PIERS 2018 Toyama

Progress In Electromagnetics Research Symposium

Advance Program

August 1–4, 2018 Toyama, JAPAN

www.emacademy.org www.piers.org

For more information on PIERS, please visit us online at www.emacademy.org or www.piers.org.

CONTENTS

TECHNICAL PROGRAM SUMMARY	4
THE ELECTROMAGNETICS ACADEMY	12
JOURNAL: PROGRESS IN ELECTROMAGNETICS RESEARCH	12
PIERS 2018 TOYAMA ORGANIZATION	13
PIERS 2018 TOYAMA SESSION ORGANIZERS	22
SYMPOSIUM VENUE	23
REGISTRATION	23
SPECIAL EVENTS	23
PIERS ONLINE	23
GUIDELINE FOR PRESENTERS	24
GENERAL INFORMATION	25
PIERS 2018 TOYAMA ORGANIZERS AND SPONSORS	26
MAP OF CONFERENCE SITE	29
GENERAL LECTURES	34
PRE-CONFERENCE WORKSHOP	39
PIERS 2018 TOYAMA TECHNICAL PROGRAM	44

TECHNICAL PROGRAM SUMMARY

Wednesday AM, August 1, 2018

1A1	FocusSession.SC5: Remote Sensing for Hydrological Applications 1	44
1A2	FocusSession.SC5: Inverse Scattering, Imaging, and Remote Sensing 1	45
1A3	SC1: Analytical Methods in Propagation, Scattering and Guiding of Waves	45
1A4	Advanced Computational Methods for Nano-optical Applications	46
1A5	SC1: Radar Cross Section	46
1A6	Parabolic Equation and Related Methods in Diffraction Theory	46
1A7	SC1: Recent Approaches to Periodic Structures 1	47
1A8	FocusSession.SC2: Advanced Holography and Illusionary Effects by Metasurfaces, Metamaterials and Plasmonic Structures 1	47
1A9	FocusSession.SC3: Novel Photonic Materials for Advanced Applications 1	48
1A10	FocusSession.SC3: Enabling Solutions of Nano-photonics 1	48
1A11	SC3: 3D Integrated Photonics	49
1A12	FocusSession.SC3: Integrated and Fiber-based Photonic Circuits and Devices	49
1A13	Optical Tweezers and Applications	50
1A14	SC3: Integrated Chip-scale Photonic Signal Processing	50
1A15	SC3: Future Wireless Communication Systems for Railways	51
1A16	SC5: Waves Propagation and Scattering in Random Media	51
1A17	SC3: Guided-mode-resonance Devices and Applications 1	52
1A18	Application of EM Field in Medical Diagnostics and Therapy	52

4

Wednesday PM, August 1, 2018

1P1	FocusSession.SC5: Remote Sensing of Soil Moisture	53
1P2	FocusSession.SC5: Inverse Scattering, Imaging, and Remote Sensing 2	54
1P3	SC1: Advances in Integral Equation Methods for Electromagnetic Problems	54
1P4	SC1: Computational Simulations and Techniques in Electromagnetics	55
1P5	FocusSession: Education for Electromagnetics	55
1P6	SC4: Computational Electromagnetics in Exposure Safety and Medical Application	56
1P7	SC1: Recent Approaches to Periodic Structures 2	56
1P8	FocusSession.SC2: Advanced Holography and Illusionary Effects by Metasurfaces, Metamaterials and Plasmonic Structures 2	57
1P9	FocusSession.SC3: Novel Photonic Materials for Advanced Applications 2	57
1P10	FocusSession.SC3: Enabling Solutions of Nano-photonics 2	58
1P11	SC3: Fiber Gratings and Optical Sensors	58
1P12	FocusSession.SC3: Ultra-high Capacity Optical Communication	59
1P13	FocusSession.SC3: Silicon Lasers and Integrated Silicon Photonics	60
1P14	SC3: Photonics and Optoelectronics Integration for Terahertz Processing	60
1P15	Advances in the Electromagnetic Modelling of Complex, Heterogeneous and Fractal Structures	61
1P16	SC5: Noninvasive Examination Techniques in Industry and Biomedicine	62
1P17a	SC3: Guided-mode-resonance Devices and Applications 2	62
1P17b	SC1: Interaction of Electromagnetic Wave with Complex Media	63
1P18	SC1: Soft Magnetic Wires and Giant Magnetoimpedance Effect for High Sensitive Magnetic Sensors and Non-destructive Control	63

Thursday AM, August 2, 2018

2A1	FocusSession.SC5: Remote Sensing for Hydrological Applications 2	64
2A2	FocusSession.SC5: Inverse Scattering, Imaging, and Remote Sensing 3	64
2A3	FocusSession.SC1&SC2: Multiscale and Multiphysics Computation and Applications 1	65
2A4	SC1&SC3: Design and Simulation of Electromagnetic and Optical Devices 1	65
2A5	SC3&SC4: Antenna Measurement and Electromagnetic Field Application Using Photonic Technique	65
2A6	Biomedical Imaging and Sensing Involving both Light and Ultrasound 1	66
2A7	SC2: Advances in Metasurfaces 1	66
2A8	SC2: Theory and Applications of Anisotropic and Bianisotropic Metamaterials 1	67
2A9	FocusSession.SC3: Novel Photonic Materials for Advanced Applications 3	67
2A10	Optoelectronic Devices and Integration	68
2A11	MS-1: Mini-symposium on Microwave Photonics 1	68
2A12	FocusSession.SC3: Advanced Optofluidics: Photonic Systems for Fluids and Life Science 1	69
2A13	Extended/Unconventional Electromagnetic Theory, EHD(Electro-hydrodynamics)/EMHD(Electro-magn hydrodynamics), and Electro-biology	ieto- 69
2A14	Oral Presentations for Best Student Paper Awards — SC1: CEM, EMC, Scattering & EM Theory \dots	70
2A15	Oral Presentations for Best Student Paper Awards — SC2: Metamaterials, Plasmonics and Complex Media	70
2A16	Oral Presentations for Best Student Paper Awards — SC3: Optics and Photonics	71
2A17	Oral Presentations for Best Student Paper Awards — SC4: Antennas and Microwave Technologies \dots	71
2A18	Oral Presentations for Best Student Paper Awards — SC5: Remote Sensing, Inverse Problems, Imag- ing, Radar and Sensing	71
2A0	Poster Session 1	72

Thursday PM, August 2, 2018

2P1	Innovative Microwave Remote Sensing	76
2P2	Light Scattering and Radiative Transfer: Basic Research and Applications 1	78
2P3a	FocusSession.SC1&SC2: Multiscale and Multiphysics Computation and Applications 2	78
2P3b	SC1: Fast and Efficient Algorithms of CEM	79
2P4	SC1&SC3: Design and Simulation of Electromagnetic and Optical Devices 2	80
2P5a	SC4: Leading Design Techniques for Wideband, Miniaturized, and Circularly Polarized Antennas	80
2P5b	SC1: Recent Progress in Antenna Analysis and Design	81
2P5c	SC4: Evaluation Techniques of Substrate Materials for MM-wave Planar Antennas	81
2P6	Biomedical Imaging and Sensing Involving both Light and Ultrasound 2	82
2P7a	SC1: Recent Approaches to Periodic Structures 3	83
2P7b	SC1: Wave Scattering from Random Surfaces and Periodic Structures	83
2P8a	SC2: Homogenization and Effective Medium Theories for Artificial Materials	83
2P8b	Metamaterials and Transformation Optics	84
2P9a	FocusSession.SC3: Novel Photonic Materials for Advanced Applications 4	84
2P9b	SC3: Short Distance Communication for Next Generation Access Networks	85
2P10	FocusSession.SC3: Advanced Nano/Quantum Photonic Technologies 1	85
2P11	MS-1: Mini-symposium on Microwave Photonics 2	86
2P12a	Advanced Nanomaterials and Nanostructures for Optical-to-Electrical Energy Conversion	88
2P12b	FocusSession.SC3: Advanced Optofluidics: Photonic Systems for Fluids and Life Science 2	88
2P13	FocusSession.SC3.SC5: Advanced Optical Sensing and Imaging for Label-free Biodetection	89
2P14	FocusSession.SC2: Topology and PT Symmetry Based Optical Devices	90
2P15a	SC3: Photonic Microstructures/Nanostructures and Their Applications	91
2P15b	SC5: Visualization of Electromagnetic Fields and Waves	92
2P16	SC4: Recent Diagnostic and Therapeutic Applications of Microwaves	92
2P17	FocusSession.SC1: Kohei Hongo Memorial Session	93
2P18a	Biological Effects of EM Fields	94
2P18b	FocusSession.SC2&SC3: Light Manipulation and Micro-/Nano-structured Optoelectronic Devices 1 \ldots	94
2P0	Poster Session 2	95

Friday AM, August 3, 2018

3A1	Advances in Quantitative Land Remote Sensing 100
3A2	FocusSession.SC5: Microwave Scattering Modelling and Remote Sensing Theory 100
3A3	Advanced Mathematical and Computational Methods in Electromagnetic Theory and Their Applica- tions 1
3A4	SC3: Modeling, Numerical Simulation and Theory in Optics and Photonics 1 101
3A5	Resonators, Filters, Transmission Lines and Waveguide
3A6	SC1: Analytical and Numerical Treatment in Electromagnetics and Its Application 103
3A7	SC2: Advances in Metasurfaces 2 103
3A8	SC2: Theory and Applications of Anisotropic and Bianisotropic Metamaterials 2 103
3A9	FocusSession.SC2: Advances in Nanolasers 1
3A10	FocusSession.SC3: Advanced Nano/Quantum Photonic Technologies 2 104
3A11	New Advances in Light Scattering by Particles in the Micron and sub-Micron Regimes 1 105
3A12	FocusSession.SC3: Photonic Nanostructures for Enhancing Light-matter Interaction 1 106
3A13	Emerging Techniques for Optical Communication and Sensing 1 106
3A14	Advanced Photonic Technologies for Energy Harvesting 1 107
3A15	Light Manipulation, Propagation and Application 1 107
3A16	SC2: Optical Metamaterials for Environment and Energy Application 1 108
3A17	SC3: Quantum Information Processing and Devices 1 108
3A18	Photonics, Nanophotonics and Quantum Electrodynamics 109
3A0	Poster Session 3 109

Friday PM, August 3, 2018

3P1a	FocusSession.SC5: Microwave Remote Sensing of Ocean 114
3P1b	SC5: Inverse Scattering 1
3P2a	FocusSession.SC5: SAR Imaging and Applications 115
3P2b	Light Scattering and Radiative Transfer: Basic Research and Applications 2 116
3P3a	Advanced Mathematical and Computational Methods in Electromagnetic Theory and Their Applica- tions 2
3P3b	SC1: Advanced Numerical Techniques for Solving Electromagnetic Problems
3P4a	SC3: Modeling, Numerical Simulation and Theory in Optics and Photonics 2 118
3P4b	SC1: Computational Techniques in Electromagnetics and Applications
3P5	SC4: Advanced Antenna and RF Circuits Design 119
3P6a	SC1: Radar Cross Section and Inverse Problems in Electromagnetics 120
3P6b	SC4: Terahertz Devices, Components, and Systems for Practical Applications 121
3P7	Novel Materials, Designs and Applications for Absorption of Electromagnetic Wave 121
3P8	SC2: Recent Advances of Metamaterials for Novel Electromagnetic and Photonic Devices 122
3P9	FocusSession.SC2: Advances in Nanolasers 2 123
3P10	SC1: High-frequency Methods 124
3P11	New Advances in Light Scattering by Particles in the Micron and Sub-Micron Regimes 2 124
3P12a	FocusSession.SC3: Photonic Nanostructures for Enhancing Light-matter Interaction 2 125
3P12b	Emerging Techniques for Optical Communication and Sensing 2 126
3P13	SC3: Optical Wireless Technologies for Mobile Communications and Internet of Things 126
3P14a	Advanced Photonic Technologies for Energy Harvesting 2 127
3P14b	SC3: Sensing Technique Enabled by Convergence of Radio and Optical Technologies 128
3P15a	FocusSession.SC2: Plasmonics and Photonic Nanostructure Surfaces for Manipulation of Light 129
3P15b	Light Manipulation, Propagation and Application 2 129
3P16a	SC2: Optical Metamaterials for Environment and Energy Application 2
3P16b	SC2: Recent Advances on Photonic Metamaterials and Plasmonic Structures
3P17	SC3: Quantum Information Processing and Devices 2
3P18	EMC Problems with Antennas & Wave Propagation
3P0	Poster Session 4

Saturday AM, August 4, 2018

4A1	SC5: Inverse Scattering 2 1	137
4A2	SC5: Subsurface Sensing and Imaging 1	138
4A3	SC1: Novel Mathematical Methods in Electromagnetics 1 1	138
4A4	SC1: Electromagnetic Simulation and Modeling Methods for Metamaterials and Plasmonics 1	139
4A5	MIMO Antenna and MIMO array 1	139
4A6	Microwave Photonics, THz technology 1	140
4A7	SC2: Metasurfaces and Metamaterials for Antenna Applications 1 1	140
4A8	FocusSession.SC3: Quantum Optics with Topological Materials 1 1	141
4A9	FocusSession.SC2: Advances in Nanolasers 3 1	141
4A10	SC2: Meta-X: Beyond Metamaterials 1 1	141
4A11	FocusSession.SC3: Advanced Photonic Technologies for Spectroscopic Applications: Devoted to Prof. Frank K. Tittel 1	142
4A12	FocusSession.SC3&SC4: Recent Advances in Devices and System Technologies for Terahertz Wireless Communications 1	142
4A13	SC3: Progresses in the Study of Topological Waves 1 1	143
4A14	Emerging Electromagnetic Functionalization of Graphene and 2D Materials for Terahertz Device Applications 1	143
4A15	FocusSession.SC2&SC3: Light Manipulation and Micro-/Nano-structured Optoelectronic Devices 2 1	144
4A16	Metamaterials and Plasmonics 1 1	144
4A17	SC3: Photonics-based Signal Source and Its Application 1 1	145
4A18	RF and Wireless Communication, Multipath 1	145
4A0	Poster Session 5 1	146

Saturday PM, August 4, 2018

4P1a	Active and Passive Remote Sensing, SAR & GPR	150
4P1b	Electromagnetic Modeling and Inversion and Applications	151
4P2a	SC5: Advances in PolSAR/PolInSAR Analysis and Applications	151
4P2b	SC5: Theoretical and Experimental Studies Related to GPR	152
4P3a	SC1: Novel Mathematical Methods in Electromagnetics 2	152
4P3b	Computational Electromagnetics, Hybrid Methods	153
4P4a	FocusSession.SC1: Advances of Numerical Methods in Computational Electromagnetics	153
4P4b	Fast Methods in Electromagnetic Numerical Simulation	154
4P5	Reconfigurable Antenna, Microstrip Antenna and Array	154
4P6a	Inverse Problems in Microwaves and Optics	156
4P6b	Radar Imaging, and Radar Signal Processing	156
4P7a	SC2: Metasurfaces and Metamaterials for Antenna Applications 2	157
4P7b	SC2: Recent Trends in Acoustic and Microwave Metamaterials	157
4P8	FocusSession.SC1: Casimir Effect and Heat Transfer	158
4P9a	FocusSession.SC3: Quantum Optics with Topological Materials 2	159
4P9b	SC1: Quantum Technologies	159
4P10a	SC2: Meta-X: Beyond Metamaterials 2	160
4P10b	SC5: Measurement Technology of Electromagnetic Waves in Space Plasma, and Its Application to	
	Space Plasma Physics	160
4P11	FocusSession.SC3: Advanced Photonic Technologies for Spectroscopic Applications: Devoted to Prof. Frank K. Tittel 2	162
4P12a	FocusSession.SC3&SC4: Recent Advances in Devices and System Technologies for Terahertz Wireless Communications 2	163
4P12b	SC5&SC4: On Earth's Electromagnetic Environment, Space Weather Phenomena, and Global Cli-	
	mate Variability	164
4P13	SC3: Progresses in the Study of Topological Waves 2	165
4P14a	Emerging Electromagnetic Functionalization of Graphene and 2D Materials for Terahertz Device Applications 2	165
4P14b	Metamaterials and Plasmonics 2	166
4P14c	SC1: Researches of Electromagnetic Field Problem in KOSEN	166
4P15	SC4: Wireless Power Transfer and Energy Harvesting	167
4P16a	Optical Nonreciprocity and Its Applications	167
4P16b	Laser, Optical Sensors and Environmental Monitoring	168
4P17a	SC3: Photonics-based Signal Source and Its Application 2	169
4P17b	SC3: Electromagnetic and Optical Properties of Photonic Materials, Structures, and Crystals	169
4P18a	Novel Approach to Electromagentics	169
4P18b	Microwave and Millimeter Wave Circuits and Devices, CAD	170
4P0	Poster Session 6	170

THE ELECTROMAGNETICS ACADEMY

The Progress in Electromagnetics Research Symposium (PIERS) is sponsored by The Electromagnetics Academy.

