ³*Royal Institute of Technology KTH, Sweden*, ⁴*Southern Federal University, Russia*

Session Title	[S-HG1b] Effects of Wave-Particle Interactions in Earth's Magnetosphere and Upper Atmosphere (2)
Date and Time	August 25 (Thu.) / 08:30~10:30
Room	Room H (Convention E)
Session Organizer	Wen Li (University of California) Ondrej Santolik (The Czech Academy of Sciences)
Session Chairs	Wen Li (University of California) Ondrej Santolik (The Czech Academy of Sciences)

[S-HG1b-1] 08:30~08:50

[Invited] Nonlinear Wave-Particle Interactions in the Radiation Belts.....N/A

Yoshiharu Omura
Kyoto University, Japan

[S-HG1b-2] 08:50~09:10

[Invited] Interactions of Energetic Particles With Ulf Waves In The Magnetosphere.....N/A

Qiugang Zong
Peking University, China

[S-HG1b-3] 09:10~09:30

[Invited] Data Assimilative Model of the Plasmasphere: Recent Advances on PLASMON Project.....N/A

János Lichtenberger^{1,2}, Anders M. Jörgensen³, Balázs Heilig⁴, Dávid Koroncay², Mark A. Clilverd⁵, Massimo Vellante⁶, Jyrki Manninen⁷, Craig J. Rodger⁸, Andrew B. Collier⁹, Jan Reda¹⁰, Robert H. Holzworth¹¹, and Reinhard Friedel¹²

¹Eötvös University, Hungary, ²Geodetic and Geophysical Institute, Hungary, ³New Mexico Institute of Mining and Technology, USA, ⁴Geological and Geophysical Institute of Hungary, Hungary, ⁵British Antarctic Survey, UK, ⁶University of L'Aquila, Italy, ⁷Sodankyla Geophysical Observatory, Finland, ⁸University of Otago, New Zealand, ⁹Exegetic Analytics, South Africa, ¹⁰Geophysical Institute of Polish Academy of Sciences, Poland, ¹¹University of Washington, USA, ¹²Los Alamos National Laboratory, USA

[S-HG1b-4] 09:30~09:50

[Invited] Geospace Exploration Project ERG.....N/A

Y. Miyoshi¹, I. Shinohara², T. Takashima², K. Asamura², H. Matsumoto², N. Higashio², T. Mitani², S. Yokota², S. Kasahara², S. Wang³, Y. Kazama³, M. Hirahara¹, Y. Kasahara⁴, Y. Kasaba⁵, S. Yagitani⁴, A. Matsuoka², H. Kojima⁶, Y. Katoh⁵, K. Shiokawa¹, and K. Seki⁷

¹Nagoya University, Japan, ²Japan Aerospace Exploration Agency, Japan, ³Institute of Astronomy and Astrophysics, Academia Sinica, Taiwan, ⁴Kanazwa University, Japan, ⁵Tohoku University, Japan, ⁶Kyoto University, Japan, ⁷Sodankyla Geophysical Observatory, Finland, ⁸University of Otago, New Zealand, ⁹Exegetic Analytics, South Africa, ¹⁰Geophysical Institute of Polish Academy of Sciences, Poland, ¹¹University of Washington, USA, ¹²Los Alamos National Laboratory, USA

[S-HG1b-5] 09:50~10:10

[Invited] Challenges of Space Borne Radio Diagnostics.....1328

Hanna Rothkaehl
Centrum Badań Kosmicznych, Poland

[S-HG1b-6] 10:10~10:30

[Invited] Effects of Dipole Geometry on the Lifetime of Poloidal Alfvén Waves.....N/A

Jiwon Choi, Dong-Hun Lee, Khan-Hyuk Kim, and Ensang Lee
Kyung Hee University, Korea

Session Title	[A4] Communication Related Metrology
Date and Time	August 25 (Thu.) / 08:30~10:30
Room	Room I (Crane)
Session Chair	Qian Nan Lu (Yunnan University)

[A4-1] **08:30~08:50**

Non-contact PIM Measurement of Large Samples using a Small Anechoic Box.....1332

Hiroataka Suzuki and Nobuhiro Kuga
Yokohama National University, Japan

[A4-2] **08:50~09:10**

A Method for On-line Measurement and Calibration of Fixed Radio Monitoring Stations.....1334

Qian Nan Lu^{1,2}, Jing Jing Yang¹, Hao Tang², Zhao Yuan Jin², De Zhang Chen², and Ming Huang¹
¹Yunnan University, China, ²Yunnan Provincial Industry and Information Technology Commission, China

[A4-3] **09:10~09:30**

Electrical Characteristics of and E-field Distribution in CTL (Coupled-Transmission-Line) Cell for SAR Measurement Probe Calibration at 150 MHz.....1337

Yoon Myoung Gimm¹, Samyoung Chung², Kihwea Kim², and Judong Jang²
¹Dankook University, Korea, ²Ministry of Science, ICT and Future Planning, Korea

[A4-4] **09:30~09:50**

Design of a Single-Radiator Multi-Port Antenna for Adaptive Beamforming Applications.....N/A

Gangil Byun and Hosung Choo
Hongik University, Korea

[A4-5] **09:50~10:10**

A Novel Design of 0.8-1.2GHz Negative Impedance Converter Circuit.....N/A

NgocDuc Au and Chulhun Seo
Soongsil University, Korea

[A4-6] **10:10~10:30**

The Effects of Antenna Position on RF Exposed Human Head.....1349

Funda Cırık Acıkaya¹, Mehmet Fatih Çelebi¹, Fulya Çallıalp Kunter¹, and Şaban Selim Şeker²
¹Marmara University, Turkey, ²Bogazici University, Turkey

Session Title	[S-DBC1] Optical, Electrical and Optoelectronic Generation and Distribution of Microwave Signal
Date and Time	August 25 (Thu.) / 08:30~10:30
Room	Room J (Swan)
Session Organizer	B N Biswas (Sir J. C School of Engineering) Arindum Mukherjee (Central Institute of Technology)
Session Chairs	B N Biswas (Sir J. C School of Engineering) Arindum Mukherjee (Central Institute of Technology)

[S-DBC1-1] 08:30~08:50

[Invited] Elimination Of The Deleterious Effect Of using Bandpass Filter In Heterodyne PLL Demodulator.....1353

B N Biswas¹, Amit K Varshney¹, and Tulika Mehta²

¹Supreme Knowledge Foundation Group of Institutions, India, ²Fortune Consultancy Services, India

[S-DBC1-2] 08:50~09:10

[Invited] Compact Wideband Dual Frequency (Dual Band) Microstrip Patch Antenna for Wireless Communications.....1357

Sunandan Bhunia¹, Avisankar Roy², and Partha Pratim Sarkar³

¹Central Institute of Technology, India, ²Haldia Institute of Technology, India, ³University of Kalyani, India

[S-DBC1-3] 09:10~09:30

[Invited] Locking Characteristics of a Modified Heterodyne Phase-Lock Loop.....1361

Arindum Mukherjee¹, A. Varseney², Tulika Mehta³, and B N Biswas²

¹Central Institute of Technology, India, ²Supreme Knowledge Foundation Group of Institutions, India, ³Fortune Consultancy Services, India

[S-DBC1-4] 09:30~09:50

[Invited] Study on the Complex Dynamics of a Single Loop Optoelectronic Oscillator.....1365

Dia Ghosh¹, Arindum Mukherjee², Nikhil Ranjan Das³, and Baidya Nath Biswas⁴

¹Siliguri Institute of Technology, India, ²Central Institute of Technology, India, ³Calcutta University, India, ⁴SKF Group of Institutions, India

[S-DBC1-5] 09:50~10:10

[Invited] False Lock Elimination in Heterodyne PLL using Phase Frequency Control.....1368

Arindum Mukherjee¹, A. Varseney², Tulika Mehta³, and B N Biswas²

¹Central Institute of Technology, India, ²Supreme Knowledge Foundation Group of Institutions, India, ³Fortune Consultancy Services, India

[S-DBC1-6] 10:10~10:30

[Invited] Hysteresis And Jump Phenomena In Reflex Oscillators.....1372

B N Biswas¹, Amit K Varshney¹, and Arindum Mukherjee²

¹Supreme Knowledge Foundation Group of Institutions, India, ²Central Institute of Technology, India

Session Title	[S-F5] Radio Wave Propagation Aspects in Body Area Networks
Date and Time	August 25 (Thu.) / 08:30~10:10
Room	Room K (White Heron)
Session Organizer	Slawomir J. Ambroziak (Gdansk University of Technology) Luis M. Correia (University of Lisbon)
Session Chair	Slawomir J. Ambroziak (Gdansk University of Technology)

[S-F5-1] 08:30~08:50

[Invited] Radio Channel Measurements in Body-to-Body Communications in Different Scenarios.....1376

Slawomir J. Ambroziak¹, Luis M. Correia², and Kenan Turbic²

¹Gdansk University of Technology, Poland, ²University of Lisbon, Portugal

[S-F5-2] 08:50~09:10

[Invited] Tracking Body Movement for Radio Channel Measurements in BAN with Indoor Positioning System.....1380

Jaroslaw Sadowski, Piotr Rajchowski, and Krzysztof Cwalina

Gdansk University of Technology, Poland

[S-F5-3] 09:10~09:30

[Invited] Analysis of On-Body Communication Channels with Consideration of Wave Absorbers Emulating Free Space.....1383

Kosori Thoun, Takahiro Aoyagi, and Jun-ichi Takada

Tokyo Institute of Technology, Japan

[S-F5-4] 09:30~09:50

Improvement of Delay Profile Estimation using Wireless LAN Signal.....1387

Atsuki Morita, Hisato Iwai, and Hideichi Sasaoka

Doshisha University, Japan

[S-F5-5] 09:50~10:10

An Improved Temporal Correlation Model for Vehicle-to-Vehicle Channels with Moving Scatterers.....1391

Sangjo Yoo and Kiseon Kim

Gwangju Institute of Science and Technology, Korea

Session Title	[S-B9a] Computational Techniques and EM Field Simulators (1)
Date and Time	August 25 (Thu.) / 13:30~15:30
Room	Room A (Emerald A)
Session Organizer	Shinichiro Ohnuki (Nihon University) Lijun Jiang (The University of Hong Kong)
Session Chair	Shinichiro Ohnuki (Nihon University)

[S-B9a-1] 13:30~13:50

[Invited] A Waveguide Configuration for Reducing Both Pure Bend and Polarization Dependent Losses.....1393

Yuta Nito, Hiroto Watanabe, Junji Yamauchi, and Hisamatsu Nakano
Hosei University, Japan