The Electromagnetics Academy is devoted to academic excellence and the advancement of research and relevant applications of the electromagnetic theory and to promoting educational objectives of the electromagnetics profession. PIERS provides an international forum for reporting progress and advances in the modern development of electromagnetic theory and its new and exciting applications.

Founded by the late Professor Jin Au Kong (1942–2008) of MIT in 1989, The Electromagnetics Academy is a non-profit organization registered in USA.

PIERS Founding Chair:

Jin Au Kong, MIT, USA

President of The Electromagnetics Academy:

Professor Leung Tsang, University of Michigan, USA

JOURNAL: PROGRESS IN ELECTROMAGNETICS RESEARCH

Progress In Electromagnetics Research (PIER) publishes peer-reviewed original and comprehensive articles on all aspects of electromagnetic theory and applications. This is an open access, on-line journal PIER (E-ISSN 1559-8985). It has been first published as a monograph series on Electromagnetic Waves (ISSN 1070-4698) in 1989. It is freely available to all readers via the Internet.

PIER is a non-profit organization.

WWW.JPIER.ORG

Contact Email: work@jpier.org

Founding Editor in Chief:

Jin Au Kong, MIT, USA

Editors in Chief:

Professor Weng Cho Chew, University of Illinois at Urbana-Champaign, USA Professor Sailing He, Royal Institute of Technology, SWEDEN; JORCEP, Zhejiang University, CHINA

Progress In Electromagnetics Research Symposium August 1–4, 2018 Toyama, JAPAN

PIERS 2018 TOYAMA ORGANIZATION

PIERS Chair

Leung Tsang, University of Michigan

PIERS 2018 Toyama General Chair

Kazuya Kobayashi, Chuo University

PIERS 2018 Toyama General Co-chairs

Weng Cho Chew, Purdue University

Sailing He, Royal Institute of Technology; JORCEP, Zhejiang University

Tsuneki Yamasaki, Nihon University

PIERS 2018 Toyama Technical Program Committee Chair and Co-Chairs

Kazuya Kobayashi, Chuo University (Chair)
Ivan Andronov, St. Petersburg State University (Co-Chair)
Iam-Choon Khoo, The Pennsylvania State University (Co-Chair)
Qing Huo Liu, Duke University (Co-Chair)
Tadao Nagatsuma, Osaka University (Co-Chair)
Yoichi Okuno, South China Normal University; Kumamoto University (Co-Chair)
Motoyuki Sato, Tohoku University (Co-Chair)
Yury Shestopalov, University of Gävle (Co-Chair)
Ari Sihvola, Aalto University (Co-Chair)
Meisong Tong, Tongji University (Co-Chair)
Jan Vrba, Czech Technical University in Prague (Co-Chair)

PIERS 2018 Toyama Subcommittee 1 (CEM, EMC, Scattering and Electromagnetic Theory)

Meisong Tong, Tongji University (Chair) Paul D. Smith, Macquarie University (Co-Chair) Eng Leong Tan, Nanyang Technological University (Co-Chair) Ivan Andronov, St. Petersburg State University Weng Cho Chew, Purdue University Young-Ki Cho, Kyungpook National University Atef Elsherbeni, The University of Mississippi Keisuke Fujita, National Institute of Technology, Yuge College D. V. Giri, Pro-Tech Keiji Goto, National Defense Academy Gérard Granet, Université Clermont Auvergne Levent Gürel, University of Illinois at Urbana-Champaign Koichi Hirayama, Kitami Institute of Technology Ramakrishna Janaswamy, University of Massachusetts Li Jun Jiang, The University of Hong Kong Dan Jiao, Purdue University Tatsuya Kashiwa, Kitami Institute of Technology Kazuya Kobayashi, Chuo University Akira Komiyama, Osaka Electro-Communication University Michiko Kuroda, Tokyo University of Technology Jin-Fa Lee, The Ohio State University Maokun Li, Tsinghua University Qing Huo Liu, Duke University Akira Matsushima, Kumamoto University Taketoshi Miyake, Toyama Prefectural University Mahta Moghaddam, University of Southern California Masahiko Nishimoto, Kumamoto University Shinichiro Ohnuki, Nihon University Yoichi Okuno, South China Normal University; and Kumamoto University Zaw Zaw Oo, Institute of High Performance Computing, Agency for Science, Technology and Research (A*STAR) Magdalena Salazar-Palma, Carlos III University of Madrid Yury Shestopalov, University of Gävle Toshihiko Shibazaki, Tokyo Metropolitan College of Industrial Technology Hiroshi Shirai, Chuo University Masahiro Tanaka, Gifu University Koki Watanabe, Fukuoka Institute of Technology Aihua W. Wood, Air Force Institute of Technology Elena Vinogradova, Macquarie University Tsuneki Yamasaki, Nihon University

PIERS 2018 Toyama Subcommittee 2 (Metamaterials, Plasmonics and Complex Media)

Atsushi Sanada, Osaka University (Chair) Yasushi Horii, Kansai University (Co-Chair) Jeong Weon Wu, Ewha Womans University (Co-Chair) Doyeol David Ahn, University of Seoul Che Ting Chan, The Hong Kong University of Science and Technology Hong Chen, Tongji University Hongsheng Chen, Zhejiang University Tie Jun Cui, Southeast University Jian-Wen Dong, Sun Yat-Sen University Zheyu Fang, Beijing University Young Chul Jun, Ulsan National Institute of Science and Technology Sungtek Kahng, Incheon National University Hiroshi Kubo, Yamaguchi University Yun Lai, Soochow University Byoungho Lee, Seoul National University Sam Hyun Lee, Yonsei University Jiao Lin, Shenzhen University Xiangang Luo, The Institute of Optics and Electronics, Chinese Academy of Sciences Ren-Min Ma, Beijing University Naobumi Michishita, National Defense Academy Osamu Sakai, The University of Shiga Prefecture Jonghwa Shin, Korea Advanced Institute of Science and Technology (KAIST) Ari Sihvola, Aalto University Seok Ho Song, Hanyang University Shulin Sun, Fudan University Satoshi Tomita, Nara Institute of Science and Technology Tetsuya Ueda, Kyoto Institute of Technology Toru Uno, Tokyo University of Agriculture and Technology Shuang Zhang, University of Birmingham, and Shenzhen University Lei Zhou, Fudan University

PIERS 2018 Toyama Subcommittee 3 (Optics and Photonics)

Stavros Iezekiel, University of Cyprus (Chair) Woo-Young Choi, Yonsei University (Co-Chair) Hiroyuki Toda, Doshisha University (Co-Chair) Guillermo Carpintero, Universidad Carlos III de Madrid Gee-Kung Chang, Georgia Institute of Technology Hung-Chun Chang, National Taiwan University Hwan Seok Chung, Electronics and Telecommunications Research Institute (ETRI) Benjamin Eggleton, The University of Sydney Jason Png Ching Eng, Institute of High Performance Computing, Agency for Science, Technology and Research (A*STAR) Dirk Englund, Massachusetts Institute of Technology Masayuki Fujita, Osaka University Nathan Gomes, University of Kent at Canterbury Sailing He, Royal Institute of Technology; JORCEP, Zhejiang University Hartmut Hillmer, University of Kassel Sheng-Kwang Hwang, National Cheng Kung University Sevia M. Irdus, Universiti Teknologi Malaysia Atsushi Kanno, National Institute of Information and Communications Technology Kazutoshi Kato, Kyushu University Tetsuya Kawanishi, Waseda University Iam-Choon Khoo, Pennsylvania State University Hoon Kim, Korea Advanced Institute of Science and Technology (KAIST) Christina Lim, University of Melbourne Ukrit Mankong, Chiang Mai University Shinji Matsuo, NTT Device Technology Laboratories Hiroaki Minamide, RIKEN Tadao Nagatsuma, Osaka University Ampalavanapillai Nirmalathas, University of Melbourne Sergei Popov, Royal Institute of Technology Jin-Wei Shi, National Central University Andreas Stoehr, University Duisburg-Essen Shogo Ura, Kyoto Institute of Technology Joewono Widjaja, Suranaree University of Technology

PIERS 2018 Toyama Subcommittee 4 (Antennas and Microwave Technologies)

Koichi Ito, Chiba University (Chair) Guillaume Ducournau, Institute of Electronics, Microelectronics and Nanotechnology (IEMN) (Co-Chair) Zhongxiang Shen, Nanyang Technological University (Co-Chair) Afshin Daryoush, Drexel University Hiroyuki Deguchi, Doshisha University Karu P. Esselle, Macquarie University Fabrizio Frezza, Sapienza University of Rome Takeshi Fukusako, Kumamoto University Akimasa Hirata, Nagoya Institute of Technology Mona Jarrahi, University of California-Los Angeles (UCLA) Yoshinori Kogami, Utsunomiya University Long Li, Xidian University Ning Li, Chuo University Cyril Renaud, University College London Kaushik Sengupta, Princeton University Naoki Shinohara, Kyoto University Ho-Jin Song, Pohang University of Science and Technology (POSTECH) Safumi Suzuki, Tokyo Institute of Technology Manos Tentzeris, Georgia Institute of Technology Malay Ranjan Tripathy, Amity University Uttar Pradesh Jan Vrba, Czech Technical University in Prague Jianping Yao, University of Ottawa

PIERS 2018 Toyama Subcommittee 5 (Remote Sensing, Inverse Problems, Imaging, Radar and Sensing)

Leung Tsang, University of Michigan (Chair) Kun-Shan Chen, Institute of Remote Sensing and Digital Earth (Co-Chair) Akira Hirose, The University of Tokyo (Co-Chair) Mohamed Barker, McMaster University Yang Du, Zhejiang University Hong Tat Ewe, University Tunku Abdul Rahman Keigo Ishisaka, Toyama Prefectural University Woong Kang, Korean Institute of Geoscience and Mineral Resources (KIGAM) Yoshiya Kasahara, Kanazawa University Kangwook Kim, Gwangju Institute of Science and Technology (GIST) Lianlin Li, Peking University Xiaofeng Li, National Oceanic and Atmospheric Administration Hai Liu, Xiamen University Andrey V. Osipov, German Aerospace Center Robert F. Pfaff, NASA/Goddard Space Flight Center Motoyuki Sato, Tohoku University Ryoichi Sato, Niigata University Jian-Cheng Shi, Institute of Remote Sensing Applications Jun-ichi Takada, Tokyo Institute of Technology Rachid Talhi, University of Tours and CNRS Saibun Tjuatja, University of Texas at Arlington Xiaolan Xu, Jet Propulsion Laboratory Satoshi Yagitani, Kanazawa University

PIERS 2018 Toyama Young Scientist Program Committee

Kazuya Kobayashi, Chuo University (Chair)
Weng Cho Chew, Purdue University (Co-Chair)
Sailing He, Royal Institute of Technology; JORCEP, Zhejiang University (Co-Chair)
Tadao Nagatsuma, Osaka University (Co-Chair)
Leung Tsang, University of Washington (Co-Chair)
Meisong Tong, Tongji University (SC1)
Atsushi Sanada, Osaka University (SC2)
Stavros Iezekiel, University of Cyprus (SC3)
Koichi Ito, Chiba University (SC4)
Kun-Shan Chen, Institute of Remote Sensing and Digital Earth (SC5)

PIERS 2018 Toyama Local Organizing Committee

Mitsuo Tateiba, Kyushu University (Chair) Kazuya Kobayashi, Chuo University (Co-Chair) Tsuneki Yamasaki, Nihon University (Co-Chair) Satoshi Yagitani, Kanazawa University (Secretary) Yasuhiko Arakawa, The University of Tokyo Kiyomichi Araki, Tokyo Institute of Technology Kaori Fukunaga, National Institute of Information and Communications Technology Kazuo Hotate, Toyota Technological Institute Ryuji Kohno, Yokohama National University Yasuo Kokubun, Yokohama National University Masanori Koshiba, Hokkaido University Toshimi Okada, Toyama Prefectural University Masakazu Sengoku, Graduate Institute for Entrepreneurial Studies Toshitaka Tsuda, Waseda University

PIERS 2018 Toyama Local Steering Committee

Kazuya Kobayashi, Chuo University (Chair) Tsuneki Yamasaki, Nihon University (Co-Chair) Akira Komiyama, Osaka Electro-Communication University (Co-Chair) Keigo Ishisaka, Toyama Prefectural University (Secretary: Local Arrangements) Ryoichi Sato, Niigata University (Secretary: Finance) Jun-ichi Takada, Tokyo Institute of Technology (Secretary: Publicity) Tadao Nagatsuma, Osaka University (Secretary: Technical Program) Satoshi Yagitani, Kanazawa University (Secretary: General Affairs) Shinichiro Ohnuki, Nihon University (Secretary: Registrations) Takashi Nagasaka, Chuo University (Assistant Secretary) Keiji Goto, National Defense Academy Akimasa Hirata, Nagoya Institute of Technology Akira Hirose, The University of Tokyo Koichi Ito, Chiba University Atsushi Kanno, National Institute of Information and Communications Technology Yoshiya Kasahara, Kanazawa University Tetsuya Kawanishi, Waseda University Yoshinori Kogami, Utsunomiya University Michiko Kuroda, Tokyo University of Technology Shinji Matsuo, NTT Device Technology Laboratories Taketoshi Miyake, Toyama Prefectural University Masahiko Nishimoto, Kumamoto University Yoichi Okuno, South China Normal University; and Kumamoto University Motoyuki Sato, Tohoku University Naoki Shinohara, Kyoto University Hiroshi Shirai, Chuo University