[S-B9a-2] 13:50~14:10

[Invited] Sparse Equivalent Source Method for Radiated Emission Analysis of Shielded Circuits.....1395

Huapeng Zhao, Ying Zhang, Jun Hu, and Zhizhang Chen
University of Electronic Science and Technology of China, China

[S-B9a-3] 14:10~14:30

[Invited] Efficient Implicit FDTD Algorithm in Cylindrical Coordinates.....1399

Jun Shibayama, Masato Ito, Junji Yamauchi, and Hisamatsu Nakano
Hosei University, Japan

[S-B9a-4] 14:30~14:50

Diagnosis of Thin Wire Antenna Arrays using Hybrid Method of Moments-Sparse Source Reconstruction.....1402

Ying Zhang and Huapeng Zhao
University of Electronic Science and Technology of China, China

[S-B9a-5] 14:50~15:10

[Invited] A Geometry-Aware, Scalable Hybrid Finite Element-Boundary Integral Method for Time-Harmonic Maxwell's Equations.....N/A

Zhen Peng and Hong-Wei Gao
University of New Mexico, USA

[S-B9a-6] 15:10~15:30

[Invited] Performance Analysis of Massively Parallelized Practical FDTD Scheme with Many-Core Architectures: Comparison between GPU and MIC Accelerators.....N/A

Yukihisa Suzuki, Ryo Imai, and Kan Okubo
Tokyo Metropolitan University, Japan

Session Title	[B3] Fields and Waves Frequency Selective Surface
Date and Time	August 25 (Thu.) / 13:30~15:10
Room	Room B (Emerald B)
Session Chair	Toshikazu Hori (University of Fukui)

[B3-1] 13:30~13:50

A Miniaturized-Element Frequency Selective Surface with High Angular Stability.....N/A

Saptarshi Ghosh¹, Kumar Vaibhav Srivastava¹, and Somak Bhattacharyya²

¹Indian Institute of Technology Kanpur, India, ²Indian Institute of Information Technology, India

[B3-2] 13:50~14:10

Configuration of Meta-surface with FSS for Wideband Polarization Conversion.....1414

Ryuji Kuse, Toshikazu Hori, and Mitoshi Fujimoto

University of Fukui, Japan

[B3-3] 14:10~14:30

Spatial Filter by using Multilayered FSS for Orthogonal Polarization Conversion.....1416

Shiro Handa, Ryuji Kuse, Toshikazu Hori, and Mitoshi Fujimoto

University of Fukui, Japan

[B3-4] 14:30~14:50

Koch Snowflake Dielectric Resonator Antenna with Periodic Circular Slots for High Gain and Wideband Applications.....1418

Dileep Sankaranarayanan, Duggirala Venkatakiran, and Biswajeet Mukherjee

Indian Institute of Information Technology Design and Manufacturing Jabalpur, India

[B3-5] 14:50~15:10

A Patch-Slot-Patch Type Frequency Selective Surface for Gain Enhancement of a Wide-Slot Antenna.....N/A

Ayan Chatterjee and Susanta Kumar Parui

Indian Institute of Engineering Science and Technology, India

Session Title	[S-JDE4] Digital Technology for Radio Astronomy
Date and Time	August 25 (Thu.) / 13:30~15:10
Room	Room C (Diamond)
Session Organizer	Se-Jin Oh (Korea Astronomy and Space Science Institute) Homin Jiang (Astronomy and Astrophysics, Academia Sinica)
Session Chairs	Se-Jin Oh (Korea Astronomy and Space Science Institute) Homin Jiang (Astronomy and Astrophysics, Academia Sinica)

[S-JDE4-1] 13:30~13:50

[Invited] HERA: The Hydrogen Epoch of Reionization Array.....N/A

David R. DeBoer¹ and Kathryn Rosie²

¹University of California, USA, ²National Research Foundation, South Africa

[S-JDE4-2] 13:50~14:10

[Invited] Progress in SKA Central Signal Processing.....N/A

John D. Bunton

Commonwealth Scientific and Industrial Research Organisation, Australia

[S-JDE4-3] 14:10~14:30

[Invited] Digital Backend Development for Yuan-Tseh Lee Array.....N/A

Homin Jiang

Institute of Astronomy and Astrophysics, Academia Sinica, Taiwan

[S-JDE4-4] 14:30~14:50

[Invited] 8192 Mbps Wideband Correlation for the KaVA.....1434

Se-Jin Oh, Duk-Gyoo Roh, Jae-Hwan Yeom, Chungsik Oh, Hyo-Ryoung Kim, and Dong-Kyu Jung

Korea Astronomy and Space Science Institute, Korea

[S-JDE4-5] 14:50~15:10

The KFFTSpec Spectrometer: Current Status and Future Plans for ALMA.....1438

Jan Wagner¹, Jongsoo Kim¹, Manabu Watanabe², Satoru Iguchi², Shin'ichiro Asayama², Scott Zang², and Kazuyuki Kawakami²

¹Korea Astronomy and Space Science Institute, Korea, ²National Astronomical Observatory of Japan, Japan

Session Title	[S-K5b] Biomedical Applications of EM Wave (2)
Date and Time	August 25 (Thu.) / 13:30~15:10
Room	Room D (Convention A)
Session Organizer	Jeong-Ki Pack (Chungnam National University) Jianqing Wang (Nagoya Institute of Technology)
Session Chairs	Jeong-Ki Pack (Chungnam National University) Jianqing Wang (Nagoya Institute of Technology)

[S-K5b-1] 13:30~13:50

Improvement of Ultrasound Contrast Imaging with Adaptive Beamformer based on Pulse Inversion Plane Wave Transmission.....1442

Yurong Huang¹, Jinhua Yu^{1,2}, Yuanyuan Wang^{1,2}, Shuying Li¹, and Yi Chen¹

¹Fudan University, China, ²The Key Laboratory of Medical Imaging Computing and Computer Assisted Intervention of Shanghai, China

[S-K5b-2] 13:50~14:10

Proximity Vital Sign Sensor using Self-Oscillating Mixer.....1446

Sangin Kim¹, Byung-Hyun Kim¹, Gi-Ho Yun², and Jong-Gwan Yook¹

¹Yonsei University, Korea, ²Sungkyul University, Korea

[S-K5b-3] 14:10~14:30

Adaptive Scaled Wiener Postfilter Beamformer for Ultrasound Imaging.....1449

Saeid Aliabadi, Yuanyuan Wang, and Jinhua Yu

Fudan University, China

[S-K5b-4] 14:30~14:50

Analysis of Super-Resolution Effect in Microwave Tomography.....N/A

Nikolai Simonov, Soon-Ik Jeon, Bo-Ra Kim, and Seong-Ho Son

Electronics and Telecommunications Research Institute, Korea

[S-K5b-5] 14:50~15:10

Label-Free Biosensor based on Planar RF Technology for Glucose Monitoring.....N/A

M. P. Jayakrishnan, Manoj M., Remsha M., Anju Pradeep, S. Mridula, and P. Mohanan

Cochin University of Science and Technology, India

Session Title	[S-EB] EMC Modeling and Techniques
Date and Time	August 25 (Thu.) / 13:30~15:30
Room	Room E (Convention B)
Session Organizer	Sungtek Kahng (Incheon National University) Erping Li (Zhejiang University)
Session Chair	Sungtek Kahng (Incheon National University)

[S-EB-1] **13:30~13:50**

[Invited] Applications of High Impedance Surfaces for Surface Wave Elimination.....1458

Xing-Chang Wei¹, Yu-Fei Shu¹, Jian-Bo Zhang¹, and Dong Wang²

¹Zhejiang University, China, ²National University of Defense Technology, China

[S-EB-2] **13:50~14:10**

[Invited] A Tunable Antenna Based on Loaded Graphene Sheets for GHz Applications.....1462

Da Li and Er-Ping Li

Zhejiang University, China

[S-EB-3] **14:10~14:30**

[Invited] Electromagnetics Computational Modelling of Magnetic Metamaterials for Wireless Power Transfer.....1465

C. Lee, D. Han, M. K. Khattak, S. Kahng, and J. Kim

¹Incheon National University, Korea, ²Acetechonology, Korea

[S-EB-4] **14:30~14:50**

[Invited] B-Spline Modal Method for Electromagnetic Scattering from Lamellar Grating with a Defect.....N/A

Koki Watanabe

Fukuoka Institute of Technology, Japan

[S-EB-5] **14:50~15:10**

[Invited] Equivalent Circuit Modeling of Package and Board with Resonance Capacitance and Inductance.....N/A

Osami Wada and Tohlu Matsuhima

Kyoto University, Japan

[S-EB-6] **15:10~15:30**

[Invited] Analysis on Field Uniformity of Radiated Fields from a Half Impulse Radiating Antenna.....1474

Tae-Heon Jang and Won-Seo Cho

Korea Testing Laboratory, Korea

Session Title	[C5] Signal Processing, Algorithm and Circuit
Date and Time	August 25 (Thu.) / 13:30~15:30
Room	Room F (Convention C)
Session Chairs	Linglong Dai (Tsinghua University) Ming-feng Lu (Beijing Institute of Technology)

[C5-1] **13:30~13:50**

Robust Waveform Design for MIMO-OFDM Radar to Improve the Detection Performance of STAP.....N/A
Xue Wang, Hongyan Wang, and Bingnan Pei
Dalian University, University

[C5-2] **13:50~14:10**

A Novel Method for Frequency Discriminators Construction based on Balanced Gray Code.....1482
E. M. F. de Oliveira¹, M. S. Coutinho¹, T. L. Pedrosa¹, M. T. de Melo¹, and I. Llamas-Garro²
¹*Universidade Federal de Pernambuco, Brazil*, ²*Centre Tecnològic de Telecomunicacions de Catalunya, Spain*

[C5-3] **14:10~14:30**

Research of Quality of Nonlinear Markov Filtering RGB Signal in Conditions of Gaussian and non-Gaussian Noise.....1485
Rostislav I. Sokolov and Renat R. Abdullin
Ural Federal University, Russia

[C5-4] **14:30~14:50**

Sampled Signal Analysis in the Fractional Fourier Transform Domain.....1489
Xiao-Wei Jin, Ming-Feng Lu, Yan-An Xie, and Zi-Xuan Yu
Beijing Institute of Technology, China

[C5-5] **14:50~15:10**

Priori-Aided Channel Tracking for Millimeter-Wave Beam-space Massive MIMO Systems.....1493
Linglong Dai and Xinyu Gao
Tsinghua University, China