PIERS 2018 Toyama Local Technical Program Committee

Tadao Nagatsuma, Osaka University (Chair) Michiko Kuroda, Tokyo University of Technology (Co-Chair) Hiroshi Shirai, Chuo University (Co-Chair) Safumi Suzuki, Tokyo Institute of Technology (Secretary) Masayuki Fujita, Osaka University (Secratery) Hiroyuki Deguchi, Doshisha University Keisuke Fujita, National Institute of Technology, Yuge College Takeshi Fukusako, Kumamoto University Koichi Hirayama, Kitami Institute of Technology Yasushi Horii, Kansai University Tatsuya Kashiwa, Kitami Institute of Technology Kazutoshi Kato, Kyushu University Hiroshi Kubo, Yamaguchi University Ning Li, Chuo University Akira Matsushima, Kumamoto University Naobumi Michishita, National Defense Academy Hiroaki Minamide, RIKEN Osamu Sakai, The University of Shiga Prefecture Atsushi Sanada, Osaka University Toshihiko Shibazaki, Tokyo Metropolitan College of Industrial Technology Masahiro Tanaka, Gifu University Hiroyuki Toda, Doshisha University Satoshi Tomita, Nara Institute of Science and Technology Tetsuya Ueda, Kyoto Institute of Technology Toru Uno, Tokyo University of Agriculture and Technology Shogo Ura, Kyoto Institute of Technology Koki Watanabe, Fukuoka Institute of Technology

PIERS 2018 TOYAMA SESSION ORGANIZERS

I. V. Andronov M. J. Berg H. S. Chen Y. T. Chen L. Criante J.-W. Dong O. Ergul K. Fujita M. N. Georgieva-Grosse F. A. Gubarev S. L. He Y. Horii X. Hu R. Janaswamy Y. Q. Jiang Y. Kasahara I.-C. Khoo Y. Kogami G. Li M. K. Li S. L. Liang G.-W. Lu Y. G. Ma H. L. Minh T. Moriyama N. Nishimura S. Ohnuki T. Otsuji R. Przesmycki R. Sato J.-C. Shi H. Shirai H.-Z. Song S. L. Sun R. Talhi S. Tomita S. K. Turitsyn J. M. S. Vega X. D. Wang X. Wu G. Q. Xie T. Yamasaki T.-J. Yang S. H. Yueh R. J. Zhang W. D. Zhou

Y. S. Ang R. Bindlish K.-S. Chen Z. Z. Cheng L. Crocco Y. Du H. T. Ewe M. Fujita E. Gescheidtova B. Guizal A. Hirata M. Hosseini S. M. Idrus Y. Jeong K. Kajikawa T. Kashiwa C. Kim A. Komiyama J. H. Li N. Li C. Lim H. Lu A. Matsushima M. I. Mishchenko T. Nagatsuma K. Nozaki V. Okhmatovski L. Peng O. Sakai N. T. Shaked L. Shi A. S. Sigov V. Spagnolo S. Suzuki E. L. Tan M. S. Tong T. Ueda J. Vrba K. Watanabe Y. Wu X. Y. Xiong F. Yan X. Z. Ye Y. V. Yukhanov S. Y. Zhang A. P. Zhukov

M. Antezza Y. J. Cai W. D. Chen W. C. Chew P. T. Dat G. Ducournau S. M. Feng T. Fukusako K. Goto J. P. Guo A. Hirata B. Hou K. Ishisaka J.-H. Jiang T. Kamei K. Kato K. Kim H. Kubo J. Q. Li T. Li J. Liu Y. Luo J. Mei F. Miyamaru J. Nakayama H. Ogawa Y. Okuno R. Pierri A. Sanada A. V. Shanin J. Shibayama A. Sihvola J. T. S. Sumantyo Y. Suzuki M. Tanaka M. R. Tripathy T. Uno T. Wan L. Wen Y. H. Wu S. Yagitani L. Yang C.-P. Yu F. Z. Zhang L. J. Zhou M. Zubair

M. E. Belkin S. K. Chan X. D. Chen M. Y. Chua J. J. Dong H. El-Ocla A. T. Friberg G. N. Georgiev G. Granet G. W. Hanson A. Hirose C. C. Hsu K. Ito L. J. Jiang A. Kanno T. Kawanishi K. Kobayashi Y. Lai J. T. Li X. F. Li Q. H. Liu R. M. Ma N. Michishita M. Mizuno M. Nishimoto A. Ohmae A. V. Osipov S. Popov M. Sato Y. V. Shestopalov T. Shibazaki F. Simoni L. E. Sun J. Takahara H. Toda Y. Tsuji S. Ura J. Wang S. L. Wu G. B. Xiao H. Yamada P. Yang Q. W. Yuan Q. Zhang Q. Zhou

SYMPOSIUM VENUE

The 2018 Progress In Electromagnetics Research Symposium will be held in Toyama during August 1–4, at "Toyama International Conference Center" and "ANA Crowne Plaza Toyama".

REGISTRATION

The PIERS technical sessions will begin at 08:30 on Wednesday, August 1, 2018. You may come to register during 12:30-18:30 on Tuesday, July 31, 2018, and during 08:00-18:00 on Wednesday, August 1, 2018, at the registration counter, Toyama International Conference Center. Registration is also available from 08:00 to 18:00 on August 2 and 3, and from 08:00 to 17:00 on August 4, 2018.

The on-site registration fee is USD 690, and the reduced registration fee for a student is USD 450 (a valid student ID is required). Please be reminded that the on-site payments will be collected in Japanese Yen. If you have preregistered and paid, your name badge and symposium program will be ready for you to pick up at the registration counter during the symposium. Please wear your name badge throughout the meeting. Access to the coffee break, interactive areas, and technical sessions will be prohibited if a name badge is not visible.

SPECIAL EVENTS

Symposium Reception

On Wednesday evening, August 1, all conference participants are invited to a welcome reception at the conference hotel. The tickets are free and handed out on a first-come-first-served basis. Please make reservation in advance for the reception by July 10.

Symposium Banquet

On Friday evening, August 3, symposium banquet is planned for PIERS participants and their guests. A limited number of banquet tickets will be available. For all participants, the price is USD 80 per person. Please make reservation and pay in advance for the banquet by July 10.

PIERS ONLINE

Information on PIERS 2018 Toyama and future PIERS is posted at www.piers.org.

GUIDELINE FOR PRESENTERS

Oral Presentations

• Load and TEST presentation files in advance:

All Oral Presenters must load and test presentation files in their own session room computers no later than 12 hours before the scheduled talk. Presenters are not allowed to detach the session computer and attach their own notebook/laptop to the LCD projector in session room.

• Presentation files format:

PDF, Power Point are recommended. Movies or animations in MPEG, Windows Media, and etc, should be tested in PIERS computer in PIERS OFFICE no later than half-day before the session.

• USB disk, CD-ROM, DVD: Presentation files in USB disk, CD-ROM, DVD are acceptable by PIERS Computer.

• **Report to Session Chair:** Presenters are required to report to their session chairs at least 10 minutes prior to the start of their session.

• Length of your talk:

In a regular session, the time length for each talk is 20 minutes. In a focus session, the presentation time limit is 30 minutes for a keynote talk, 20 minutes for an invited talk, and 15 minutes for a contributed talk.

• DO NOT change presentation sequence:

Session Chairs, please be present in the session room at least 15 minutes before the start of the session and must strictly observe the starting time and time limit of each paper and refrain from changing paper presentation sequence.

• NO picture request:

When such a request is made by the presenter, the session chair and session helpers will do their best to ensure that no pictures will be taken at the presentation.

Poster Presentations

Presenters should post time slots of their presence on the panel and be present for interactive questions at the given time. Each poster can be posted at 8:30–11:30 and 14:00–17:00, and all presenters are suggested to be present at least during 10:40–11:00 and 15:40–16:00.

One panel area of 47.2'' (W) $\times 82.7''$ (H) or 1200 mm (W) $\times 2100$ mm (H) will be available for each poster.

All presenters are required to mount their papers 30 minutes before the session and remove them at the end of their sessions.

GENERAL INFORMATION

LANGUAGE

The official language for the Symposium is English.

CURRENCY AND CREDIT CARDS

The local currency is the Japanese Yen (JPY) and the exchange rate is 1 USD for about 110 JPY (as of June 1, 2018). Credit cards and cash are acceptable for payments. International credit cards are acceptable in most shops, restaurants etc.

TAX AND TIP

Please do not tip a waiter/waitress or a taxi driver and other persons who provide regular service. All advertised merchandise prices normally include tax.

TAXI

Usually, a taxi is available along the roadsides (while you wave for it) or right in front of a hotel.

BUSINESS OPENING HOURS

- Post Office Opening hours: usually 08:30 – 17:00, from Monday to Friday.
- Bank Opening hours: usually 09:00 – 16:00, from Monday to Friday.
- Store Opening hours: usually 10:00 – 21:00, from Monday to Sunday. There are 24 h service shops also.
- Public Transportation Operating hours: generally 05:30 – 23:30

ELECTRICITY

In Toyama area in Japan, the standard outlets provide AC of $100\,\mathrm{V}/60\,\mathrm{Hz}.$

PIERS 2018 TOYAMA ORGANIZERS AND SPONSORS

Sponsored by:

- The Institute of Electronics, Information and Communication Engineers (IEICE)
- Science Council of Japan
- The Electromagnetics Academy

Technically co-sponsored by:

- Institute of Electrical and Electronics Engineers (IEEE)
- IEEE Geoscience and Remote Sensing Society (IEEE GRSS)
- IEEE Antenna and Propagation Society (IEEE APS)
- IEEE Geoscience and Remote Sensing Society All Japan Joint Society
- The Electromagnetics Academy at Zhejiang University

In cooperation with:

- Association for Promotion of Electrical, Electronic and Information Engineering
- The Institute of Electrical Engineers of Japan
- The Laser Society of Japan
- The Remote Sensing Society of Japan

Supported by:

- Japan National Tourism Organization
- Toyama Prefecture
- Toyama City
- Toyama Convention Bureau
- University of Toyama
- Toyama Prefectural University

Financial Supporters:

- National Institute of Information and Communications Technology (NICT)
- The Telecommunications Advancement Foundation
- Support Center for Advanced Telecommunications Technology Research, Foundation (SCAT)
- The Murata Science Foundation
- Toyama Prefecture
- Toyama City
- Toyama Convention Bureau

Exhibitors:

- IEEE AP-S
- Nippon Eletex Co., Ltd.
- Quadsystem Co., Ltd.
 - (as of June 25, 2018)

Donations by:

- Denyosya Corporation Co., Ltd.
- Hokuden Information System Service Company, Inc.
- Hokuriku Electric Industry Co., Ltd.
- INTEC Inc.
- IPEC Co., Ltd.
- Musenparts Co., Ltd.
- Nippon Electronics Service Co., Ltd.
- Nippon SEC Co., Ltd.
- Shikino High-Tech Co., Ltd.
- Tamagawa Electronics Co., Ltd.
- Tateyama Kagaku Industry Co., Ltd.
- Tateyama Machine Co., Ltd.
- Todoroki Industry Co., Ltd.
- Toyama Television Broadcasting Co., Ltd.
- UCM Co., Ltd.

(as of June 25, 2018)



MAP OF CONFERENCE SITE



Venue 1: Toyama International Conference Center



Venue 1: Toyama International Conference Center

[1st Floor]





Venue 2: ANA Crowne Plaza Toyama



[19th Floor]



Venue 2: ANA Crowne Plaza Toyama

PIERS 2018 Toyama Venue

"Toyama International Conference Center" & "ANA Crowne Plaza Toyama"



GENERAL LECTURES

General Lecture 1 (11:00-12:00, Wednesday, August 1, 2018) Venue: Main Hall, 3rd floor, Toyama International Conference Center

Mathematics, Physics, Engineering, and Electromagnetics

Speaker: Weng Cho Chew, Purdue University, USA

Abstract

In this lecture, we will discuss mathematics issues that commonly emerge in solving electromagnetics and engineering problems. Approximation methods, convergence of approximation methods, existence of solutions, stability of time-stepping methods are often encountered. The understanding of linear vector spaces, such as Hilbert spaces, and Sobolev spaces becomes important in understanding the underlying behaviors of many approximation or numerical methods.

Due to the advent of computers, fast solution methods have been of interest to many researchers. Hence, matrix or operator factorization becomes an important topic of research. Many of the modern fast methods can be thought of matrix or operator factorization techniques. Acceleration of convergence through multi-level multi-grid also becomes the prerogatives of many researchers.

In addition, the use of differential geometry or exterior calculus has been connected to electromagnetics for many years. But recently, a discrete version of exterior calculus has been developed. It seems that this exterior calculus is a superset theory of classical calculus.

In physics, many theories are postulated instead of been derived. For instance, quantum postulates give rise to quantum theory that is a superset theory that describes the world from a new perspective. It will be good for mathematicians to investigate if all physical theories have superset theories. They can lead to a richer description of the world.

Also, there are many mathematical theories that are developed independently of physics and engineering applications. Examples of these are complex variable theory, topology, Lie algebra. The use of topology concepts like Chern number is replete in many literatures on topological insulators.

It will be important that bridges be built between mathematics, physics, engineering, and electromagnetics so that this set of knowledge permeates for real-world applications more readily.

Profile

W. C. Chew received all his degrees from MIT. His research interests are in wave physics, specializing in fast algorithms for multiple scattering imaging and computational electromagnetics in the last 30 years. His recent research interest is in combining quantum theory with electromagnetics, and differential geometry with computational electromagnetics. After MIT, he joined Schlumberger-Doll Research in 1981. In 1985, he joined U Illinois Urbana-Champaign, was then the director of the Electromagnetics Lab from 1995–2007. During 2000–2005, he was the Founder Professor, 2005–2009 the YT Lo Chair Professor, and 2013–2017 the Fisher Distinguished Professor. During 2007–2011, he was the Dean of Engineering at The University of Hong Kong. He joined Purdue U in August 2017 as a Distinguished Professor. He has co-authored three books, many lecture notes, over 400 journal papers, and over 600 conference papers. He is a fellow of



various societies, and an ISI highly cited author. In 2000, he received the IEEE Graduate Teaching Awar, in 2008, he received the IEEE AP-S CT Tai Distinguished Educator Award, in 2013, elected to the National Academy of Engineering, and in 2015 received the ACES Computational Electromagnetics Award. He received the 2017 IEEE Electromagnetics Award. He now is the 2018 IEEE AP-S President.

General Lecture 2 (11:00-12:00, Thursday, August 2, 2018) Venue: Main Hall, 3rd floor, Toyama International Conference Center

Challenges in Metamaterial and Metasurfaces Design for Practical Antenna Applications

Speaker: Raj Mittra, University of Central Florida, USA

Abstract

Metamaterials (MTMs) were introduced to the EM world by Veselago in a seminal paper back the 60's, in which he argued that materials with DNG (double-negative) characteristics, whose e and m are both negative, would exhibit exotic properties such as subwavelength resolution, when used in devices such as lenses. Since then other interesting properties of MTMs have been identified, and their applications to cloaking, performance enhancement of small antennas, and related areas, have been proposed. More recently, there has been considerable interest in the topic of Metasurfaces (MTSs), as opposed to volume-type materials, that have been employed to control the propagation of EM waves with applications to communication antennas.

Despite a flood of publications on MTMs and related topics — literally thousands during the last 10 years — the number of real-world applications in which MTMs and MTSs have been utilized have been rather limited. The primary reason for this is the lack of availability of the materials needed to fabricate devices such as those that reduce the size of antennas without compromising their performance in terms of gain, bandwidth, and efficiency, for instance, or shrouds (cloaks) that suppress the electromagnetic scattering from radar targets, to name just a few. A similar situation arises when one attempts to design an antenna, or a similar device, using Transformation Optics (TO), a relatively new concept which was recently introduced by Pendry, among others. In this approach, the transformation of one coordinate system to another is used to modify the geometry of an antenna, without altering its performance, by replacing the original material properties with new ones that can be rigorously determined by applying the principles of TO to Maxwell's equations. An example of such a device is a flat Luneburg lens which is derived by transforming the conventional spherical Luneburg lens, to render it easier to fabricate. The caveat is that the TO algorithm calls for e and m materials that are not available naturally, e.g., MTMs. The same is also true for a wide variety of other devices, such as flat GRIN (graded index) lenses and Reflectarrays (RAs), which require materials that are unavailable off-the-shelf and, hence, must be synthesized artificially.

In light of this background on MTMs, this presentation will focus on the topic of artificial synthesis of materials with real-world applications in mind. We will review the different strategies that have been proposed, will identify the ones that have been successfully implemented, provide several practical examples of the same, and go on to discuss the challenges that still need to be met — not the least of which is cost-effective fabrication — to satisfy the ever-increasing demands posed by emerging technologies, such as IoT and 5G.

The topic of Additive Manufacturing for low-cost fabrication of MTMs also being pursued a by several groups around the world will be covered, and some issues particularly related to this topic will be examined.

Profile

Raj Mittra is a Professor in the Department of Electrical Engineering & Computer Science department of the University of Central Florida in Orlando, FL., where he is the Director of the Electromagnetic Communication Laboratory. Prior to joining the University of Central Florida, he worked at Penn State as a Professor in the Electrical and Computer Engineering from 1996 through June, 2015. He was a Professor in the Electrical and Computer Engineering at the University of Illinois in Urbana Champaign from 1957 through 1996, when he moved to the Penn State University. Currently, he also holds the position of Hi-Ci Professor at King Abdulaziz University in Saudi Arabia. He is a Life Fellow of the IEEE, a Past-President of AP-S, and he has served as the Editor

of the Transactions of the Antennas and Propagation Society. He won the Guggenheim



Fellowship Award in 1965, the IEEE Centennial Medal in 1984, and the IEEE Millennium medal in 2000. Other

honors include the IEEE/AP-S Distinguished Achievement Award in 2002, the Chen-To Tai Education Award in 2004 and the IEEE Electromagnetics Award in 2006, and the IEEE James H. Mulligan Award in 2011.

Recently he founded the e-Journal FERMAT (www.e-fermat.org) and has been serving as the co-editor-in-chief of the same. Dr. Mittra is a Principal Scientist and President of RM Associates, a consulting company founded in 1980, which provides services to industrial and governmental organizations, both in the U.S. and abroad.
General Lecture 3 (11:00-12:00, Friday, August 3, 2018) Venue: Main Hall, 3rd floor, Toyama International Conference Center

Advances in Quantum Dot Photonics

Speaker: Yasuhiko Arakawa, The University of Tokyo, Japan

Abstract

Since the first proposal of the concept of the quantum dot in 1982, the quantum dots have been intensively studied for both fundamental solid-state physics and advanced device applications. Fully discretizing the energy levels of electrons by quantum dots has enabled the realization of high performance quantum lasers, high-sensitivity quantum dot infrared detectors, and quantum information devices such as single photon sources. Quantum dots can be applied to solar cells with a forecasted conversion efficiency over 75% for the future sustainable renewable energy system. Moreover, embedding a single quantum dot inside the photonic nanocavity provides a new platform for studying solid-state cavity quantum electronics (cavity-QED).

In this lecture, we overview recent progress in quantum dot technology, including practical implementation of quantum dot lasers and demonstration of single photon sources operating above room temperature. Moreover, advances in quantum dot cavity-QED and prospects of the future quantum dot photonics are also discussed.

Profile

Yasuhiko Arakawa received his PhD degree in Electronics and Electrical Engineering from the University of Tokyo in 1980. He joined the University of Tokyo as an assistant professor and became a full professor at the University of Tokyo in 1993. He is now Professor and the Director of the Institute for Nano Quantum Information Electronics, the University of Tokyo. He served to the International Commission for Optics (ICO) as the President and was elected as a Foreign Member of US National Academy of Engineering (NAE). He has received numerous awards, including Leo Esaki Award (2004), IEEE/LEOS William Streifer Award (2006), Fujiwara Award (2007), IEEE David Sarnoff Award (2009), Medal with Purple Ribbon (2009), C&C Prize (2010), Heinrich Welker Award (2011), OSA Nick Holonyak Jr. Award (2011), and Japan Academy Prize (2017). He is a Life Fellow of IEEE and a Fellow of OSA.



General Lecture 4 (11:00-12:00, Saturday, August 4, 2018) Venue: Main Hall, 3rd floor, Toyama International Conference Center

Electromagnetic Wave Theory for Wireless Power Transfer

Speaker: Naoki Shinohara, Kyoto University, Japan

Abstract

A wireless power transfer (WPT) technology is considered as one of game changing technologies. The WPT technology is basically based on the same theory for a wireless communication. We use an antenna for the WPT. We use a wave circuit for the WPT. Only the difference of the technologies between for the WPT and for the wireless communication is a view point of an efficiency of the power transmission between the antennas and of the power conversion at the circuit. For example, we put a transmitting antenna and a receiving antenna at distance in which a mutual coupling between the transmitting and the receiving antenna occurs to increase a beam efficiency. When the mutual coupling between the transmitting and the receiving antenna is very strong, it is called inductive/capacitive coupling WPT. In that distance, a magnetic field or an electric field is used as a carrier of the power. When the mutual coupling is weak, it is called a resonance coupling WPT and an evanescent mode wave is used as the carrier of the power. When the mutual coupling is very weak or negligible, it is called a WPT via electromagnetic wave in a radiative near field. In that distance, we cannot apply Friis transmission equation because we cannot assume a plane wave. All phenomena will occur with the same antenna. Now there are various kind of WPT commercial applications, e.g., a wireless charger of a smart phone with an inductive coupling WPT, a resonance coupling wireless charger of an electric vehicle, an RF-ID via microwave power, and an IoT devices whose power is supplied by an energy harvesting from an ambient radio wave. They seem to be different WPT systems. But we can explain all WPT systems via the same electromagnetic theory.

In this talk, first of all, current R&D status of the WPT in the world will be described and hopeful future of the WPT as a game changing technology will be described. Next total electromagnetic theory for the WPT will be explained. New circuit theory to increase a power conversion efficiency will also described. This talk will give audiences total knowledge of the WPT theory and technologies.

Profile

Naoki Shinohara received the B.E. degree in electronic engineering, the M.E. and Ph.D (Eng.) degrees in electrical engineering from Kyoto University, Japan, in 1991, 1993 and 1996, respectively. He was a research associate in Kyoto University from 1996. From 2010, he has been a professor in Kyoto University. He has been engaged in research on Solar Power Station/Satellite and Microwave Power Transmission system. He is IEEE MTT-S Technical Committee 26 (Wireless Power Transfer and Conversion) chair, IEEE MTT-S Distinguish Microwave Lecturer (DML), IEEE Wireless Power Transfer Conference advisory committee member, URSI Commission D vice chair, international journal of Wireless Power Transfer (Cambridge Press) executive editor, first chair and technical committee member on IEICE Wireless Power Transfer, Japan Society of Electromagnetic Wave Energy Applications (JEMEA) president, Space Solar Power Systems Society board member, Wireless Power Transfer Consortium for Practical Applications (WiPoT) chair, and Wireless Power Management Consortium (WPMc) chair.



PRE-CONFERENCE WORKSHOP

Prior to the conference, a Workshop will be held on July 31, 2018, where all the paid registrants of PIERS 2018 Toyama are invited to attend without any extra fee nor any advance reservation.

Date: July 31, 2018 Time: 13:30-17:45 (Registration Desk will open at 12:30.) Venue: Main Hall, 3rd floor, Toyama International Conference Center Fee: Free (included in the PIERS 2018 Toyama registration fee)

Invited Talk 1 (13:30-14:15)

A Simple Collective Ray Description for the EM Radiation by Conformal Phase Scanned Antenna Arrays on Locally Smooth Convex Surfaces

Speaker: Prabhakar H. Pathak, Professor Emeritus, The Ohio State University, USA

Abstract

A collective uniform geometrical theory of diffraction (UTD) ray solution is described for efficiently analyzing the radiation from large phase scanned antenna arrays mounted conformally on locally smooth convex surfaces. This collective UTD describes the radiation from an entire, large, phased array in terms of just a few rays; this is in contrast to the brute force array element by element field summation via UTD. In so doing, the collective UTD provides a vivid physical description for the array radiation mechanisms. The UTD solution is useful in predicting the radiation performance of large conformal phased arrays on larger locally convex but otherwise complex platforms which may occur in modern applications. The basic ideas are demonstrated via the analysis of canonical problems involving the radiation by finite size linear periodic phased arrays placed either along the axial or along the circumferential directions on a PEC circular cylinder, and excited with a uniform amplitude and appropriate phase distribution for scanning in a given direction. An asymptotic high frequency analysis, which is applicable here, is seen to yield a collective UTD description for the fields of the array in terms of basically three rays which arrive at an observation point in the near or far zone in the region external to the array but not too close to it. One such ray originates from an appropriate point interior to the array and constitutes the Floquet modal ray which exists as if the axial array was infinitely long, or the circumferential array completely wrapped the cylinder. The remaining two rays arrive from each end of the finite linear array and thus constitute the Floquet modal diffracted fields arising from the array truncation. An extension of this work to tapered array source distributions and to surface array distributions (as opposed to linear arrays) will also be briefly discussed.

Profile

Prabhakar H. Pathak received his Ph.D. (1973) in Electrical Engineering from the Ohio State University (OSU). Currently he is Professor Emeritus at OSU, and Adjunct Professor at the Univ. of South Florida. Prof. Pathak is regarded as a codeveloper of the uniform geometrical theory of diffraction (UTD). His research interests continue to be in the development of new UTD ray solutions in both the frequency and time domains, as well as in the development of fast beam and hybrid (ray and numerical) methods for analyzing electrically large electromagnetic (EM) antenna and scattering problems, including reflector systems and conformal phased arrays. His work includes the development of analytical tools for predicting EM radiation and mutual coupling associated with antennas/arrays



on large airborne/spaceborne platforms. He is also working on novel methods related to near field measurements of far zone antenna patterns. Prof. Pathak has been presenting short courses and invited talks at conferences and workshops both in the US and abroad. He has authored/coauthored over hundred journal and conference papers, as well as contributed chapters to seven books. Prior to 1993, he served two terms as an associated editor for IEEE Trans AP. He was appointed IEEE AP-S distinguished lecturer during 1991–1993, and was later appointed as chair of the distinguished lecturer program for the IEEE AP-S during 1995–2005. He was an IEEE AP-S AdCom member in 2010. He received the 1996 Schelkunoff best paper award from IEEE AP-S; the ISAP 2009 best paper award, the George Sinclair award (1996) from the OSU ElectroScience Laboratory, and the IEEE Third Millenium medal from AP-S in 2000. Prof. Pathak received the IEEE AP-S distinguished achievement award in 2013. He is an IEEE Life Fellow and a member of URSI commission B.

Invited Talk 2 (14:15-15:00)

Stochastic Method for Solving Certain EM Field Computation Problems

Speaker: Ramakrishna Janaswamy, The University of Massachusetts Amherste, USA

Abstract

Stochastic method, wherein the solution of a boundary value problem in electrostatics or electrodynamics is represented as an ensemble average of a stochastic process generated by the underlying partial differential equation, is very attractive in electromagnetics because (i) it permits the solution in any subregion of a computational domain without having to determine the field everywhere, (ii) the solution is amenable to complete parallelization, and (iii) the solution can be generated without an explicit mesh. We discuss here the basics of the stochastic formulation and apply the method to the solution of Poisson's equation and the Helmholtz equation. The latter will involve examples below the first resonance for normal media and for any frequency in plasmonic media.

Profile

Ramakrishna Janaswamy is a Professor in the Department of Electrical & Computer Engineering, University of Massachusetts, Amherst. His research interests include deterministic and stochastic radio wave propagation modeling, analytical and computational electromagnetics, antenna theory and design, and wireless communications. He is Fellow of IEEE and an elected member of U.S. National Committee of International Union of Radio Science, Commissions B and F. He is a recipient of the R. W. P. King Prize Paper Award of the IEEE Transactions on Antennas and Propagation and the IEEE 3rd Millennium Medal. He served as an Associate Editor of Radio Science, the IEEE Transactions on Vehicular Technology, the IEEE Transactions of Antennas and Propagation and the IET Electronics Letters. He is an IEEE Standards Activity member representing the IEEE Antennas and Wave Propagation Standards. He is the author of the book Radiowave Propagation and Smart Antennas for Wireless Communications, Kluwer Academic Publishers, November 2000, and a contributing author in Handbook



of Antennas in Wireless Communications, L. Godara (Ed.), CRC Press, August 2001 and Encyclopedia of RF and Microwave Engineering, John Wiley and Sons, 2005.

Invited Talk 3 (15:00-15:45)

Metamaterials, Anapoles and Flying Donuts

Speaker: Nikolay Zheludev, University of Southampton, UK & Nanyang Technological University, Singapore

Abstract

Metamaterials have been the platform for experimental development of a new chapter in electrodynamics devoted to toroidal and anapole modes of excitation and the generation of electromagnetic flying donuts. Electromagnetic

toroidal dipoles can be represented as currents flowing on the surfaces of tori. They provide physically significant contributions to the basic characteristics of matter including absorption, dispersion, and chirality. They give rise to dynamic anapoles, illusive non-radiating charge-current configurations. Toroidal excitations also exist in free space as spatially and temporally localized electromagnetic pulses propagating at the speed of light and interacting with matter in a way different from conventional electromagnetic transvers pulses. We discuss these recent findings and the role of localized and propagating electromagnetic toroidal excitations in light-matter interactions, spectroscopy and telecommunications.