[C5-6] **15:10~15:30**

Elimination of Cycle Slipping And Effect of Transmission Delay In Heterodyne PLL Demodulator.....N/A
Shuvajit Roy, B N Biswas, and Amit K. Varshney
Supreme Knowledge Foundation Group of Institutions, India

Session Title	[G2] General Ionospheric Studies (1)
Date and Time	August 25 (Thu.) / 13:30~14:50
Room	Room G (Convention D)
Session Chair	Young-Sil Kwak (Korea Astronomy and Space Science Institute)

[G2-1] **13:30~13:50**

Morphological Characteristics of Equatorial Ionization Anomaly Crest Over Nanning Region.....N/A

D. H. Zhang¹ and X. H. Mo²

¹*Peking University, China*, ²*Guangxi University for Nationalities, China*

[G2-2] **13:50~14:10**

Comparison of TayAbsTEC Technique Results with GIM Data.....N/A

A. A. Mylnikova and Y. V. Yasyukevich

Institute of Solar-Terrestrial Physics of Siberian Branch of Russian Academy of Sciences, Russia

[G2-3] **14:10~14:30**

The Bite-out Phenomenon in the Ionosphere Over Turkey.....N/A

Secil Karatay¹, Ali Cinar¹, Feza Arıkan², and Ersin Kamberli¹

¹*Kastamonu University, Turkey*, ²*Hacettepe University, Turkey*

[G2-4] **14:30~14:50**

On the Response of the Equatorial, Low, Mid and High Latitude Ionosphere to the Geomagnetic Storm of 17 March 2013.....N/A

Shreedevi P. R. and R. K. Choudhary

Indian Space Research Organisation, India

Session Title	[H1] Theory and Observation of Waves in the Earth's Magnetosphere
Date and Time	August 25 (Thu.) / 13:30~14:50
Room	Room H (Convention E)
Session Chairs	Wen Li (University of California) Kyoung-Joo Hwang (NASA Goddard Space Flight Center)

[H1-1] 13:30~13:50

Fast Modulations of Pulsating Proton Aurora Related with Sub-Packet Structures of Pc1 Pulsations.....N/A

M. Ozaki¹, S. Yagitani¹, T. Inoue¹, K. Shiokawa², Y. Miyoshi², R. Kataoka³, Y. Ebihara⁴, and M. Connors⁵
¹Kanazawa University, Japan, ²Nagoya University, Japan, ³National Institute of Polar Research, Japan, ⁴Kyoto University, Japan, ⁵Athabasca University, Canada

[H1-2] 13:50~14:10

MMS Observations of Kelvin-Helmholtz Waves.....N/A

Kyoung-Joo Hwang¹ and Kyoung-Joo Hwang²
¹NASA Goddard Space Flight Center, USA, ²University of Maryland, USA

[H1-3] 14:10~14:30

Quantitative Assessment of Earth's Radiation Belt Electron Acceleration.....1517

Wen Li, Qianli Ma, Richard M. Thorne, and Jacob Bortnik
 University of California, USA

[H1-4] 14:30~14:50

Frequency Distribution of Pc5-Range Waves in the Magnetosphere Observed with Ekaterinburg Decameter Radar.....N/A

Maksim A. Chelpanov
 Institute of Solar-Terrestrial Physics, Russia

Session Title	[D1] Optics and RF/THz Applications
Date and Time	August 25 (Thu.) / 13:30~15:30
Room	Room J (Swan)
Session Chair	Hosung Choo (Hongik University)

[D1-1] 13:30~13:50

Spoof Plasmonic Waveguide of a Roofed Metallic Grating for Terahertz Applications.....N/A

Yong-Qiang Liu, Ling-Bao Kong, and Pu-Kun Liu
Peking University, China

[D1-2] 13:50~14:10

Output Power Enhancement by Optical Pulse Compression in Photonic-Based RF Generation.....1528

Takashi Yamaguchi, Hiroki Morimoto, and Hiroyuki Toda
Doshisha University, Japan

[D1-3] 14:10~14:30

Analysis of Subwavelength Slit Transmittances on Ag and Au Plates at Terahertz Range.....1531

Jong-Eon Park and Hosung Choo
Hongik University, Korea

[D1-4] 14:30~14:50

Design of All Optical Circular Shift Register using Micro-Ring Resonator.....1534

Jayanta Kumar Rakshit and Jitendra Nath Roy
National Institute of Technology Agartala, India

[D1-5] 14:50~15:10

Relative Stability of First-Order and Second-Order Optical Phase-Locked Loop Considering NonNegligible Propagation Delay.....1537

Jayjeet Sarkar¹, Abhijit Banerjee¹, and B. N. Biswas²
¹*Academy of Technology, India,* ²*Supreme Knowledge Foundation Group of Institutions, India*

[D1-6] 15:10~15:30

Incompletely Modulated PSK Signal Reception using Modified Balanced Optical Phase-Locked Loop.....1541

Abhijit Banerjee¹, Jayjeet Sarkar¹, and B. N. Biswas²
¹*Academy of Technology, India,* ²*Supreme Knowledge Foundation Group of Institutions, India*

Session Title	[S-F6a] Remote Sensing of Precipitation (1)
Date and Time	August 25 (Thu.) / 13:30~15:30
Room	Room K (White Heron)
Session Organizer	Tomoo Ushio (Osaka University) Animesh Maitra (University of Calcutta)
Session Chair	Animesh Maitra (University of Calcutta)

[S-F6a-1] 13:30~13:50

[Invited] Dependence of Rain Integral Parameters on Measured Rain Drop Velocities at a Tropical Location.....1545

Thumree Sarkar, Soumyajyoti Jana, and Animesh Maitra
University of Calcutta, India

[S-F6a-2] 13:50~14:10

[Invited] Prediction of Convective Rainfall using Multitechnique Observations.....1549

Animesh Maitra, Rohit Chakraborty, and Soumyajyoti Jana
University of Calcutta, India

[S-F6a-3] 14:10~14:30

[Invited] Pre-Rain Scintillation of Ku-band Satellite Signal at a Tropical Location.....1552

Arijit De, Arpita Adhikari, and Animesh Maitra
University of Calcutta, India

[S-F6a-4] 14:30~14:50

[Invited] Microphysical Characteristics Analysis of Three Heavy Snowfall Events from the MASCRAD Campaign in Greeley, Colorado, USA.....1555

Wonbae Bang¹, Kwonil Kim¹, GyuWon Lee¹, Merhala Thurai², Patrick Kennedy², V. N. Bringi², and Branislav Notaros²
¹*Kyungpook National University, Korea*, ²*Colorado State University, USA*

[S-F6a-5] 14:50~15:10

[Invited] Precipitation Climatology over India: Validation with Observations and Reanalysis Datasets and Spatial Trends.....N/A

P. Kishore¹, S. Jyothi², S. V. B. Rao², and Isabella Velicogna¹
¹*University of California, USA*, ²*Sri Venkateswara University, India*

[S-F6a-6] 15:10~15:30

[Invited] Precipitation Observation Capabilities of an X-Band Solid-State Weather Radar.....N/A

Zhao Shi¹, Jianxin He¹, Ling Yang¹, Zhendong Yao¹, Debin Su¹, Xuehua Li¹, V. Chandrasekar², and Haonan Chen²
¹*Chengdu University of Information Technology, China*, ²*Colorado State University, USA*

Session Title	[S-B9b] Computational Techniques and EM Field Simulators (2)
Date and Time	August 25 (Thu.) / 16:00~18:00
Room	Room A (Emerald A)
Session Organizer	Shinichiro Ohnuki (Nihon University) Lijun Jiang (The University of Hong Kong)
Session Chair	Shinichiro Ohnuki (Nihon University)

[S-B9b-1] 16:00~16:20

[Invited] Novel Deflectable CRLH Unit Cell Structure for Leaky-Wave Antenna Design.....N/A

Cheng-Yen Ho and Fu-Chiarng Chen
National Chiao Tung University, Taiwan

[S-B9b-2] 16:20~16:40

[Invited] Characteristics of Guided-Mode Extracted Integral Equation for Three-Dimensional Waveguides.....1565

Masahiro Tanaka and Kazuo Tanaka
Gifu University, Japan

[S-B9b-3] 16:40~17:00

[Invited] Optical Property of Gold Nano-Cylinder Chains.....N/A

Shinichiro Ohnuki, Kazuya Nagasawa, and Ryo Takahashi
Nihon University

[S-B9a-4] 17:00~17:20

[Invited] Application of IPO Method to Calculate Scattering by Conducting and Dielectric Objects.....1569

Il-Suek Koh¹, Jae-Won Rim¹, and Woo-Tae Kim²
¹*Inha University, Korea*, ²*Anycasting Software, Korea*

[S-B9b-5] 17:20~17:40

Performance Comparison of the Parallelized FDTD Scheme with the PML implemented on GPU and MIC Architectures.....1572

Ryo Imai, Yukihiisa Suzuki, and Kan Okubo
Tokyo Metropolitan University, Japan

[S-B9b-6] 17:40~18:00

Electromagnetic Resonance through the Transmission Cavity in a Thick Conductor.....N/A

Young Ki Cho¹, Jong Gyeong Yoo¹, Kyung Je Park¹, Dae Sub Kum¹, and Ji Whan Ko²
¹*Kyungpook National University, Korea*, ²*Kumoh National Institute of Technology, Korea*

Session Title	[B4] Fields and Waves Wideband/Dualband Antenna
Date and Time	August 25 (Thu.) / 16:00~17:40
Room	Room B (Emerald B)
Session Chair	Youchung Chung (Daegu University)

[B4-1] 16:00~16:20

Conical Wall Edge Design of Spiral Antenna for Back Lobe Suppression.....N/A

Kyeong-Sik Min

Korea Maritime and Ocean University, Korea

[B4-2] 16:20~16:40

Experimental Research of Leaky-Wave Antenna Based on Covered Rectangular Waveguide with Transverse Slots.....1578

Renat R. Abdullin and Rostislav I. Sokolov

Ural Federal University, Russia

[B4-3] 16:40~17:00

Closed-form Expression of Axial Ratio for Circularly Polarized Patch Antenna with Perturbation Segments.....N/A

Nu Pham and Jae-Young Chung

Seoul National University of Science and Technology, Korea

[B4-4] 17:00~17:20

A Dual Band-notched Ultra Wideband Antenna using Split Ring Resonators.....N/A

Sameer Kumar Sharma¹ and Chan-Wang Park²

¹*Indian Institute of Technology Kanpur, India,* ²*University of Quebec in Rimouski, Canada*

[B4-5] 17:20~17:40

School Food Logistics and Inspection System with HF/UHF Dual Band RFID Tag on Smart Box.....N/A