Profile

Nikolay Zheludev, directs the Centre for Photonic Metamaterials at Southampton University, UK and Centre for Disruptive Photonic Technologies at Nanyang Technological University, Singapore. He is also deputy director of the Optoelectronics Research Centre at Southampton and co-Director of the Photonics institute at NTU, Singapore. His research interests are in nanophotonics and metamaterials. His personal awards include the Thomas Young Medal for "global leadership and pioneering, seminal work in optical metamaterials and nanophotonics", Senior Professorships of the Engineering and Physical Sciences Research Council (UK) and the Leverhulme Trust and the Royal Society Wolfson Research Fellowship. Professor Zheludev is the Editor-in-Chief of the IOP "Journal of Optics" and advisor to the Nature-Springer publishing group.



$\langle Break \rangle (15:45-16:15)$

Invited Talk 4 (16:15-17:00)

Contribution of Electromagnetics to Humanitarian Demining and UXO Clearance

Speaker: Motoyuki Sato, Tohoku University, Japan

Abstract

Humanitarian demining and UXO clearance have gathered interest all over the world last 20 years, however, it is still quite important activity in many mine/UXO affected countries. Since the Ottawa treaty established in 1997, land mine problems have been widely known, and we have continued efforts to demolish all the landmines including buried mines in mine affected countries. Even though, we have noticed that in many mine affected countries, mine clearance is not an easy task and we have to continue this effort. It is reported that accidents caused by landmines occurred in 56 countries in 2016, and more than 9,000 people were killed or injured. As of November 2017, landmines remains in 61 countries.

In order to detect buried landmines and UXO, electromagnetic techniques have widely been used. Electromagnetic Induction Sensor (EMI sensor) is one of the most commonly used sensor for detection of metal objects. Most of UXO are made of metal and most types of landmines contain metal components, which can be detected by EMI sensor. In addition, recently, Ground Penetrating Radar (GPR) has also been used for humanitarian demining, because it can detect non-metal objects. In this workshop, at first I will introduce these techniques.

Then, we introduce more actual activities. Tohoku University has developed ALIS for humanitarian demining. ALIS is a handheld "Dual sensor" which combines EMI sensor and GPR. This is a hand held sensor, equipped with position tracking system, therefore ALIS can acquire the EMI and GPR signal together with its position information, while it is scanned on the ground surface by an operator by hand manually. Then, the data can be processed using Synthetic Aperture Radar (SAR) processing (migration) and can reconstruct 3-D subsurface image. GPR of ALIS operates at 1–3 GHz, and the penetration depth of the GPR is 20–50 cm. The development of ALIS started in 2002, and after evaluation test in some mine affected countries including Afghanistan, a long-term evaluation test has been conducted in Cambodia since 2009. We found that the prototype of ALIS is capable for imaging buried mines, and can reduce the false alarm ratio drastically. We have detected more than 80 buried land

mines in Cambodia mine fields. The ALIS is based on these practical evaluation conducted together with CMAC (Cambodian Mine Action Center). The new ALIS system is compact and light weight which is less than 3.1 kg, and can be used for more than 6 hours. It was evaluated in CMAC test site in 2018, and we demonstrated its high performance.

Profile

Motoyuki Sato received the B.E., M.E degrees, and Dr. Eng. degree in information engineering from the Tohoku University, Sendai, Japan, in 1980, 1982 and 1985, respectively. Since 1997 he is a professor at Tohoku University and a distinguished professor of Tohoku University since 2007, and he was the Director of Center for Northeast Asian Studies, Tohoku University during 2009–2013. In 1988, he was a visiting researcher at the Federal German Institute for Geoscience and Natural Resources (BGR) in Hannover, Germany. His current interests include transient electromagnetics and antennas, radar polarimetry, ground penetrating radar (GPR), borehole radar, electromagnetic induction sensing, interferometric and polarimetric SAR. He has conducted the development of GPR sensors for humanitarian demining, and his sensor ALIS which is a hand-held dual sensor, has



detected more than 80 mines in mine fields in Cambodia. He received 2014 Frank Frischknecht Leadership Award from SEG for his contribution to his sustained and important contributions to near-surface geophysics in the field of ground-penetrating radar. He received IEICE Best paper award (Kiyasu Award), and IEEE Ulrich L. Rohde Innovative Conference Paper Awards on Antenna Measurements and Applications both in 2017. He is a visiting Professor at Jilin University, China, Delft University of Technology, The Netherlands, and Mongolian University of Science and Technology.

Invited Talk 5 (17:00-17:45)

Computational Bioelectromagnetics: Human Safety, Healthcare and Medical Applications

Speaker: Akimasa Hirata, Nagoya Institute of Technology, Japan

Abstract

The adverse health effects caused by the electromagnetic field exposures at low- and radio-frequencies are the stimulation and thermal effect, respectively. International guidelines/standards for human exposure safety have been set to prevent from the effects. In the guidelines/standards, the limits are prescribed in terms of the internal physical quantities; in-situ electric field at low frequencies and specific absorption rate (SAR) at radio frequencies. The SAR is a surrogate of the temperature elevation.

When providing the rational for the guidelines/standards, the threshold for inducing the health effect should be assessed. The computational electromagnetics, in addition to the thermodynamics for radio-frequency exposure, is powerful and essential tool in the standardization. Computational techniques for electromagnetics in human have been developed for exposure safety; magneto-quasi-static approximation techniques at low frequencies and full-wave analysis at radio frequencies. A committee on EMF dosimetry modeling has been formed under the IEEE International Committee on Electromagnetic Safety. Combining computational electromagnetics with modeling techniques of human body from medical images, integrated computational techniques are used for healthcare and medical applications. For example, in the non-invasive brain stimulation (e.g., transcranial magnetic stimulation, transcranial direct current stimulation etc), personalized electrostimulation strategy using combined computational techniques becomes common. This is the same for hyperthermia, radio-frequency ablation, etc.

In this talk, computational techniques for bioelectromagnetics in different frequency ranges will be reviewed first, and then the role of computational bioelectromagnetics for setting the limit in the safety guidelines will be explained, together with current research agenda. A risk management system of heat-related illness and diagnosis systems for the brain function will be reviewed, together with future perspective in this research field.

Profile

Dr. Hirata is Director and Professor of Research Center of Bioelectromagnetic Engineering, Nagoya Institute of Technology. He serves as WHO Expert and a member of the main commission of International Commission on Non-Ionizing Radiation Protection (ICNIRP) where he leads a project group on dosimetry (engineering/physics modeling). He also serves administrative member and chairperson of subcommittee 6 of IEEE International Committee on Electromagnetic Safety. He won several awards including Japan Academy Medal (2018), IEEE EMC-S Technical Achievement Award (2015), Prizes for Science and Technology (2014 Public Understanding Category and 2011 Research Category) from Ministry of Education, Culture, Sports, Science and Technology, Japan. He is Fellow of IEEE and Institute of Physics.



of Snow Cover

PIERS 2018 TOYAMA TECHNICAL PROGRAM

Session 1A1 FocusSession.SC5: Remote Sensing for Hydrological Applications 1

Wednesday AM, August 1, 2018 Room T1 Organized by Jian-Cheng Shi, Hui Lu Chaired by Jian-Cheng Shi, Hui Lu

08:30 Fully Coherent Model for Layered Bicontinuous KeynoteMedium Using Analytical Method of Feynman Diagram for Applications in Microwave Remote Sensing

> Jiyue Zhu (University of Michigan); Leung Tsang (University of Michigan); Shurun Tan (University of Michigan); Son V. Nghiem (California Institute of Technology);

 $09{:}00 \hspace{0.1in} \text{Improving Snow Fraction Spatio-temporal Continuity}$

Invited Using a Combination of MODIS and Fengyun-2 Satellites over China Lingmei Jiang (Beijing Normal University); GongXue Wang (Beijing Normal University); Jian-Cheng Shi (Institute of Remote Sensing Applications, Chinese Academy of Sciences);

09:20 Time-series Passive Microwave Observations Applied Invited for Snow Estimation

> Jinmei Pan (Institute of Remote Sensing and Digital Earth, Chinese Academy of Science); Chuan Xiong (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Jian-Cheng Shi (Institute of Remote Sensing Applications, Chinese Academy of Sciences); Deyuan Geng (Institute of Remote Sensing and Digital Earth, Chinese Academy of Science); Haokui Xu (University of Michigan);

09:40 Time-series Ground Based X and Ku Band SAR Ob-Invited servation of Seasonal Snow: Modeling and Retrieval

> Chuan Xiong (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Jiancheng Shi (Institute of Remote Sensing and Digital Earth, CAS); Jinmei Pan (Institute of Remote Sensing and Digital Earth, Chinese Academy of Science); Haokui Xu (Institute of Remote Sensing and Digital Earth, Chinese Academy of Science); Tianjie Zhao (Institute of Remote Sensing and Digital Earth, Chinese Academy of Science); Deyuan Geng (Institute of Remote Sensing and Digital Earth, Chinese Academy of Science);

10:00 Measurement and Modeling of Multi-frequency Mi-Invited crowave Emission of Soil Freezing and Thawing Processes

> Tianjie Zhao (Jointly Sponsored by Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Jian-Cheng Shi (Institute of Remote Sensing Applications, Chinese Academy of Sciences); Shaojie Zhao (Beijing Normal University); Kun-Shan Chen (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Pingkai Wang (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Shangnan Li (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Shangnan Li (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Chuan Xiong (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Qing Xiao (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences);

10:20 Z-R Relationships for Weather Radar in Indonesia from the Particle Size and Velocity (Parsivel) Optical Disdrometer Marzuki (Andalas University); Hiroyuki Hashiguchi

(Kyoto University); Mutya Vonnisa (Andalas University); Harmadi (Andalas University); Muzirwan (National Institute of Aeronautics and Space); Sugeng Nugroho (Indonesian Agency for Meteorological, Climatological and Geophysics); Meri Yoseva (Andalas University);

10:40 Coffee Break

Session 1A2 FocusSession.SC5: Inverse Scattering, Imaging, and Remote Sensing 1

Wednesday AM, August 1, 2018 Room T2 Organized by Xiuzhu Ye, Xudong Chen Chaired by Xiuzhu Ye

- 08:30 A Robust Algorithm of Through-wall Imaging by Electromagnetic Power Measurement Yan-Lei Li (Institute of Electronics, Chinese Academy of Sciences); Xingdong Liang (Institute of Electronics, Chinese Academy of Sciences); Qi-Chang Guo (Institute of Electronics, Chinese Academy of Sciences); Yun-Long Liu (Institute of Electronics, Chinese Academy of Sciences); Long-Yong Chen (Institute of Electronics, Chinese Academy of Sciences);
- 08:50 Steepest-descent Accelerated Contrast-source Inversion Scheme for Sparse Electromagnetic Imaging Ali Imran Sandhu (King Abdullah University of Science and Technology (KAUST)); Abdulla Desmal (King Abdullah University of Science and Technology (KAUST)); Hakan Bagci (King Abdullah University of Science and Technology (KAUST));
- 09:10 Shear-induced Size Sorting of Rain and Hail Observed by a C-band Polarimetric Weather Radar Tian-You Yu (University of Oklahoma); Yadong Wang (Southern Illinois University);
- 09:30 Imaging Plasma Inhomogeneities Using Spatial Wave Field Processing with DWFT Approximation Sergei I. Knizhin (Irkutsk State University); Mikhail V. Tinin (Irkutsk State University); A. D. Tkachev (Irkutsk State University);
- 09:50 Magnetic Resonance Based Electrical Properties Reconstruction with Total Variation Regularization and Zero-point Control of Electric Fields *Motofumi Fushimi (The University of Tokyo)*; *Takaaki Nara (The University of Tokyo)*;
- 00:00 Model-based POD for Evaluating Sub-mm Surfacebreaking Crack Detection in Alloys Viet Phuong Bui (Institute of High Performance Computing); G.-Y. Wang (Nanyang Technological University); Zaw Oo Zaw (Institute of High Performance Computing); Ching-Eng Png (Institute of High Performance Computing (IHPC));
- 10:40 Coffee Break

Session 1A3 SC1: Analytical Methods in Propagation, Scattering and Guiding of Waves

Wednesday AM, August 1, 2018 Room T3 Organized by Ramakrishna Janaswamy Chaired by Ramakrishna Janaswamy

- 08:30 Rotated Uniaxial Parallel-plate Waveguide Green Function Using a Scalar Potential Formulation Michael John Havrilla (Air Force Institute of Technology);
- 08:50 Physical Limits of Electromagnetic Responses of Layered Stacked Structures

Binbin Zhu (Kuang-Chi Institute of Advanced Technology); Huquan Li (Kuang-Chi Institute of Advanced Technology); Ruopeng Liu (Kuang-Chi Institute of Advanced Technology); Chunlin Ji (Kuang-Chi Institute of Advanced Technology); Dong Wei (Shenzhen Kuang-Chi Institute of Advanced Technology);

- 09:10 Fidelity of Integral Representations of Green's Functions in Open Regions Ramakrishna Janaswamy (University of Massachusetts);
- 09:30 Study on a Fast Solver for Poisson's Equation Based on Deep Learning Technique Tao Shan (Tsinghua University); Xunwang Dang (Tsinghua University); Maokun Li (Tsinghua University); Fan Yang (Tsinghua University); Shenheng Xu (Tsinghua University); Ji Wu (Tsinghua University);
- 09:50 Stored Electromagnetic Field Energies in General Materials Geyi Wen (Nanjing University of Information Science and Technology);
- 10:10 Design of a Waveguide Slots Array Antenna for Uniform Heating of Material in a Cavity Taewoo Yu (Seoul National University); Sangwook Nam (Seoul National University);
- 10:40 Coffee Break

Session 1A4
Advanced Computational Methods for
Nano-optical Applications

Wednesday AM, August 1, 2018 Room T4 Organized by Ozgur Ergul, Shinichiro Ohnuki

Chaired by Ozgur Ergul, Shinichiro Ohnuki

08:30 High Order Curvilinear DGTD Methods for Local and Nonlocal Plasmonics Nikolai Schmitt (Cote d'Azur University, Inria,

CNRS, LJAD); Jonathan Viquerat (Cote d'Azur University, Inria, CNRS, LJAD); Stephane Lanteri (Cote d'Azur University, Inria, CNRS, LJAD); Claire Scheid (Cote d'Azur University, LJAD, CNRS, Inria);