Franck K. Byondi, Teklebrhan H. Berhe, and Youchung Chung

Daegu University, Korea

Session Title	[J1] Five Hundred Meter Aperture Spherical Telescope (Fast)
Date and Time	August 25 (Thu.) / 16:00~18:00
Room	Room C (Diamond)
Session Chairs	Hideyuki Kobayashi (National Astronomy Observatory of Japan) Do-young Byun (Korea Astronomy and Space Science Institute)

[J1-1] **16:00~16:20**

[Invited] The Five-Hundred-Meter Aperture Spherical Radio Telescope.....N/A

Di Li

National Astronomical Observatories, China

[J1-2] **16:20~16:40**

A Cryogenic, Wide Band Receiver for the 500 m Aperture Spherical Telescope (FAST).....1595

Stephen Smith¹ and Sander Weinreb²

¹*Cosmic Microwave Technology, Inc., USA*, ²*California Institute of Technology, USA*

[J1-3] **16:40~17:00**

EMC Design for FAST.....N/A

Haiyan Zhang, Rendong Nan, Hengqian Gan, Youling Yue, Jinghai Sun, Mingchang Wu, Hao Hu, Jinyou Song, Shijie Huang, Keke Si, Zhiwei Zhang, Chengjin Jin, Caihong Sun, and Bo Peng

Chinese Academy of Sciences, China

[J1-4] **17:00~17:20**

Quad-Ridge Flared Horn Feed Design for Radio Telescope Receiver System using a Genetic Algorithm.....N/A

Y. Ma¹, JL. Yu¹, F. Pang¹, and C. H. See²

¹*Chinese Academy of Sciences, China*, ²*University of Bradford, UK*

[J1-5] **17:20~17:40**

Radio Observation of Venus at Meter Wavelengths using the GMRT.....N/A

Nithin Mohan¹, Subhashis Roy², Govind Swarup², Divya Oberoi², Niruj Mohan², Suresh Raju C.¹, and Anil Bhardwaj¹

¹*Vikram Sarabhai Space Center, India*, ²*Tata Institute of Fundamental Research, India*

[J1-6] **17:40~18:00**

Black Hole Mass Measurement in Nearby Galaxy using Molecular Gas Dynamics.....N/A

Kyoko Onishi¹, Satoru Iguchi¹, Timothy Davis², Martin Bureau³, Michele Cappellari³, Leo Blitz⁴, and Marc Sarzi⁵

¹*National Astronomical Observatory of Japan, Japan*, ²*Cardiff University, UK*, ³*University of Oxford, UK*, ⁴*University of California, USA*, ⁵*University of Hertfordshire, UK*

Session Title	[S-K6] Dosimetry for WBAN Antennas and Devices
Date and Time	August 25 (Thu.) / 16:00~18:00
Room	Room D (Convention A)
Session Organizer	Ping Jack Soh (University Malaysia Perlis) Koichi Ito (Chiba University)
Session Chairs	Ping Jack Soh (University Malaysia Perlis) Yoon Myoung Gimm (Dankook University)

[S-K6-1] 16:00~16:20

[Invited] Transmission Enhancement using Artificial Magnetic Conductor Sheet for Body Centric Communication.....N/A

Mohammad Kamal A Rahim, M. A. Abdullah, Noor Asmawati Samsuri, Noor Asniza Murad, and Kamilia Kamardin
University Technology Malaysia, Malaysia

[S-K6-2] 16:20~16:40

[Invited] Measurement of Electric Field Distributions in the MHz Band around an Electromagnetic Source Employing the Electro-Optic Conversion.....N/A

Teruo Onishi and Satoshi Ishihara
NTT Docomo, Inc., Japan

[S-K6-3] 16:40~17:00

[Invited] Study on Electromagnetic Wave Exposure in Automotive Environments.....N/A

Seongkyu Lee, Juneseok Lee, Sungjoon Yoon, and Jaehoon Choi
Hanyang University, Korea

[S-K6-4] 17:00~17:20

[Invited] A C-Slotted Dual Band Textile Antenna for WBAN Applications.....1621

Ping Jack Soh¹, Fatin Nabilah Gimam¹, Mohd Faizal Jamlos^{1,2}, Herwansyah Lago¹, and Azremi Abdullah Al-Hadi¹
¹*Universiti Malaysia Perlis, Malaysia*, ²*Universiti Malaysia Pahang, Malaysia*

[S-K6-5] 17:20~17:40

[Invited] Latest Technology and Procedures on Safety and Dosimetric Evaluations of OnBody and Implanted Wireless Biomedical and Healthcare Applications.....N/A

Niels Kuster
ETH Zurich, Switzerland

[S-K6-6] 17:40~18:00

A Modified Square Koch Curve Fractal Stent Antenna Design for Medical Implants.....1628

Ramesh Patel, Franklin Bien, and Ki Jin Han
Ulsan National Institute of Science and Technology, Korea

Session Title	[E1] Radio Interference and Spectrum
Date and Time	August 25 (Thu.) / 16:00~18:00
Room	Room E (Convention B)
Session Chair	Qian Nan Lu (Yunnan University)

[E1-1] 16:00~16:20

Assessment of PED Interference to ILS and VOR Receivers in a Small Cargo Plane.....1632

Fatih Üstüner, Coşkun Coşar, Ekrem Demirel, Ersan Baran, and I. Hakan Gökdoğan
Tubitak Bilgem

[E1-2] 16:20~16:40

State-of-the-Art and Challenges of Radio Spectrum Monitoring in Borderlands of China.....1636

Qian Nan Lu^{1,2}, Jing Jing Yang¹, Zhao Yuan Jin², De Zhang Chen², and Ming Huang¹
¹*Yunnan University, China*, ²*Yunnan Provincial Industry and Information Technology Commission, China*

[E1-3] 16:40~17:00

Statistical Property of Polarization Ratio for Radar Sea Clutter.....N/A

Yong Yang, Shun-ping Xiao, De-jun Feng, and Wen-ming Zhang
National University of Defense Technology, China

[E1-4] 17:00~17:20

Insertion Loss Characteristic based on Length Change of the Blanced Transmission line through the Retangular Apertures Enclosure.....1645

Jin-kyu Choi¹, Hyeong gyu Jang¹, Sung-Min Lim², and Ki-Chai Kim¹
¹*Yeungnam University, Korea*, ²*SL Corporation, Korea*

[E1-5] 17:20~17:40

Indian Telecom Spectrum Allocation through Auction.....N/A

Pradeep M. Shah, Prakash D. Vyavahare, and Anjana Jain
Shri Govindram Seksaria Institute of Technology and Science, Indore, India

[E1-6] 17:40~18:00

Development of a System for Measuring Power and Phase Distributions of Radio Waves.....1651

Ryohei Kanaura, Ryohei Hayashi, Satoshi Yagitani, Tomohiko Imachi, Mitsunori Ozaki, Yoshiyuki Yoshimura, and Hirokazu Sugiura
¹*Kanazawa University, Japan*, ²*Industrial Research Institute of Ishikawa, Japan*

Session Title	[C6] New Radio Service
Date and Time	August 25 (Thu.) / 16:00~18:00
Room	Room F (Convention C)
Session Chair	Yunquan Dong (Seoul National University)

[C6-1] 16:00~16:20

Multi-Feature Fusion for Target Recognition based on D-S Evidence Iterative Discount Method.....N/A

Caiyun Wang, Zhiyong He, and Shuxia Wu
Nanjing University of Aeronautics & Astronautics, China

[C6-2] 16:20~16:40

Application of TDR for Monitoring of Ground Movements in Indian Opencast Mine.....N/A

Guntha karthik and Singam Jayanthu
National Institute of Technology, Rourkela, India

[C6-3] 16:40~17:00

Distance-and-Energy-Aware Routing for Energy Harvesting Wireless Sensor Networks.....N/A

Yunquan Dong¹, Jian Wang¹, Byonghyo Shim¹, and Dong In Kim²
¹Seoul National University, Korea, ²Sungkyunkwan University

[C6-4] 17:00~17:20

Compressive Multi-User Detector for Spatial Modulation (SM)-Based Random Access in Internet of Things (IoT)s.....N/A

Zhen Gao
Beijing Institute of Technology, China

[C6-5] 17:20~17:40

Comparative Study of Sensor Fusion Methods for Hybrid Positioning Systems.....1669

Suk-hoon Jung, Byungchul Moon, Jeonghee Ahn, and Dongsoo Han
Korea Advanced Institute of Science and Technology, Korea

[C6-6] 17:40~18:00

Data-Based Optimal Control for Double-Layer Networked Industrial Processes.....N/A

Jianbin Qiu
Harbin Institute of Technology, China

Session Title	[G3] General Ionospheric Studies (2)
Date and Time	August 25 (Thu.) / 16:00~17:40
Room	Room G (Convention D)
Session Chair	Jaeheung Park (Korea Astronomy and Space Science Institute)

[G3-1]	16:00~16:20
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Solar Flare Imprints of Equatorial Electrodynamics: An Investigation using Radio and Optical Techniques.....N/A

S. G. Sumod¹ and Tarun Kumar Pant²

¹Mahatma Gandhi University, India, ²Indian Space Research Organization, India

[G3-2]	16:20~16:40
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On the Possibilities of the Existence of Molecular Ions in the Lunar Ionosphere: a Study using Results from Chandrayaan-I S-Band Radio Occultation Experiment and a Photochemical Model.....N/A

K. M. Ambili¹, R. K. Choudhary², and Anil Bhardwaj³

¹Indian Institute of Space Science and Technology, India, ²Indian Space Research Organization, India

[G3-3]	16:40~17:00
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Correlation of the Ionospheric F2-Layer Parameters with MUF during the Rise of Solar Cycle 24.....N/A

Rafidah Abd Malik^{1,2}, Mardina Abdullah¹, Sabirin Abdullah¹, Mariyam Jamilah Homam³, Tatsuhiro Yokoyama⁴, and Clara Y. Yatini⁵

¹Universiti Kebangsaan Malaysia, Malaysia, ²Science & Technology Research Institute for Defence, Malaysia,

³Universiti Tun Hussein Onn Malaysia, Malaysia, ⁴National Institute of Information and Communications Technology, Japan, ⁵Indonesian National Instit

[G3-4]	17:00~17:20
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Investigation of Short-Lived Es-Layers.....N/A

Kamil Yusupov and Adel Akchurin

Kazan Federal University, Russia

[G3-5]	17:20~17:40
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Exploring Obvious Lunar Ionosphere Based on the Service Module of Circumlunar Return and Reentry Spacecraft.....N/A