- 08:50 Recent Advances in Thermally-assisted-occupation Density Functional Theory (TAO-DFT) Jeng-Da Chai (National Taiwan University);
- 09:10 Multiphysics Analysis of Plasmonic Photomixers under Periodic Boundary Conditions Using Discontinuous Galerkin Time Domain Method Liang Chen (King Abdullah University of Science and Technology (KAUST)); Kostyantyn Sirenko (O. Usikov Institute for Radiophysics and Electronics of National Academy of Sciences of Ukraine (IRE NASU)); Hakan Bagci (King Abdullah University of Science and Technology (KAUST));
- 09:30 Optimal Cavities to Enhance Free-space Matching in Solar Cells Bariscan Karaosmanoglu (Middle East Technical University); Ulas Topcuoglu (Middle East Technical University); Emre Tuygar (Middle East Technical University); Ozgur Ergul (Middle East Technical University);
- 09:50 Time-domain Reference Solutions of Near-field EM Waves Using Fast Inverse Laplace Transform Soichiro Masuda (Nihon University); Motohiro Endo (Nihon University); Ryohei Ohnishi (Nihon University); Shinichiro Ohnuki (Nihon University);
- 10:10 A Kretschmann-type Surface Plasmon Resonance Waveguide Sensor in the THz Region Jun Shibayama (Hosei University); Kota Mitsutake (Hosei University); J. Yamauchi (Hosei University); H. Nakano (Hosei University);
- 10:40 Coffee Break

Session 1A5 SC1: Radar Cross Section

Wednesday AM, August 1, 2018 Room T5

Organized by Hiroshi Shirai, Ryoichi Sato Chaired by Hiroshi Shirai, Ryoichi Sato

08:30 Analytical-Numerical Method for Transient Scattered Magnetic Field from a Coated Conducting Cylinder Excited by UWB Pulse Wave Keiji Goto (National Defense Academy); Toru Kawano (National Defense Academy); Manami Inoue (National Defense Academy); Hisaki Kitahara (National Defense Academy); Yuri Fukumura (National Defense Academy);

- 08:50 Diffraction by a Rectangular Hole in a Thick Conducting Screen — Calculation of Aperture Fields Hirohide Serizawa (Numazu National College of Technology); Kaisei Okawa (Numazu National College of Technology);
- 09:10 Plane Wave Scattering from Two Cracks on Conducting Plane Ryoichi Sato (Niigata University); Hiroshi Shirai (Chuo University);
- 09:30 Wiener-Hopf Analysis of the Diffraction by a Slit in a Material Screen Takashi Nagasaka (Chuo University); Kazuya Kobayashi (Chuo University);
- 09:50 Research on the Establishment of Scattering Model of Complex Cavity Based on Data-driven Approach Jun Gu (Shanghai Radio Equipment Research Institute);
- 10:40 Coffee Break

Session 1A6 Parabolic Equation and Related Methods in Diffraction Theory

Wednesday AM, August 1, 2018 Room T6

Organized by Ivan V. Andronov, Andrey V. Shanin Chaired by Ivan V. Andronov, Andrey V. Shanin

08:30 Parabolic Equation of Diffraction Theory: Why It Works Better than Expected? Andrey V. Shanin (Moscow State University); Andrey Igorevich Korolkov (Moscow State University);

- 08:50 An Explanation of Solar Glories in Terms of Surface Waves Propagating in the Interior of Water Droplets Andrey V. Osipov (Microwaves and Radar Institute, German Aerospace Center (DLR));
- 09:10 On Diffraction of Whispering Gallery Modes by Boundary Inflection Points Valery P. Smyshlyaev (University College London);
- 09:30 Dipole Field Diffraction by a Strongly Elongated Spheroid in High-frequency Approximation Ivan V. Andronov (St. Petersburg State University);
- 09:50 Diffraction of TM Polarized EM Waves by a Nonlinear Inhomogeneous Dielectric Cylinder Eugene Smolkin (Penza State University); Maxim Snegur (Penza State University); Yury V. Shestopalov (University of Gavle);
- 10:10 Measurement of the Diffraction Coefficient of a Trihedral Cone with Homogeneous Neumann Boundary Conditions
 Valeriy Yu. Valyaev (Nihon Michelin Tire Co. Ltd.);
 Andrey V. Shanin (Moscow State University);

10:40 Coffee Break

Session 1A7 SC1: Recent Approaches to Periodic Structures 1

Wednesday AM, August 1, 2018 Room T7

Organized by Koki Watanabe, Gerard Granet Chaired by Koki Watanabe, Gerard Granet

08:30 Realization of Linear Amplification of Optical Signal in Guiding Nanostructures

> Vakhtang Jandieri (University of Duisburg-Essen); Tornike Onoprishvili (Free University of Tbilisi); Ramaz Khomeriki (Tbilisi State University); Daniel Erni (University of Duisburg-Essen, Campus Duisburg);

08:50 Experimental Study on Filtering Circuits by Electromagnetic Band Gap Structure in Microwave Frequency Hiroshi Maeda (Fukuoka Institute of Technolary): K. Hagri (Fukuoka Institute of Technoltary): K. Hagri (Fukuoka Institute of Technol-(Fukuoka Institute of Technol-(Fuk

ogy); K. Haari (Fukuoka Institute of Technology); X. Z. Meng (Fukuoka Institute of Technology); N. Higashinaka (Fukuoka Institute of Technology); 09:10 Comparative Analysis of Various Domain Truncation Techniques for Initial-boundary Value Problems for Periodic Structures

> Vadym Pazynin (O. Usikov Institute for Radiophysics and Electronics of National Academy of Sciences of Ukraine (IRE NASU)); Kostyantyn Sirenko (O. Usikov Institute for Radiophysics and Electronics of National Academy of Sciences of Ukraine (IRE NASU)); Yuriy Sirenko (O. Usikov Institute for Radiophysics and Electronics of National Academy of Sciences of Ukraine (IRE NASU)); Nataliya Yashina (O. Usikov Institute for Radiophysics and Electronics of National Academy of Sciences of Ukraine (IRE NASU));

09:30 Comparative Study of Differential Theories to Surface-relief Gratings

Koki Watanabe (Fukuoka Institute of Technology);

09:50 Fourier Modal Method with Modified Boundary Conditions for Near-field Calculations of Diffraction Gratings

> Roman Antos (Charles University); Josef Navratil (Charles University); Jaroslav Hamrle (Charles University); Martin Veis (Charles University); Jan Mistrik (University of Pardubice); Miroslav Vlcek (University of Pardubice);

10:10 Analysis of Arbitrary-shaped Surface Relief Gratings Using Matched Coordinates and Polynomial Expansions

Gerard Granet (Universite Clermont Auvergne);

10:40 Coffee Break

Session 1A8

FocusSession.SC2: Advanced Holography and Illusionary Effects by Metasurfaces, Metamaterials and Plasmonic Structures 1

Wednesday AM, August 1, 2018

Room T8

Organized by Yun Lai, Tao Li Chaired by Yun Lai, Tao Li 08:30 Broadband Achromatic Metalenses

Invited

Shuming Wang (Nanjing University); Pin Chieh Wu (National Taiwan University); Vin-Cent Su (National Taiwan University); Yi-Chieh Lai (National Cheng Kung University); Cheng Hung Chu (Research Center for Applied Sciences); Jia-Wern Chen (National Taiwan University); Shen-Hung Lu (National Taiwan University); Ji Chen (Nanjing University); Beibei Xu (Nanjing University); Chieh-Hsiung Kuan (National Taiwan University); Tao Li (Nanjing University); Shi-Ning Zhu (Nanjing University); Din Ping Tsai (Academia Sinica);

08:50 Multiplexed Holography by SPP and Guided Mode Invited Waves

Ji Chen (Nanjing University); Chenchen Zhao (Nanjing University); Tao Li (Nanjing University); Shi-Ning Zhu (Nanjing University);

09:10 Holographic Display with Full Parallax by Metamate-Invited rials

Wen Qiao (Soochow University); Linsen Chen (Soochow University);

09:30 Metasurface-based Cloaking Technologies Invited

> Hongchen Chu (Soochow University); Jie Luo (Soochow University); Yun Lai (Soochow University);

10:40 Coffee Break

Session 1A9 FocusSession.SC3: Novel Photonic Materials for Advanced Applications 1

Wednesday AM, August 1, 2018

Room A1

Organized by Iam-Choon Khoo Chaired by Iam-Choon Khoo

08:30 Photonic Crystal Solar Cells: Toward Thermodynamic KeynotePower Conversion Efficiency Sajeev John (University of Toronto);

09:00 Photonics Polymers for Ultra-high Definition Display Systems Yasuhiro Koike (Keio University);

09:20 Scanning Wave Photopolymerization for Design of Invited Photo-patterned Liquid Crystal Films Atsushi Shishido (Tokyo Institute of Technology); 09:40 Liquid Crystal Based Fiber-optic Random Laser Source for Speckle-free Imaging Ting-Mao Feng (National Sun Yat-Sen University); Tzu-Hsuan Yang (National Sun Yat-Sen University); Chun-Wei Chen (National Sun Yat-Sen University); Chun-Ta Wang (National Sun Yat-sen University); Hung-Chang Jau (National Sun Yat-sen University); Chih-Wei Wu (National Sun Yat-Sen University); Tsung-Hsien Lin (National Sun Yat-Sen University);

09:55 Continuous Wave Operation of InAs-based Quantum Cascade Lasers above 20 μm
Zeineb Loghmari (Université de Montpellier); Michael Bahriz (Université de Montpellier); Ariane Meguekam-Sado (Université de Montpellier); Hoang Nguyen-Van (Université de Montpellier); Roland Teissier (Université de Montpellier); Alexei N. Baranov (Université de Montpellier);

10:40 Coffee Break

Session 1A10 FocusSession.SC3: Enabling Solutions of Nano-photonics 1

Wednesday AM, August 1, 2018 Room A2

Organized by Sergei Popov, Ari T. Friberg Chaired by Sergei Popov, Ari T. Friberg

08:30 Control of Optical Radiation in Metamaterial Struc-Invited tures

Markus Nyman (Aalto University); Andriy Shevchenko (Aalto University); Ville Kivijarvi (Aalto University); Matti Kaivola (Aalto University);

08:50 Electrically-driven Nanoscale Chemistry with Plas-Invited monic Nanorod Metamaterials

PanWang(King'sCollegeLondon);AlexeyV.Krasavin(King'sCollegeLondon);MazharE.Nasir(King'sCollegeLondon);WayneDickson(King'sCollegeLondon);Ana-tolyV.Zayats(King'sCollegeLondon);

09:10 Photon Crystal Supported Surface Electromagnetic

Invited Waves and Their Use for Ultrasensitive Label-free Biosensing and Generation of Long Propagating Surface Plasmon-polaritons

Sergey K. Sekatskii (Ecole Polytechnique Federale de Lausanne);

09:30 Nano-structured Transparent Wood — Peculiar Find-Invited ing or Promising Branch in Photonics?

Sergei Popov (KTH Royal Institute of Technology); Elena Vasileva (KTH Royal Institute of Technology); Ilya Sychugov (KTH Royal Institute of Technology); Max Yan (KTH Royal Institute of Technology); Yuanyuan Li (KTH Royal Institute of Technology); Lars Berglund (KTH Royal Institute of Technology);

09:50 Pancharatnam-Berry Geometric Phase and Surface Invited Plasmon Polaritons

Salman Daniel (University of Eastern Finland); Kimmo Saastamoinen (University of Eastern Finland); Taco D. Visser (Vrije Universiteit); Ari T. Friberg (University of Eastern Finland);

10:10 Surface Plasmon Excitation on Hybrid Structures of

Invited Oxide Semiconductors of $({\rm Ga_2O_3})/{\rm ZnO:Ga}$ in Near-infrared Range

Y. Kuranaga (The University of Tokyo); H. Matsui (The University of Tokyo); A. Ikehata (National Agriculture and Food Research Organization); Y.-L. Ho (The University of Tokyo); J.-J. Delaunay (The University of Tokyo); Hitoshi Tabata (The University of Tokyo);

10:40 Coffee Break

Session 1A11 SC3: 3D Integrated Photonics

Wednesday AM, August 1, 2018

Room A3 Organized by Linjie Zhou, Weidong Zhou Chaired by Linjie Zhou

08:30 Heterogeneously Integrated Optoelectronic Devices Invited for Implantable Neural Interfaces

Xing Sheng (Tsinghua University);

08:50 $\,$ Heterogeneous Integration of III-V/Ge on Si for Pho-Invited tonic Integrated Circuits

Mitsuru Takenaka (The University of Tokyo); Shinichi Takagi (The University of Tokyo);

09:10 Multi-Layer Silicon Photonics with MEMS for Scal-Invited able Optical Switches

Tae Joon Seok (Gwangju Institute of Science and Technology);

09:30 Progress in Meta-structured Photonic Integrated De-Invited vices

Jian Wang (Huazhong University of Science and Technology);

09:50 Heterogeneously Integrated Photonic Devices Using $_{\rm Invited}$ III-V, Si and SiN on Si Platform

Shinji Matsuo (NTT Corporation);

10:10 Heterogeneous Integration Technology for 3D Opto-Invited electronic Integrated Circuits

Sang Hyeon Kim (Korea Institute of Science and Technology (KIST));

10:40 Coffee Break

Session 1A12 FocusSession.SC3: Integrated and Fiber-based Photonic Circuits and Devices

Wednesday AM, August 1, 2018

Room A4

Organized by Mikhail E. Belkin, Alexander S. Sigov Chaired by Mikhail E. Belkin, Alexander S. Sigov

08:30 Selecting an Optimal Concept to Measure Frequency Invited Response of Millimeter-bandwidth Photodetector

Mikhail E. Belkin (Moscow Technological University MIREA); Tatiana N. Bakhvalova (Moscow State Institute of Radioengineering, Electronics and Automation (Technical University)); D. Klushnik (Moscow State Technological University (MIREA), Scientific and Technological Center "Integrated Microwave Photonics"); Alexander S. Sigov (Moscow Technological University MIREA);

08:50 Bending Effects in Multicore Optical Fibers for Fiber-Invited optic Delay Line

> O. N. Egorova (Fiber Optics Research Center RAS (FORC RAS)); Mikhail E. Belkin (Moscow Technological University MIREA); S. G. Zhuravlev (Fiber Optics Research Center RAS (FORC RAS)); Sergey L. Semjonov (Fiber Optics Research Center RAS (FORC RAS));

 $09{:}10 \hspace{0.1in} {\rm Microwave \ Photon \ Transport \ Transistors}$

Invited Stavros Iezekiel (University of Cyprus);

09:30 Optical Switching by Exploiting Integrated OAM Invited Multiplexers

Muhammad N. Malik (CNIT); Mirco Scaffardi (CNIT); Filippo Scotti (CNIT — National Photonics Labs); Francesco Paolucci (Scuola Superiore Sant'Anna); Ning Zhang (University of Glasgow); Charalambos Klitis (University of Glasgow); Andrea Sgambelluri (Scuola Superiore Sant'Anna); Martin Lavery (University of Glasgow); Filippo Cugini (CNIT); Marc Sorel (University of Glasgow); Antonella Bogoni (CNIT); 09:50 Characterization of Integrated Photonic Circuits with Invited Ultrahigh Resolution

Min Xue (Nanjing University of Aeronautics and Astronautics); Shilong Pan (Nanjing University of Aeronautics and Astronautics);

10:10 A High-speed Pipelined ADC Based on Open-loop Amplification
Yujia Huang (Southeast University); Qiao Meng (Southeast University); Fei Li (Southeast University);

10:40 Coffee Break

Session 1A13 Optical Tweezers and Applications

Wednesday AM, August 1, 2018 Room A5 Organized by Yuqiang Jiang

Chaired by Yuqiang Jiang

08:30 Spin-to-orbital Conversion of Angular Momentum in Femtosecond Laser Trapping

> Yaqiang Qin (Institute of Genetics and Developmental Biology, Chinese Academy of Sciences); Lu Huang (Institute of Genetics and Developmental Biology, Chinese Academy of Sciences); Honglian Guo (Minzu University of China); Hao Shi (Institute of Genetics and Developmental Biology, Chinese Academy of Sciences); Liantuan Xiao (Shanxi University); Yuqiang Jiang (Institute of Genetics and Developmental Biology, Chinese Academy of Sciences);

- 08:50 A Chip of Pulse-laser-assisted Dual-beam Fiber-optic Trap Zhenhai Fu (Zhejiang University); Xuan She (Zhejiang University); Nan Li (Zhejiang University); Wenqiang Li (Zhejiang University); Huizhu Hu (Zhejiang University);
- 09:10 Rotation of a Trapped Microsphere in a Misaligned Dual-beam Optical Tweezer Wenqiang Li (Zhejiang University); Nan Li (Zhejiang University); Zhenhai Fu (Zhejiang University); Heming Su (Zhejiang University); Yu Shen (Zhejiang University of Science and Technology); Huizhu Hu (Zhejiang University);
- 09:30 Angular Stability Analysis of a Nanorod Rotated by Laser in Air Heming Su (Zhejiang University); Nan Li (Zhejiang University); Wenqiang Li (Zhejiang University); Huizhu Hu (Zhejiang University);

- 09:50 Dynamic Analysis and Simulation of Optically Levitated Rotating Particle in High Vacuum Qi Zhu (Zhejiang University); Nan Li (Zhejiang University); Heming Su (Zhejiang University); Yu Shen (Zhejiang University of Science and Technology); Huizhu Hu (Zhejiang University);
- 10:10 Dynamics of KIF11 Measured by Optical Tweezers Yingxi Xue (Institute of Genetics and Developmental Biology, Chinese Academy of Sciences); Lu Huang (Institute of Genetics and Developmental Biology, Chinese Academy of Sciences); Yuqiang Jiang (Institute of Genetics and Developmental Biology, Chinese Academy of Sciences);

10:40 Coffee Break

Session 1A14 SC3: Integrated Chip-scale Photonic Signal Processing

> Wednesday AM, August 1, 2018 Room A6 Organized by Jian Wang

Chaired by Jian Wang

08:30 Active Silicon Photonic Devices and Integration & Re-Invited lated Applications in Signal Processing

Wei Jiang (Nanjing University);

08:50 Silicon-based Optoelectronic Devices for Communica-Invited tion and Sensing Applications *Kyoungsik Yu (KAIST*);

09:10 Optical Signal Processing Using Silicon Photonic Invited Nanobeam Devices: Filtering and Switching

Yong Zhang (Shanghai Jiao Tong University); Ciyuan Qiu (Shanghai Jiao Tong University); Xinhong Jiang (Shanghai Jiao Tong University); Huanying Zhou (Shanghai Jiao Tong University); Zhenzhen Xu (Shanghai Jiao Tong University); Yikai Su (Shanghai Jiao Tong University);

09:30 Programmable Silicon Photonic Circuits for Multi-Invited functional Microwave Photonic Signal Processing Liangjun Lu (Shanghai Jiao Tong University); 09:50 Advances in Photonic-integrated Fast Microwave Invited phase-shifter in Silicon-on-insulator Technology for

Beam-steering in 5G Systems and Radar Applications
C. Porzi (TeCIP — Scuola Superiore Sant'Anna);
F. Falconi (CNIT — National Photonics Labs);
S. Pinna (TeCIP — Scuola Superiore Sant'Anna);
V. Sorianello (CNIT — National Photonics Labs);
G. Serafino (TeCIP — Scuola Superiore Sant'Anna);
M. Puleri (Ericsson Telecomunicazioni SpA);
A. D'Errico (Ericsson Telecomunicazioni SpA);
F. Scotti (CNIT — National Photonics Labs);
M. Romagnoli (CNIT — National Photonics Labs);
Antonella Bogoni (CNIT — Photonics Networks and Technologies Laboratory); P. Ghelfi (TeCIP — Scuola Superiore Sant'Anna);

10:10 High Modulation Efficiency Compact Graphene-Si Invited Waveguide Modulator

Xingjun Wang (Peking University); Haowen Shu (Peking University);

10:40 Coffee Break

Session 1A15 SC3: Future Wireless Communication Systems for Railways

Wednesday AM, August 1, 2018

Room A7 Organized by Hiroyo Ogawa, Hiroyuki Toda Chaired by Hiroyuki Toda

- 08:30 Current and Future Trend of Research and Development of Telecommunication System for Railway Kazuki Nakamura (Railway Technical Research Institute); Kunihiro Kawasaki (Railway Technical Research Institute);
- 08:50 Railway Radio Communication System for High Speed Train Using Millimeter Wave and RoF Technology Nobuhiko Shibagaki (Hitachi Kokusai Electric Inc.); Yausuke Sato (Hitachi Kokusai Electric Inc.): Ken-

Yousuke Sato (Hitachi Kokusai Electric Inc.); Kennich Kashima (Hitachi Kokusai Electric Inc.);

09:10 Linear Cellularization Enabling Millimeter-wave Train Radio Communication Systems in 5G Era Hiroshi Nishimoto (Mitsubishi Electric Corporation); K. Kamohara (Mitsubishi Electric Corporation); F. Hasegawa (Mitsubishi Electric Corporation); S. Umeda (Mitsubishi Electric Corporation); Y. Kinoshita (Mitsubishi Electric Corporation); A. Okazaki (Mitsubishi Electric Corporation); A. Okazuki subishi Electric Corporation);

09:30 Optical Access Network Technology for Millimeterwave Railway Communication Systems Using Linear Cell Configuration

> Atsushi Kanno (National Institute of Information and Communications Technology); Pham Tien Dat (Waseda University); Naokatsu Yamamoto (National Institute of Information and Communications Technology); Tetsuya Kawanishi (National Institute of Information and Communications Technology);

- Propagation Study Including ITU-R Activities for 09:50Millimeter Wave Railway Communication Systems Hirokazu Sawada (National Institute of Information and Communication Technology (NICT)); Kentaro Ishizu (National Institute of Information and Communication Technology (NICT)); Fumihide Kojima (National Institute of Information and Communication Technology (NICT)); Hiroyo Oqawa (National Institute of Information and Communications Technology); Kazuki Nakamura (Railway Technical Research Institute); Nagateru Iwasawa (Railway Technical Research Institute); Kunihiro Kawasaki (Railway Technical Research Institute); Nobuhiko Shibagaki (Hitachi Kokusai Electric Inc.); Keizo Inagaki (National Institute of Information and Communications Technology);
- 10:10 Spectrum Regulation in the 100-GHz Band for Railway Radiocommunication System

Hiroyo Ogawa (National Institute of Information and Communications Technology); Atsushi Kanno (National Institute of Information and Communications Technology); Tetsuya Kawanishi (National Institute of Information and Communications Technology); Naokatsu Yamamoto (National Institute of Information and Communications Technology);

10:40 Coffee Break

Session 1A16 SC5: Waves Propagation and Scattering in Random Media

> Wednesday AM, August 1, 2018 Room A8 Organized by Hosam El-Ocla Chaired by Hassan El-Sallabi

- 08:30 Improvement in Accuracy of Breakpoint Distance Model for Path Loss Prediction Hassan El-Sallabi (Emiri Signal and Information Technology Corps); Abdulaziz Aldosari (Emiri Signal and Information Technology Corps); Yahia Basahl (Emiri Signal and Information Technology Corps); Jean-Francois Chamberland (Texas A&M University);
- 08:50 Effects of Storm Attenuation over Satellite Links in Sub-tropical Africa Mary Nabangala Ahuna (University of KwaZulu-Natal); Thomas Joachim Odhiambo Afullo (University of KwaZulu-Natal (UKZN));
- 09:10 A Comparative Study of Dual-slope Path Loss Model in Various Indoor Environments at 14 to 22 GHz Nicholas O. Oyie (University of KwaZulu-Natal (UKZN)); Thomas Joachim Odhiambo Afullo (University of KwaZulu-Natal (UKZN));
- 09:30 An Empirical Approach to Omnidirectional Path Loss and Line-of-sight Probability Models at 18 GHz for 5G Networks Nicholas O. Oyie (University of KwaZulu-Natal

(UKZN)); Thomas Joachim Odhiambo Afullo (University of KwaZulu-Natal (UKZN));

- 09:50 The Second Order Moment Equation of Crossly Polarized EM-waves Due to Depolarization in Propagation through Continuous Isotropic Random Medium Yukihisa Nanbu (National Institute of Technology, Sasebo College); Mitsuo Tateiba (Kyushu University);
- 10:10 Application of Hybrid T-matrix Method to Predict Vegetation Attenuation in Outdoor Agriculture Orchard and Comparison with Measurement Tossaporn Srisooksai (Tokyo Institute of Technology); Jun-Ichi Takada (Tokyo Institute of Technology);

10:40 Coffee Break

Session 1A17 SC3: Guided-mode-resonance Devices and Applications 1

> Wednesday AM, August 1, 2018 Room A9 Organized by Shogo Ura Chaired by Shogo Ura

08:30 Applications of Gradient Grating Period Guided-Invited mode Resonance in Spectral Measurement

Cheng-Sheng Huang (National Chiao Tung University); Hsin-An Lin (National Chiao Tung University); Chih-Wei Chang (National Chiao Tung University); Hsin-Yun Hsu (National Chiao Tung University); 08:50 GMR-type Multi-channel Wavelength Filters for NIR Invited Spectroscopy

Yasuo Ohtera (Tohoku University);

09:10 Guided Mode Resonant Grating for Thermal and Invited Laser Applications

Kota Ito (Toyota Central R&D Labs., Inc.); Takayuki Matsui (Toyota Central R&D Labs., Inc.); Hideo Iizuka (Toyota Central R&D Labs., Inc.);

09:30 Guided-mode Resonances in Dielectric Waveguide Invited Gratings: Role of Surface Modulation Profile

Wenxin Liu (Tongji University); Yong Sun (Tongji University); Hong Chen (Tongji University);

09:50 Guided-mode Resonance in Waveguide Cavity Invited

Junichi Inoue (Kyoto Institute of Technology); Shogo Ura (Kyoto Institute of Technology); Kenji Kintaka (National Institute of Advanced Industrial Science and Technology);

 $10{:}10 \ \ {\rm Guided}{-}{\rm mode}{-}{\rm resonance\ }{\rm Biosensing}$

Martina Gerken (Christian-Albrechts-Universitat zu Kiel);

10:40 Coffee Break

Invited

Session 1A18 Application of EM Field in Medical Diagnostics and Therapy

Wednesday AM, August 1, 2018

Room A10

Organized by Jan Vrba

Chaired by Jan Vrba

08:30 Status of ThomX and TTX2 — Development of a High Power Optical Cavity Used for Laser Electron Beam Interaction

Huan Wang (Universite Paris-Saclay); Loic Amoudry (Universite Paris-Saclay); Ronic Chiche (Universite Paris-Sud); Wenhui Huang (Tsinghua University); Aurelien Martens (Universite Paris-Sud); Viktor Soskov (Universite Paris-Sud); Kevin Cassou (Universite Paris-Sud); Kevin Dupraz (Universite Paris-Sud); Daniele Nutarelli (Universite Paris-Sud); Chuanxiang Tang (Tsinghua University); Lixin Yan (Tsinghua University); Fabian Zomer (Universite Paris 11); 08:50 Microwave Interstitial Applicator Array for Treatment of Pancreatic Cancer Jan Vrba (Czech Technical University in Prague); Lucie Vojackova (Czech Technical University in Prague); Ondrej Fiser (Czech Technical University in Prague);

Ilja Merunka (Czech Technical University in Praque);

- 09:10 Microwave Technologies in Medical Diagnostics and Therapy Jan Vrba (Czech Technical University in Prague); Jan Vrba, Jr. (Czech Technical University in Prague); David Vrba (Czech Technical University in Prague); Ilja Merunka (Czech Technical University in Prague); Ondrej Fiser (Czech Technical University in Prague);
- 09:30 Advancements in the Development of Microwave Technology for Brain Stroke Monitoring Rosa Scapaticci (Institute for Electromagnetic Sensing of the Environment); J. A. Tobon Vasquez (CNR-IREA); G. Turvani (CNR-IREA); G. Dassano (CNR-IREA); N. Joachimowicz (Universite Paris Saclay); Bernard Duchene (CNRS, CentraleSupelec, Université Paris-Sud); Gennaro Bellizzi (University of Naples Federico II); E. Tedeschi (University of Naples Federico II); Mario Roberto Casu (Politecnico di Torino); Francesca Vipiana (Politecnico di Torino); Lorenzo Crocco (CNR — National Research Council of Italy);
- 09:50 Numerical Study of Stroke Detection Using UWB Radar

Ondrej Fiser (Czech Technical University in Prague); Vojtech Hruby (Czech Technical University in Prague); Ilja Merunka (Czech Technical University in Prague); Jan Vrba, Jr. (Czech Technical University in Prague); Jan Vrba (Czech Technical University in Prague);

10:40 Coffee Break

Session 1P1 FocusSession.SC5: Remote Sensing of Soil Moisture

Wednesday PM, August 1, 2018 Room T1

Organized by Steven K. Chan, Rajat Bindlish Chaired by Steven K. Chan 13:00 Prediction of Cement-based Materials' Water Content with the Use of Electromagnetic Homogenisation Schemes

Vincent Guihard (EDF R&D); Frederic Taillade (EDF R&D); Jean-Paul Balayssac (Universite de Toulouse); Barthelemy Steck (EDF R&D); Julien Sanahuja (EDF R&D); Fabrice Deby (LMDC Toulouse);

- 13:20 AMSR2 Soil Moisture Retrieval and Evaluation Using Successive Radiometric Overpass Observations Steven K. Chan (NASA Jet Propulsion Laboratory, California Institute of Technology);
- 13:40 Physical Modeling of Transmission and Phase Shift of Vegetation and Trees at P-band for Remote Sensing of Soil Moisture

Huanting Huang (University of Michigan); Leung Tsang (University of Michigan); Rashmi Shah (California Institute of Technology); Xiaolan Xu (California Institute of Technology); Simon H. Yueh (California Institute of Technology);

- 14:00 Fully Bistatic Polarized Radar Scattering and Its Use in Parameters Inversion
 Kun-Shan Chen (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Yang Yin (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Yu Liu (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Yongwei Liu (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences);
- 14:20 Multi-temporal L-band Estimation of Soil Moisture Using Bistatic GNSS Land Returns Mohammad Al-Khaldi (The Ohio State University); Joel T. Johnson (The Ohio State University); Eric Loria (The Ohio State University); Andrew O'Brien (The Ohio State University);
- 14:40 Radar Bistatic Configuration for Soil Moisture Estimation at L-band Using Global Sensitivity Analysis Method