Wang Mingyuan¹, Ping Jinsong¹, Han Songtao², Tang Geshi², and Zhang Qiang²

¹Chinese Academy of Sciences, China, ²National Key Laboratory of Science and Technology on Aerospace Flight Dynamics, China

Session Title	[H2] Waves and Particles in Solar System: General
Date and Time	August 25 (Thu.) / 16:00~17:40
Room	Room H (Convention E)
Session Chairs	Ondrej Santolik (Charles University) Kichang Yoon (Korean Space Weather Center of National Radio Rese)

[H2-1] 16:00~16:20

Derivation of Landau Damping without Landau Contour.....N/A

Tadas Nakamura
Fukui Prefectural University, Japan

[H2-2] 16:20~16:40

Scientific Questions Addressed by the Wave Measurements onboard EXOMARS Surface Platform.....N/A

I. Kolmasova¹, O. Santolik¹, and A. Skalsky²
¹*IAP CAS and Charles University, Czech Republic,* ²*Russian Academy of Sciences, Russia*

[H2-3] 16:40~17:00

Coherent Low-Frequency Electrostatic Turbulence in the Solar Wind.....N/A

G. S. Lakhina and S. V. Singh
Indian Institute of Geomagnetism, India

[H2-4] 17:00~17:20

An FDTD Formulation for Communication Through a Plasma With a Linear Density Profile.....N/A

Youngjoon Lim and Sangwook Nam
Seoul National University, Korea

[H2-5] 17:20~17:40

Study on Prediction of Solar Energetic Particle using Linear Regression.....N/A

KiChang Yoon, Jaehun Kim, and Sunhak Hong
National Radio Research Agency, Korea

Session Title	[D2] Energy Harvesting and other Electronic Components
Date and Time	August 25 (Thu.) / 16:00~18:00
Room	Room J (Swan)
Session Chair	Sang-Min Han (Soonchunhyang University)

[D2-1] 16:00~16:20

High-Sensitivity and High-Efficiency 2.4-GHz RF Energy Harvester using SiP Technique.....1707

Ming-Che Yu and Chun-Hsing Li
National Central University, Taiwan

[D2-2] 16:20~16:40

A Review on Recent Trend of High Efficiency Rectifiers for RF Energy Harvesting Applications.....N/A

Zaffar Hayat Nawaz Khan¹, Danial Khan¹, Hamed Abbasizadeh¹, Sang-Yun Kim¹, Young-Jun Park¹, Kang-Yoon Lee¹, Seong-Ho Lee², and Seong-Chul Lee²
¹Sungkyunkwan University, Korea, ²Korea Electronics Technology Institute, Korea

[D2-3] 16:40~17:00

Properties of Stepped Impedance Resonator and Its Application in the Design of Chipless RFID Tag.....N/A

Nijas C. M., Sajitha V. R., Jayakrishnan M. P., and Mohanan P.
Cochin University of Science and Technology, India

[D2-4] 17:00~17:20

Study for Realization of Arbitrary Inductance Values using Distributed Elements and Capacitors.....N/A

Jongsik Lim¹, Seok-Jae Lee¹, Dal Ahn¹, Sang-Min Han¹, Boram An², and Yongchae Jeong²
¹Soonchunhyang University, Korea, ²Chonbuk National University, Korea

[D2-5] 17:20~17:40

Open Otto Chip as an SPR Pressure Transducer.....1722

J. O. Maciel Neto¹, Gustavo Oliveira Cavalcanti², Ignacio Llamas-Garro³, Jung-Mu Kim⁴, and Eduardo Fontana⁵
¹Instituto Federal de Pernambuco, Brazil, ²Universidade de Pernambuco, Brazil, ³Centre Tecnològic de Telecomunicacions de Catalunya, Spain, ⁴Chonbuk National University, Korea, ⁵Universidade Federal de Pernambuco, Brazil

[D2-6] 17:40~18:00

A 35 dBm, 36.5% Efficiency Harmonic Tuned GaN Oscillator using Stepped Impedance Resonator.....N/A

Inhyun Kim, Sunghwan Park, Jung-Lin Woo, and Youngwoo Kwon
Seoul National University, Korea

Session Title	[S-F6b] Remote Sensing of Precipitation (2)
Date and Time	August 25 (Thu.) / 16:00~17:40
Room	Room K (White Heron)
Session Organizer	Tomoo Ushio (Osaka University) Animesh Maitra (University of Calcutta)
Session Chair	Animesh Maitra (University of Calcutta)

[S-F6b-1] 16:00~16:20

[Invited] Conceptual Design of Collaborative Radar Network for Remote Sensing of Precipitation Over Chengdu Metropolitan in Western Sichuan Basin.....1727

Debin Su¹, Jianxin He¹, Ling Yang¹, Zhendong Yao¹, Zhao Shi¹, Xuehua Li¹, V. Chandrasekar², and Haonan Chen²

¹Chengdu University of Information Technology, China, ²Colorado State University, USA

[S-F6b-2] 16:20~16:40

Analysis of Precipitation Characteristics Over Southern Peninsular Malaysia for Satellite Propagation Application.....1729

Siat Ling Jong¹, Hong Yin Lam¹, Michele D'Amico², and Jafri Din³

¹Universiti Tun Hussein Onn Malaysia, Malaysia, ²Politecnico di Milano, Italy, ³Universiti Teknologi Malaysia, Malaysia

[S-F6b-3] 16:40~17:00

Diurnal Variability of Tropical Tropopause: Results Inferred from Radio Occultation Technique.....N/A

K. V. Suneeth¹, Siddarth Shankar Das¹, and Subrata Kumar Das²

¹Vikram Sarabhai Space Centre, India, ²Indian Institute of Tropical Meteorology, India

[S-F6b-4] 17:00~17:20

Variability of Critical Rain Drop Diameter and Its Effect on Rain Attenuation and Radar Reflectivity.....1737

Saurabh Das

Indian Statistical Institute, India

[S-F6b-5] 17:20~17:40

[Invited] Energy Compaction and Multi-Resolution Decomposition Method for Weather Radar Data Compression.....N/A

Bong-Joo Jang and Sanghun Lim

Korea Institute of Civil Engineering and Building Technology, Korea

Session Title	Poster Session
Date and Time	August 24 (Wed.) / 16:00~18:00
Room	Lobby (3F), Convetion Center, Grand Hilton Hotel
Session Chair	Jae-Wook Lee (Korea Aerospace University)

[P-1] **16:00~18:00**

Research on Calibration Technology of the Wide Spectrum Grating Monochromator Wavelength Accuracy.....1744

HongYuan Liu¹, ChengPing Ying¹, KunFeng Chen¹, HongChao Wang¹, Bin Jiang¹, Bin Wu², HengFei Wang², and Mingming Huo²

¹The 41st Institute of China Electronic Technology Group Corporation, China, ²Science and Technology on Electronic Test & Measurement Laboratory, China

[P-2] **16:00~18:00**

Calibration of Terahertz Spectrum by using Carbon Monoxide.....1748

Bin Wu¹, Hengfei Wang¹, Kunfeng Chen², Rui Zhang², Yanzhao Yang², and Chengping Ying²

¹Science and Technology on Electronic Test & Measurement Laboratory, China, ²The 41st Institute of China Electronic Technology Group Corporation, China

[P-3] **16:00~18:00**

NbN Thin Films Fabricated at High Temperature Prepared by Reactive DC Magnetron Sputtering for Hot-electron Bolometer Applications.....N/A

H. W. Chang, K. N. Lin, C. L. Wang, and M. J. Wang

Institute of Astronomy and Astrophysics, Academia Sinica, Taiwan

[P-4] **16:00~18:00**

Comparison of RF Power Sensor Calibration using a Vector Network Analyzer and a Direct Transfer System.....1754

Windi Kurnia Perangin Angin^{1,3}, Jae-Yong Kwon^{2,3}, Tae-Weon Kang^{2,3}, and No-Weon Kang²

¹Pusat Penelitian Metrologi LIPI, Indonesia, ²Korea Research Institute of Standards and Science, Korea, ³University of Science and Technology, Korea

[P-5] **16:00~18:00**

An Inverse Scattering Approach to Design a Compact Microstrip RF Filter using Defected Ground Structure.....N/A

Monika Singh and M Jaleel Akhtar

Indian Institute of Technology Kanpur, India

[P-6] **16:00~18:00**

Elevated and Tapered Microstrip Coupled ENZ SIW Sensor for Microwave Testing of Radome and Building Materials in 3G and ISM Bands.....1761

Abhishek Kumar Jha and M. Jaleel Akhtar

Indian Institute of Technology Kanpur, India

- [P-7] 16:00~18:00
 Design and Measurement of the KRISS Reverberation Chamber 1.....1765
 Aditia Nur Bakti^{1,3}, Jae-Yong Kwon^{2,3}, Jun-Ho Choi⁴, and No-Weon Kang²
¹*Puslit Sistem Mutu dan Teknologi Pengujian LIPI, Indonesia*, ²*Korea Research Institute of Standards and Science, Korea*, ³*University of Science and Technology, Korea*, ⁴*Agency for Defense Development, Korea*
- [P-8] 16:00~18:00
 Design of Broadband Low-pass Reflective Phasers.....1769
 Qingfeng Zhang¹, Tongfeng Guo¹, Yifan Chen¹, and Christophe Caloz²
¹*South University of Science and Technology of China, China*, ²*École Polytechnique de Montréal, Canada*
- [P-9] 16:00~18:00
 Multi-layer Substrate Loaded 10:1 (900MHz-9GHz) Ultrawideband Tightly Coupled Antenna Array.....N/A
 Hao Huang, Ke Xiao, Shengshui Wang, and Shunlian Chai
National University of Defense Technology, China
- [P-10] 16:00~18:00
 CPW-Fed Tri-Band Slot Dipole Antenna with C-Shaped Strips.....N/A
 You-Jhu Chen, Te-Wei Liu, and Wen-Hua Tu
National Central University, Taiwan
- [P-11] 16:00~18:00
 Study on the Gain-flatness Characteristics of Backward-pumped Distributed Fiber Raman Amplifier based on the Genetic Algorithm.....1779
 Liu Zhiming¹, Gao Yesheng¹, Chen Kunfeng¹, and Li Jian²
¹*The 41st Institute of China Electronic Technology Group Corporation, China*, ²*Beijing Railways Bureau, China*
- [P-12] 16:00~18:00
 Broadband THz Quasi-Optical Antenna System.....N/A
 Chao-Hai Du and Pu-Kun Liu
Peking University, China
- [P-13] 16:00~18:00
 Compact Minkowski Half-hexagon Notched Dielectric Resonator Antenna for Wideband Applications.....1787
 Duggirala Venkata Kiran, Dileep. Sankaranarayanan, and Biswajeet Mukherjee
Indian Institute of Information Technology Design and Manufacturing Jabalpur, India
- [P-14] 16:00~18:00
 THz Super-Focusing and Enhancement of Transmission Based on Slit-Grooves.....N/A
 XiaoFei Zang and YiMing Zhu
University of Shanghai for Science and Technology, China
- [P-15] 16:00~18:00
 Research on the Beam Spot Size Measurement of Terahertz Laser.....N/A
 Rui Zhang¹, Bin Wu², Yanzhao Yang¹, Chengping Ying¹, Hengfei Wang², and Kunfeng Chen¹
¹*The 41st Institute of China Electronic Technology Group Corporation, China*, ²*Science and Technology on Electronic Test & Measurement Laboratory, China*

[P-16]	16:00~18:00
Turnstile Junction Ortho-mode Transducer for W-Band Radar Seeker.....1796	
Junyong Han ¹ , Seongsik Yoon ¹ , Taek K. Lee ¹ , Jae W. Lee ¹ , Sungchan Song ² , and Kyunghyun Oh ² <i>¹Korea Aerospace University, Korea, ²Hanwha Thales, Korea</i>	
[P-17]	16:00~18:00
Koch Snowflake Dielectric Resonator Antenna Loaded with a Circular Metallic Patch for Wideband Applications.....1798	
Dileep Sankaranarayanan, Duggirala Venkata Kiran, and Biswajeet Mukherjee <i>PDPM Indian Institute of Information Technology Design and Manufacturing Jabalpur, India</i>	
[P-18]	16:00~18:00
Integrated Optimization Design of Space Deployable Array Antenna Performances Based on Electromechanical Coupling.....N/A	
Congsi Wang ^{1,2} , Jing Mao ¹ , Jingsheng Cheng ¹ , Wei Wang ¹ , Yan Wang ¹ , Lan Xiao ¹ , Jianfeng Zhong ³ , and Bin Li ³ <i>¹Xidian University, China, ²University of California, USA, ³Nanjing Research Institute of Electronics Technology, China</i>	
[P-19]	16:00~18:00
Edge Grounding Perforated Triangular Dielectric Resonator Antenna.....1805	
Nunsawath Ravi Nayak, Dhuna Ram Saini, Ravi Kumar Singh, Dileep Sankaranarayanan, Duggirala Venkata Kiran, and Biswajeet Mukherjee <i>PDPM Indian Institute of Information Technology Design and Manufacturing Jabalpur, India</i>	
[P-20]	16:00~18:00
A K-band to Ka-band CPW-like Low Loss Transmission Line in 0.18-um CMOS.....1808	
Cheng-Hung Hsieh and Zuo-Min Tsai <i>National Chung Cheng University, Taiwan</i>	
[P-21]	16:00~18:00
Design of CRLH Transmission Lines with Stepped Impedance Resonators.....N/A	
Yujiro Kushiya, Takuji Arima, and Toru Uno <i>Tokyo University of Agriculture and Technology, Japan</i>	
[P-22]	16:00~18:00
Tapered Dielectric Nanorod Antenna at Optical Wavelengths.....1813	
Junji Yamauchi, Satoru Honda, and Hisamatsu Nakano <i>Hosei University, Japan</i>	
[P-23]	16:00~18:00
Switched-Beam Wideband Circularly Polarized 2x2 Antenna Array.....1815	
Huy Hung Tran and Ikmo Park <i>Ajou University, Korea</i>	
[P-24]	16:00~18:00
Multiband RF Harvesting Antenna Based on Meta-structured Transmission Line.....N/A	
Kwi Seob Um and Jeong-Hae Lee <i>Hongik University, Korea</i>	

- [P-25]** 16:00~18:00
 Design of PIFA on the Capacitive Grating AMC Structure for SAR Reduction in the Penta-band.....N/A
 Jae-Gon Lee and Jeong-Hae Lee
Hongik University, Korea
- [P-26]** 16:00~18:00
 Circularly Polarized Substrate-Integrated-Waveguide Antenna Array for Millimeter-Wave Handset Device.....N/A
 Seong-Jin Park and Seong-Ook Park
Korea Advanced Institute of Science and Technology, Korea
- [P-27]** 16:00~18:00
 Electromagnetic Analysis of the Von Karman Radome Enclosed Waveguide Slot Array Antenna Based on Ray Tracing and Huygens's Principle.....N/A
 Jihyung Kim¹, Sung Chan Song¹, and Yong Bae Park²
¹*Hanwha Thales, Korea,* ²*Ajou University*
- [P-28]** 16:00~18:00
 A Low-profile, Single-Arm Hexagonal Spiral Arrays with a 3:1 Bandwidth on Ground Plane.....N/A
 Yongduk Oh, Hakjune Lee, and Sangwook Nam
Seoul National University, Korea
- [P-29]** 16:00~18:00
 Gain Enhancement of Microstrip Grid Array Antenna for 5G Applications.....1827
 W. A. W. Muhamad¹, R. Ngah¹, M. F. Jamlos^{2,3}, P. J. Soh², and H. Lago²
¹*Universiti Teknologi Malaysia, Malaysia,* ²*Universiti Malaysia Perlis, Malaysia,* ³*Universiti Malaysia Pahang, Malaysia*
- [P-30]** 16:00~18:00
 Shape Identification of Perfectly Conducting, Arc-Like Crack in Transverse Electric Mode.....1830
 Won-Kwang Park
Kookmin University, Korea
- [P-31]** 16:00~18:00
 An Algorithm of Subarray Optimization for Low Side-lobe Multi-beam and Monopulse Beams.....N/A
 Heeduck Chae, Je-Woo Yu, and Jongkuk Park
LIG NEXI, Korea
- [P-32]** 16:00~18:00
 Millimeter-wave Planar Microstrip-to-waveguide Transition with Waveguide Connected on Microstrip Signal-line.....N/A
 Kunio Sakakibara, Yuki Ishikawa, Yuta Mizuno, and Nobuyoshi Kikuma
Nagoya Institute of Technology, Japan

[P-33]	16:00~18:00
Angle Modulated SRR Array as Metasurface for Circular Polarization.....N/A	
Jagannath Malik, Amalendu Patnaik, and M. V. Kartikeyan <i>Indian Institute of Technology Roorkee, India</i>	
[P-34]	16:00~18:00
Time-domain Performance of Band-notch Techniques in UWB Antenna.....N/A	
Jagannath Malik, Amalendu Patnaik, and M. V. Kartikeyan <i>Indian Institute of Technology Roorkee, India</i>	
[P-35]	16:00~18:00
Design of Microstrip Patch Antennas with Parasitic Elements for Minimized Polarization Mismatch.....1845	
Sungjun Yoo, Gangil Byun, and Hosung Choo <i>Hongik University, Korea</i>	
[P-36]	16:00~18:00
Design of a Periodic Structure to Improve Isolation using Ferrite Material for Small CRPA Arrays.....1847	
Jun Hur, Gangil Byun, and Hosung Choo <i>Hongik University, Korea</i>	
[P-37]	16:00~18:00
SAR Reduction of Smart Watch Antenna using Meander Loop Structure.....1849	
Yohan Lim, Hyengcheul Choi, Byungwoon Jung, and Chisang You <i>LG Electronics, Korea</i>	
[P-38]	16:00~18:00
A CMOS Active Delay Line using Injection-locking Technique.....1852	
Kang-Chun Peng ¹ , Chan-Hung Lee ¹ , and Tai-Hsuan Tsai ² ¹ National Kaohsiung First University of Science and Technology, Taiwan, ² Pegatron Corporation, Taiwan	
[P-39]	16:00~18:00
Channel Measurements and Modeling for 5G Communication Systems at 3.5 GHz Band.....1855	
Ruisi He ¹ , Mi Yang ¹ , Lei Xiong ¹ , Honghui Dong ¹ , Ke Guan ¹ , Danping He ¹ , Bei Zhang ¹ , Dan Fei ¹ , Bo Ai ¹ , Zhangdui Zhong ¹ , Zhuyan Zhao ² , Deshan Miao ² , and Hao Guan ² ¹ Beijing Jiaotong University, China, ² Nokia, China	
[P-40]	16:00~18:00
A Spectrum Detection Method for Cognitive Radio Networks with Dynamic Noise Properties.....N/A	
Sana Salous ¹ , Mengwei Sun ² , and Chenglin Zhao ² ¹ Durham University, UK, ² Beijing University of Posts and Telecommunications, China	
[P-41]	16:00~18:00
Random Signal Analysis in the Linear Canonical Transform Domain.....1862	
Liyun Xu, Feng Zhang, Mingfeng Lu, and Xin Wu <i>Beijing Institute of Technology, China</i>	

[P-42]	16:00~18:00
Compressive Sensing Based Clipping Noise Cancellation for OFDM Systems.....N/A	
Kee-Hoon Kim ¹ , Hosung Park ² , Jong-Seon No ³ , Habong Chung ⁴ , and Dae-Woon Lim ⁵	
¹ Samsung Electronics, Korea, ² Chonnam National University, Korea, ³ Seoul National University, Korea, ⁴ Hongik University, Korea, ⁵ Dongguk University, Korea	
[P-43]	16:00~18:00
The Test and Strategy Analysis on D+F Network of TD-LTE.....N/A	
Feng Linlin	
China Mobile Group Design Institute Co., Ltd. Heilongjiang Branch, China	
[P-44]	16:00~18:00
Gain Enhancement Technique for Bowtie Slot Antenna.....N/A	
Jun Gi Jeong ¹ , Young Joong Yoon ¹ , and Hyungrak Kim ²	
¹ Yonsei University, Korea, ² Daelim University College, Korea	
[P-45]	16:00~18:00
Channel Estimation and Communication Performance Evaluation at 700 MHz using USRP.....N/A	
Chan Ju Park ¹ , Woojoong Kim ¹ , Young Joong Yoon ¹ , and Hyungrak Kim ²	
¹ Yonsei University, Korea, ² Daelim University College, Korea	
[P-46]	16:00~18:00
Angle Estimation for Non-Uniform Linear Array with Virtual Antenna via Single Transmit Source.....N/A	
Seokhyun Kang ¹ , Seongwook Lee ¹ , Heonkyo Sim ¹ , Jae-eun Lee ^{1,2} , and Seong-Cheol Kim ¹	
¹ Seoul National University, Korea, ² Mando Corporation, Korea	
[P-47]	16:00~18:00
Precoding Design for Two-Way MIMO Relaying with Antenna Selection.....N/A	
Chia-Chang Hu, Bo-Hung Chen, Guan-Fu Liu, Yi-Chi Kao, and Yang-Jun Wang	
National Chung Cheng University, Taiwan	
[P-48]	16:00~18:00
Tolerance Analysis of Antenna Array Pattern in the Presence of Array Weights and Element Position Errors.....1885	
Ying Zhang, Danni Zhao, and Huapeng Zhao	
University of Electronic Science and Technology of China, China	
[P-49]	16:00~18:00
Oversampling Analysis of CORR Metric for Selected Mapping Scheme of OFDM Signals.....N/A	
Jun-Young Woo ¹ , Kee-Hoon Kim ¹ , Kang-Seok Lee ² , Jong-Seon No ² , and Dong-Joon Shin ³	
¹ Samsung Electronics Co., Ltd., Korea, ² Seoul National University, Korea, ³ Hanyang University, Korea	
[P-50]	16:00~18:00
Link Availability Analysis for Long-Distance Air-Ground Datalink Communication Systems.....N/A	
Young Jae Ryu ^{1,2} and Jae Min Ahn ¹	
¹ Chungnam National University, Korea, ² Agency for Defense Development, Korea	

[P-51]	16:00~18:00
<p>Steeply Sloped Microstrip Bandpass Filter with Stepped Impedance Short-Circuited Stub.....N/A</p> <p>Minjae Jung and Byung-Wook Min <i>Yonsei University, Korea</i></p>	
[P-52]	16:00~18:00
<p>A Low-Complexity PTS Scheme using Adaptive Selection of Dominant Time-Domain Samples in OFDM Systems.....1897</p> <p>Kang-Seok Lee¹, Young-Jeon Cho¹, Jong-Seon No¹, and Dae-Woon Lim² ¹<i>Seoul National University, Korea</i>, ²<i>Dongguk University, Korea</i></p>	
[P-53]	16:00~18:00
<p>A Linear HBT Power Amplifier with an IMD3 Reduction Method for LTE-A Small-cell Base-station Applications.....1901</p> <p>Hui Dong Lee, Seunghyun Jang, and Bonghyuk Park <i>Electronics and Telecommunications Research Institute, Korea</i></p>	
[P-54]	16:00~18:00
<p>A Self-Powered WSN/IoT Sensor-Node using Self Wake-up and Wireless Power Harvesting Techniques.....N/A</p> <p>Won-jae Jung, Ji-hoon Lee, Hyung-il Chae, and Jun-seok Park <i>Kookmin University, Korea</i></p>	
[P-55]	16:00~18:00
<p>Smart Beamforming Based Wireless Backhaul for Cost-effective Small Cells.....1908</p> <p>Youngseok Oh¹, Sungmin Cho¹, Jinhyo Park¹, Hyukjun Oh², and Heejung Yu³ ¹<i>SK Telecom, Korea</i>, ²<i>Kwangwoon University, Korea</i>, ³<i>Yeungnam University, Korea</i></p>	
[P-56]	16:00~18:00
<p>Thermal Empirical Effect on the Kapton-Based Passive Microstrip Circuit.....1911</p> <p>Y. G. Rabobason, B. Ravelo, and N. Benjelloun <i>ESIGELEC, France</i></p>	
[P-57]	16:00~18:00
<p>A 2.4-GHz Noncontact Vital-Sign Sensor Based on Two Circulators and Frequency-Modulated/Injection-Locked VCO.....1915</p> <p>Sen Wang and Ren-Hua Chang <i>National Taipei University of Technology, Taiwan</i></p>	
[P-58]	16:00~18:00
<p>Electric Field Measurement with Electro-optic Sensor of High Power W-band Gyrotron.....1919</p> <p>Jong-Won Yang¹, Minwoo Yi¹, Woosang Lee¹, Joonho So¹, Won Jang¹, Jungho Kim², Jong-Hyo Won², Seok Kim³, Dong-Joon Lee³, and Young Joong Yoon⁴ ¹<i>Agency for Defense Development, Korea</i>, ²<i>LIG NEXI, Korea</i>, ³<i>Korea Research Institute of Standards and Science, Korea</i>, ⁴<i>Yonsei University</i></p>	

- [P-59] 16:00~18:00
 Simulations of Energy-bands Bending Effect and Carriers Transportation in Semiconductor with Propagating Surface Acoustic Waves.....1921
 Boqun Dong, Shiqi Guo, and Mona Zaghloul
The George Washington University, USA
- [P-60] 16:00~18:00
 Penta-band Based Low Noise Amplifier Design for Vehicular Wireless Communications.....N/A
 Ramya Vijay, T. Rama Rao and Revathi Venkataraman
SRM University, India
- [P-61] 16:00~18:00
 A Novel Method for the Design of Broadband Class E Power Amplifier with Contiguous Diplexer.....N/A
 Ninh Dang-Duy and Chulhun Seo
Soongsil University, Korea
- [P-62] 16:00~18:00
 SOI LDMOS Power Amplifier for WLAN.....N/A
 Gwanghyeon Jeong, Seunghun Wang, and Songcheol Hong
Korea Advanced Institute of Science and Technology, Korea
- [P-63] 16:00~18:00
 Overlooked Phenomena in Reflex Oscillators.....N/A
 Amit K Varshney¹, B N Biswas¹, and Arindum Mukherjee²
¹Supreme Knowledge Foundation Group of Institutions, India, ²Coimbatore Institute of Technology, India
- [P-64] 16:00~18:00
 Calibration on the Detection Efficiency of the Si-APD and InGaAs-APD Single-photon Detectors by Correlated Photon Pairs.....N/A
 Xueshun Shi¹, Kun Zhao¹, Changming Liu¹, Haidong Chen¹, Kunfeng Chen¹, and Haiyong Gan²
¹The 41st Institute of China Electronic Technology Group Corporation, China, ²National Institute of Metrology, China
- [P-65] 16:00~18:00
 Fabrication of 0.15 μm Recessed AlGaIn/GaN MIS-HEMTs on Si Substrate.....N/A
 Donghwan Kim¹, Junseok Jeong¹, Kwang-Seok Seo¹, and Ho-Young Cha²
¹Seoul National University, Korea, ²Hongik University, Korea
- [P-66] 16:00~18:00
 Optical Diffuse Reflectance of Black Silicon and Its Isotropy.....1944
 Ahmed Elsayed¹, Yasser M. Sabry¹, Daa Khalil¹, Frédéric Marty², and Tarik Bourouina²
¹Ain Shams University, Egypt, ²Université Paris-Est, France
- [P-67] 16:00~18:00
 A Broadband Darlington Power Amplifier using 0.5 μm GaN-on-SiC HEMT Process.....1947
 Min-Li Chou, Hong-Kun Wang, Hsien-Chin Chiu, and Fan-Hsiu Huang
Chang Gung University, Taiwan

[P-68] 16:00~18:00

Wavelength Selective Dual-band Mid-infrared Metamaterial Absorber/emitter.....N/A

Jitendra Kumar Pradhan¹, S. Anantha Ramakrishna¹, and Achanta Venu Gopal²

¹Indian Institute of Technology, India, ²Tata Institute of Fundamental Research, India

[P-69] 16:00~18:00

The Laser Scattering and Statistical Characteristics of Moving Ice Crystal Particles Which Have Rarefied Random Distribution.....N/A

Mingjun Wang^{1,3}, Ke Xizheng³, Ying leLi², and Wang Jiao³

¹Xian Yang Normal College, China, ²Shaanxi Xueqian Normal University, China, ³Xi'an University of Technology, China

[P-70] 16:00~18:00

The Delay Spread Characteristics of 28GHz Band at LOS Environments.....1953

Jong Ho Kim, YoungKeun Yoon, and Young Jun Chong

Electronics and Telecommunications Research Institute, Korea

[P-71] 16:00~18:00

Propagation Characteristics for the Corner Link in Urban Hotspot Environment.....N/A

YoungKeun Yoon, JongHo Kim, and YoungJun Chong

Electronics and Telecommunications Research Institute, Korea

[P-72] 16:00~18:00

Complexity in Seasonal Dynamics of Surface Radio Refractivity Across Different Climatic Zones of Nigeria.....N/A

Ogunjo S. T., Fuwape I. A., Oluyamo S. S., Akinpelu S. B

Federal University of Technology, Nigeria

[P-73] 16:00~18:00

Improving the Wireless Communication System at a Large Antwerp Car Factory.....1963

Emmanuel Van Lil and Iris De Coster

Katholieke Universiteit Leuven, Belgium

[P-74] 16:00~18:00

Estimation of Interfade Duration for Ku- and Ka-Band Satellite Communication System in Equatorial Malaysia.....1967

Mawami Mohamed Yunus^{1,2}, Jafri Din², Hong Yin Lam³, and Siat Ling Jong³

¹Universiti Teknikal Malaysia Melaka, Malaysia, ²Universiti Teknologi Malaysia, Malaysia, ³Universiti Tun Hussein Onn Malaysia, Malaysia

[P-75] 16:00~18:00

Measurement and Analysis of Weather Phenomena with K-Band Rain Radar.....N/A

Jun-Hyeong Park¹, Ki-Bok Kong², and Seong-Ook Park¹

¹Korea Advanced Institute of Science and Technology, Korea, ²Kukdong Telecom, Korea

- [P-76] 16:00~18:00
 Microwave Sub-surface Imaging using Scattered-field Calibration Technique.....1974
 Greeshmaja Govind and M. J. Akhtar
Indian Institute of Technology, India
- [P-77] 16:00~18:00
 Cloud Observation using the Ka Band Cloud Radar of CUIT.....1978
 Xuehua Li¹, Jianxin He¹, Ling Yang¹, Debin Su¹, Zhendong Yao¹, Zhao Shi¹, V. Chandrasekar², and Haonan Chen²
¹Chengdu University of Information Technology, China, ²Colorado State University, USA
- [P-78] 16:00~18:00
 Radio Link Performance Investigation for UWB Wireless Communication in Indoor Environment.....N/A
 Susila M, RamaRao T, and Pushpalatha M
SRM University, India
- [P-79] 16:00~18:00
 Analysis of Ionospheric Variations over East Asian Area with Empirical Orthogonal Function (EOF).....N/A
 Jianchang Zheng and Biqiang Zhao
Institute of Geology and Geophysics, China
- [P-80] 16:00~18:00
 Compact Way of the Ionosphere Layers Critical Frequency Detection.....N/A
 Kamil Yusupov and Adel Akchurin
Kazan Federal University, Russia
- [P-81] 16:00~18:00
 The Onset Time of Equatorial Plasma Bubbles and Its Relationship with Pre-reversal Enhancement.....N/A
 J.-M. Choi^{1,2}, H. Kil³, Y.-S. Kwak², and Y.-H. Kim¹
¹Chung-nam National University, Korea, ²Korea Astronomy and Space Science Institute, Korea, ³The Johns Hopkins University Applied Physics Laboratory, USA
- [P-82] 16:00~18:00
 Case Study: Observation of the EMIC Wave by External Source in the Outer Magnetosphere.....N/A
 Sung-Hwan Lee¹, Dong-Hun Lee¹, Jiwon Choi¹, Khan-Hyuk Kim¹, Ensang Lee¹, Hyomin Kim², Eun-Hwa Kim³, Jay R. Johnson³
¹Kyung Hee University, Korea, ²New Jersey Institute of Technology, USA, ³Princeton Plasma Physics Laboratory, USA
- [P-83] 16:00~18:00
 Coherent EMIC Waves and Pitch Angle Scattering of Energetic Electrons in the Magnetosphere.....N/A
 Remya Bhanu¹, K. H. Lee¹, L. C. Lee¹, and B. T. Tsurutani²
¹Institute of Earth Sciences, Taiwan, ²California Institute of Technology, USA

[P-84] 16:00~18:00

Transfer of Real-time Dynamic Radiation Environment Assimilation Model (rtDREAM); Research to Operation.....N/A

Junga Hwang¹, Dae-Kyu Shin¹, Gi-Jeong Kim¹, Steeve Morley², Mike Henderson², Reiner Friedel², Geoff Reeves², Taeyoung Kim³, Seok-Hyeon Byeon, Myungjin Choi³, KiChang Yoon⁴, and Sunhak Hong⁴

¹Korea Astronomy and Space Science Institute, Korea, ²Los Alamos National Laboratory, USA, ³InSpace.co.,ltd, Korea, ⁴Korean Space Weather Center, Korea

[P-85] 16:00~18:00

Determining the Statistical Significance of Relativistic Electron Precipitation Related to EMIC Waves.....N/A

Dae-Kyu Shin¹, Dae-Young Lee¹, Sung-Jun Noh¹, Junga Hwang², and Jaejin Lee²

¹Chungbuk National University, Korea, ²Korea Astronomy and Space Science Institute, Korea

[P-86] 16:00~18:00

A Statistical Study of EMIC Waves Observed by THEMIS Probes in the Outer Magnetosphere under Quiet Geomagnetic Conditions.....N/A

Gi-Jeong Kim¹, Khan-Hyuk Kim¹, Dong-Hun Lee¹, Ensang Lee¹, Jong-Sun Park², Junga Hwang³, and Ki-Chang Yoon⁴

¹Kyung Hee University, Korea, ²National Central University, Korea, ³Korea Astronomy and Space Science Institute, Korea, ⁴Korea Space Weather Center, Korea

[P-87] 16:00~18:00

Electron Plasma β Dependence of Development of Whistler Instability: PIC Simulations.....N/A

Sang-Yun Lee, Ensang Lee, Khan-Hyuk Kim, Dong-Hun Lee, and Jongho Seon

Kyung Hee University, Korea

[P-88] 16:00~18:00

Current Status and Planning of the Plasma Wave Experiment (PWE) Onboard the ERG Satellite.....1996

Yoshiya Kasahara¹, Yasumasa Kasaba², Hirotsugu Kojima³, Satoshi Yagii¹, Tomohiko Imachi¹, Mistunori Ozaki¹, Syoya Matsuda¹, Keigo Ishisaka⁴, Fuminori Tsuchiya², and Atsushi Kumamoto²

¹Kanazawa University, Japan, ²Tohoku University, Japan, ³Kyoto University, Japan, ⁴Toyama Prefectural University

[P-89] 16:00~18:00

A Plan for Two-element Solar Radio Spectra-Interferometer.....1998

Lihong Geng, Yihua Yan, Zhijun Chen, Wei Wang, Donghao Liu, Linjie Chen, Long Xu, and Fei Liu

National Astronomical Observatories, China

[P-90] 16:00~18:00

IPS Test Observation with DVAC.....2000

Liu Lijia, Liu Bin, Yu Lei, and Ma Yue

National Astronomical Observatories, China

[P-91] 16:00~18:00

Renewal of Taeduk Radio Astronomy Observatory.....N/A

Hyunwoo Kang, Changhoon Lee, Jae Hoon Jung, Young Sik Kim, Il-Gyo Jeong, Youngung Lee, Do-Heung Je, and Seungraek Kim

Korea Astronomy and Space Science Institute, Korea

- [P-92] 16:00~18:00
 Q-Band Waveguide Orthomode Transducer for Radio Astronomical Receiver Application.....N/A
 Chih-Ming Yang¹, Yo-Shen Lin¹, Chau-Ching Chiong², and Chih-Cheng Chang²
¹National Central University, Taiwan, ²Institute of Astronomy and Astrophysics, Taiwan
- [P-93] 16:00~18:00
 Research and Development of Risk Analysis System for Aerospace Radiation.....N/A
 Taeyoung Kim¹, SeokHyeon Byeon¹, Yoonhee Oh¹, Myungjin Choi¹, and Kichang Yoon²
¹InSpace.Co.,Ltd, Korea, ²Korean Space Weather Center
- [P-94] 16:00~18:00
 Noise Temperature and IF Bandwidth of a 1.4 THz Superconducting HEB Mixer.....2010
 K. M. Zhou¹, W. Miao¹, S. C. Shi¹, R. Lefevre², and Y. Delorme²
¹Purple Mountain Observatory, China, ²Observatoire de Paris, France
- [P-95] 16:00~18:00
 Effect of Al Cap Layer on Nb-Al-AlOx-Al-Nb Josephson Junction with High Critical Current Density.....N/A
 Ming-Jye Wang, Yen-Pin Chang, Tse-Jun Chen, and Wei-Chun Lu
 Academia Sinica, Taiwan
- [P-96] 16:00~18:00
 Analysis of Asymmetric Resonance Response in Kinetic Inductance Detector with Mismatched Transmission Line.....N/A
 Jin-Ping Yang, Zhen-hui Lin, and Sheng-Cai Shi
 Purple Mountain Observatory, China
- [P-97] 16:00~18:00
 Polarization Simulation for Mingantu Ultrawide Spectral Radiograph.....2019
 Cang Su, Wei Wang, and Yihua Yan
 National Astronomical Observatories, Chinese Academy of Sciences
- [P-98] 16:00~18:00
 Relationship between the Intensity of Type II Radio Bursts and Coronal Shock Strength.....N/A
 Nai-Hwa Chen¹, P. F. Chen², Kyung-Suk Cho¹, and Rok-Soon Kim¹
¹Korea Astronomy and Space Science Institute, Korea, ²Nanjing University, China
- [P-99] 16:00~18:00
 Effects of Long-term Exposure to 0.3 THz in Human Eye Cells.....N/A
 Shin Koyama¹, Eijiro Narita¹, Yoko Shimizu¹, Naoki Shinohara¹, Junji Miyakoshi¹, Takeo Shiina², and Masao Taki²
¹Kyoto University, Japan, ²Tokyo Metropolitan University
- [P-100] 16:00~18:00
 Evaluation of SARs in a Human-body Model Due to Smart-watch Wearable Device.....2027
 Seon-eui Hong and Jong-Hwa Kwon
 Electronics and Telecommunication Research Institute, Korea

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16:00~18:00

Development of the Exposure Apparatus of Intermediate Frequency Magnetic Field for Mice and Biological Effects on Blood Properties.....2030

Akira Ushiyama¹, Naoki Kunugita¹, Kenji Hattori², Kazuyuki Ishii², Yoko Iwanami², Shin Ohtani², Yukihisa Suzuki³, Keiji Wada³, Kazuki Matsubara³, Tatsuya Terai³, and Hajime Yoshino³

¹National Institute of Public Health, Japan, ²Meiji Pharmaceutical University, Japan, ³Tokyo Metropolitan University

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Evaluation of Exposure from Mobile Phone Base Stations and Comparison with the Exposure from a Third Generation Mobile Phone.....N/A

Yumi Niinuma¹, Masao Taki¹, Miwa Ikuyo¹, Kaoru Esaki¹, Masaki Hagiwara¹, Tomoaki Nagaoka², and Kanako Wake²

¹Tokyo Metropolitan University, Japan, ²National Institute of Information and Communications Technology, Japan

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A Matrix Form Representation of 3-D Impedance Method for Calculations of Induced Electric Fields and Currents.....N/A

Tomoaki Mori, Yukihisa Suzuki, and Masao Taki

Tokyo Metropolitan University, Japan

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16:00~18:00

Eight Hours of Nocturnal 915 MHz Radiofrequency Identification (RFID) Exposure Reduces Urinary Levels of Melatonin and Its Metabolite via Pineal Arylalkylamine N-acetyltransferase Activity in Male Rats.....N/A

Hye Sun Kim¹, Yu Hee Lee¹, Man-Jeong Paik², Yun-Sil Lee³, Hyung Do Choi⁴, Jong Hwa Kwon⁴, Jeong-Ki Park⁵, Nam Kim⁶, and Young Hwan Ahn¹

¹Ajou University School of Medicine, Korea, ²Sunchon National University, Korea, ³Ewha Women's University, Korea, ⁴Electronics and Telecommunications Research Institution, Korea, ⁵Chungnam National University, Korea, ⁶Chungbuk National University, Korea

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Evaluating Human Exposure to Electromagnetic Field Radiated by the Commercial Wireless Power Charging Device.....N/A

Jun-Seok Kang¹, Byeong-Nam Kang¹, Seungwoo Lee¹, Nam Kim¹, Ic-Pyo Hong², and In-Kui Cho³

¹Chungbuk National University, Korea, ²Kongju National University, Korea, ³Electronics and Telecommunications Research Institute, Korea

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Research of Shielding Structure for Reducing Leakage Magnetic Field from Low Power Wireless Charging Coil.....N/A

Jongchan Kim¹, Seungwoo Lee¹, Domin Choi¹, Nam Kim¹, Ic-Pyo Hong², and In-Kui Cho³

¹Chungbuk National University, Korea, ²Kongju National University, Korea, ³Electronics and Telecommunications Research Institute, Korea

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Generating Propulsion Force in Micro-robot using Wireless Power Transfer System.....2050

Dongwook Kim, Jaehyoung Park, Karam Hwang, and Seungyoung Ahn

Korea Astronomy and Space Science Institute, Korea