Jiangyuan Zeng (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Kun-Shan Chen (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences);

15:00 Root-zone and Surface Soil Moisture Retrievals Using Signal of Opportunity (SoOp) Observations Rajat Bindlish (NASA Goddard Space Flight Center); James L. Garrison (Purdue University); Mehmet Kurum (Mississippi State University); Jeffrey R. Piepmeier (NASA Goddard Space Flight Center); Manuel A. Vega (NASA Goddard Space Flight Center); Benjamin Nold (Purdue University); 15:20 Multi-frequency Signals of Opportunity for Remote Sensing of Root Zone Soil Moisture Simon H. Yueh (California Institute of Technology); Rashmi Shah (California Institute of Technology); Xiaolan Xu (California Institute of Technology); Kelly Elder (California Institute of Technology); Steve Margulis (California Institute of Technology);

15:40 Coffee Break

Session 1P2 FocusSession.SC5: Inverse Scattering, Imaging, and Remote Sensing 2

Wednesday PM, August 1, 2018

Room T2

Organized by Xiuzhu Ye, Xudong Chen

Chaired by Xiuzhu Ye

13:00 Multiphysics/Multimodality Inversion for Subsurface KeynoteSensing and Imaging

> Qing Huo Liu (Duke University); Yuan Fang (Duke University); Yunyun Hu (Duke University); Dezhi Wang (Duke University); Tian Lan (Xiamen University); Feng Han (Xiamen University); Na Liu (Xiamen University);

13:30 Recent Advances in Inverse Microwave Imaging Invited

Uday K. Khankhoje (Indian Institute of Technology Madras);

13:50 A Study of Successive Estimation Technique in Con-Invited crete Diagnosis

Zhi Qi Meng (Fukuoka University); Tomonori Tsuburaya (Fukuoka University); Takashi Takenaka (Nagasaki University);

14:10 Two-slab High Sensitivity Technique for Measurement of Permittivity of a Dielectric Slab in a Rectangular Waveguide Roman Kushnin (Riga Technical University); Janis Semenjako (Riga Technical University); Yury V. Shestopalov (University of Gavle); An-

dris Viduzs (Riga Technical University); 14:25 Inverse Problem and Image Reconstruction in Electri-

Invited cal Capacitance Tomography Lijun Xu (Beihang University); Jiangtao Sun (Beihang University); Shijie Sun (Beihang University); Zhang Cao (Beihang University); Jiayu Zhao (Beihang University); 14:45 Shape Measurement Based on Combined Reduced Phase Dual-directional Illumination Digital Holography and Speckle Displacements Davood Khodadad (Linnaeus University); Behnam Tayebi (Korea University);

15:00 Study on the Feasibility of Multi-physics Imaging for KeynoteHuman Thorax

Maokun Li (Tsinghua University); Ke Zhang (Tsinghua University); Xiaoqian Song (Tsinghua University); Haolin Zhang (Tsinghua University); Fan Yang (Tsinghua University); Shenheng Xu (Tsinghua University); Aria Abubakar (Schlumberger Houston Formation Evaluation);

15:40 Coffee Break

Session 1P3

SC1: Advances in Integral Equation Methods for Electromagnetic Problems

Wednesday PM, August 1, 2018

Room T3

Organized by Maokun Li, Gaobiao Xiao

Chaired by Maokun Li, Gaobiao Xiao

13:20 A- Φ Formulation Time Domain Integral Equations Invited Free from Interior Resonances

Thomas Edgar Roth (University of Illinois at Urbana-Champaign); Weng Cho Chew (University of Illinois);

13:40 A Fast Algorithm in Modeling Quasi-periodic Arrays Xunwang Dang (Tsinghua University); Maokun Li (Tsinghua University); Fan Yang (Tsinghua University); Shenheng Xu (Tsinghua University);

 $14{:}00\ {\rm MOD}\ {\rm Based}\ {\rm Discontinuous}\ {\rm Galerkin}\ {\rm PMCHW}$

Invited Method for Simulating Transient Scattering Characteristics of Dielectric Objects

> Li Huang (Shanghai Jiao Tong University); Hao-Xuan Zhang (Shanghai Jiao Tong University); Liang Zhou (Shanghai Jiao Tong University); Wen-Yan Yin (Zhejiang University);

14:20 Fast Solution of Volume Integral Equations Based on Invited Meshless Discretization

Qing Xu (Tongji University); Mei Song Tong (Tongji University);

14:40 Analyzing Phased Arrays with Basis Functions Associated with Characteristic Modes
Gaobiao Xiao (Shanghai Jiao Tong University);
Can Xiong (Shanghai Jiao Tong University);
Yibei Hou (Shanghai Jiao Tong University);

15:00 Convergence of Iterative Solution of a Linear System in the Framework of the Discrete Dipole Approximation

Maxim A. Yurkin (Voevodsky Institute of Chemical Kinetics and Combustion, SB RAS);

15:20 Reconstruction of the Poynting Vector from the Measurements of the Electric Field for 920 MHz Electromagnetic Wave Sources Akihiro Chiba (The University of Tokyo); Takaaki Nara (The University of Tokyo);

15:40 Coffee Break

Session 1P4 SC1: Computational Simulations and Techniques in Electromagnetics

Wednesday PM, August 1, 2018

Room T4

Organized by Masahiro Tanaka, Shinichiro Ohnuki Chaired by Masahiro Tanaka, Shinichiro Ohnuki

- 13:20 FDTD Analysis of Radiation and Reflection of Electromagnetic Fields in Finite Length Microstrip Lines with Terminal Cross-section Rakkappan Balasubramanian (Synclayer, Inc.); Yasumitsu Miyazaki (Aichi University of Technology);
- 13:40 Parallel Computing in Particle Swarm Optimization for Antenna Design Linh Ho Manh (Hanoi University of Science and Technology); Nguyen Khac Kiem (Hanoi University of Science and Technology); Chien Dao Ngoc (Ministry of Science and Technology);
- 14:00 Comparison Study on EFIE, MFIE and CFIE for Three-dimensional Hollow Waveguide Masahiro Tanaka (Gifu University);
- 14:20 Ray Tracing in the Context of Atmospheric Propagation
 Andreas Danklmayer (Fraunhofer Institute for High Frequency Physics and Radar Techniques (FHR));
 Frank Weinmann (Research Institute for High Frequency Physics and Radar Techniques);
- 14:40 Full-vectorial Analysis of Optical Waveguide Discontinuities Using Propagation Operator Method Based on Finite Element SchemeK. Morimoto (Muroran Institute of Technology); Ya-

K. Morimoto (Muroran Institute of Technology); Yasuhide Tsuji (Muroran Institute of Technology);

- 15:00 Analysis of Electromagnetic Fields Combined with Magnetization Dynamics Shinichiro Ohnuki (Nihon University); Takumi Yasuda (Nihon University); Kazuyuki Tanaka (Nihon University);
- 15:40 Coffee Break

Session 1P5 FocusSession: Education for Electromagnetics

Wednesday PM, August 1, 2018

Room T5

Organized by Eng Leong Tan, Ari Sihvola Chaired by Eng Leong Tan, Ari Sihvola

13:20 Study on Characteristics of High-gain, Narrow-band Invited and Low-gain, Wideband Antennas Mitsuo Taquchi (Naqasaki Univ);

13:40 Analysis on Equation System in Textbook in Electro-Invited magnetics on Aspect of Network Topology

Osamu Sakai (The University of Shiga Prefecture); Tetsuya Kojima (The University of Shiga Prefecture);

14:00 Ways to Enhance Teaching Effectiveness in Electro-Invited magnetics

Ying Wu (King Abdullah University of Science and Technology (KAUST));

- 14:20 Broadband Electromagnetics Education: The Role of
- Invited History of Electrical Engineering Ari Sihvola (Aalto University);
- 14:40 Demonstrating the Use of iPad to Aid Teaching of

Invited Transmission Line Theory in Undergraduate Electromagnetic Course Eng Leong Tan (Nanyang Technological University);

Ding Yu Heh (Nanyang Technological University);

- 15:00 Uncertainties in EMC Calibration and Testing Dirk L. R. Van Troyen (Katholieke Universiteit Leuven); Filip Nauwelaerts (Katholieke Universiteit Leuven);
- 15:15 Real-time Remote Practical and Virtual Lab Work in the Web Browser *Timothy D. Drysdale (University of Edinburgh)*;
- 15:40 Coffee Break

Session 1P6 SC4: Computational Electromagnetics in Exposure Safety and Medical Application

Wednesday PM, August 1, 2018

Room T6

Organized by Akimasa Hirata, Tatsuya Kashiwa Chaired by Akimasa Hirata, Tatsuya Kashiwa

- 13:00 Development on High Resolution Human Voxel Model for High Frequency Exposure Analysis Kenji Taguchi (Kitami Institute of Technology); Tatsuya Kashiwa (Kitami Institute of Technology); Akimasa Hirata (Nagoya Institute of Technology);
- 13:20 Comparison of Thermal Response in Human and Rat for RF Field
 Sachiko Kodera (Nagoya Institute of Technology);
 A. Hirata (Nagoya Institute of Technology);
- 13:40 Heat Potential of Power Density for MMW Exposure Assessment from 6 GHz to 1 THz Kun Li (National Institute of Information and Communications Technology); Kensuke Sasaki (National Institute of Information and Communications Technology); Soichi Watanabe (National Institute of Information and Communications Technology);
- 14:00 Numerical Estimation on the Threshold of Nerve Excitation Caused by the Application of Current with Multiple Frequencies

Kei Makino (Tokyo Metropolitan University); Yukihisa Suzuki (Tokyo Metropolitan University); Masao Taki (Tokyo Metropolitan University);

- 14:20 Validation of Numerical Method for Analysis of Contact Current Using Measured Electric Field in Intermediate Frequency Band
 Keisuke Arai (Tokyo University of Agriculture and Technology); Jerdvisanop Chakarothai (National Institute of Information and Communication Technology); Kanako Wake (National Institute of Information and Communications Technology); Soichi Watanabe (National Institute of Information and Communications Technology); Takuji Arima (Tokyo University of Agriculture and Technology); Toru Uno (Tokyo University of Agriculture and Technology);
- 14:40 Simulation of Cardiac Electrophysiology by Small Electric Dipoles with Numerical Model
 T. Nakane (Nagoya Institute of Technology); T. Ito (Nagoya Institute of Technology); Akimasa Hirata (Nagoya Institute of Technology);

15:00 Transcutaneous Electrical Nerve Stimulation (TENS) during Pregnancy: Computing the Electric Field inside the Foetal Brain

> Behailu Kibret (Monash University); Malin Premaratne (Monash University); Assefa K. Teshome (Victoria University); Daniel T. H. Lai (Victoria University);

15:20 Algorithm of Brain Wave Source Localization by Matching Pursuit Using Anatomical Human Head Model

Yuki Osachi (Nagoya Institute of Technology); T. Ito (Nagoya Institute of Technology); A. Hirata (Nagoya Institute of Technology);

15:40 Coffee Break

Session 1P7 SC1: Recent Approaches to Periodic Structures 2

Wednesday PM, August 1, 2018

Room T7

Organized by Koki Watanabe, Gerard Granet Chaired by Koki Watanabe, Gerard Granet

13:20 Latest Advances on Modal Methods in Computational Electromagnetics: Applications in Nanophotonics and Plasmonics

> Kofi Edee (Clermont Uniniversite); M. Ben Rhouma (Universite Clermont Auvergne); M. Antezza (Universite Montpellier); B. Guizal (Universite Montpellier);

- 13:40 Numerical Analysis for Structural Coloration in Multilayered Dielectric Gratings
 Hideaki Wakabayashi (Okayama Prefectural University); M. Asai (Kindai University); Jiro Yamakita (Okayama Prefectural University);
- 14:00 Spectroscopic Ellipsometry Characterization of Surface Relief Chalcogenide Gratings
 Jan Mistrik (University of Pardubice); Roman Antos (Charles University); Karel Palka (University of Pardubice); Stanislav Slang (University of Pardubice); Liudmila Loghina (University of Pardubice); Marina Grinco (University of Pardubice); Josef Navratil (Charles University); Miroslav Vlcek (University of Pardubice);
- 14:20 Coupling of Surface Plasmon Polariton Wave and Waveguide Modes
 - Jaromir Pistora (VSB Technical University of Ostrava); Jaroslav Vlcek (VSB — Technical University of Ostrava); Michal Lesnak (VSB — Technical University of Ostrava);

14:40 Band-pass and Band-stop Characteristics of a Periodic Array of Magnetodielectric Circular Cylinders Using Analytic Dispersion Formulation Yong Heui Cho (Mokwon University);

15:40 Coffee Break

Session 1P8 FocusSession.SC2: Advanced Holography and Illusionary Effects by Metasurfaces, Metamaterials and Plasmonic Structures 2

Wednesday PM, August 1, 2018

Room T8

Organized by Yun Lai, Tao Li Chaired by Yun Lai, Tao Li

- 13:00 Hiding Dynamic Objects Selectively at Visible Wave-Invited lengths
 - Qiluan Cheng (Huazhong Agricultural University); Guo Ping Wang (Shenzhen University);
- 13:20 3D Holographic Display with Enlarged Field of View Invited Based on Binary Optical Elements
 - Erkai Hua (Soochow University); Wen Qiao (Soochow University); Linsen Chen (Soochow University);
- 13:40 Holographic Related Technology Based on Metasur-Invited faces

Lingling Huang (Beijing Institute of Technology);

- 14:00 Broadband Achromatic Silicon Nitride Metalens for Invited Unpolarized Visible Light
 - Zhi-Bin Fan (Sun Yat-Sen University); Xiao-Ning Pang (Sun Yat-Sen University); Jian-Wen Dong (Sun Yat-Sen University);
- 14:20 Wave-front Reshaping of Surface Wave with Meta-Invited walls

Shaohua Dong (Fudan University); Yu Zhang (Fudan University); Huijie Guo (Fudan University); Qiong He (Fudan University); Haibin Zhao (Fudan University); Lei Zhou (Fudan University); Shulin Sun (Fudan University);

14:40 Advanced Holography and Illusionary Effects by Re-Invited configurable Phase Control Metasurfaces

> Tianhang Chen (Zhejiang University); Bin Zheng (Zhejiang University); Lijun Guo (Zhejiang University); Huaping Wang (Zhejiang University); Lian Shen (Zhejiang University); Hongsheng Chen (Zhejiang University);

00:00 Programmable Imaging Based on Information Meta-Keynotesurfaces

Tie Jun Cui (Southeast University); Lianlin Li (Peking University);

15:40 Coffee Break

Session 1P9 FocusSession.SC3: Novel Photonic Materials for Advanced Applications 2

Wednesday PM, August 1, 2018

Room A1 Organized by Iam-Choon Khoo

Chaired by Iam-Choon Khoo

13:00 Reusable Localized Surface Plasmon Sensors Based on Invited Octupolar Nanostructures for dsDNA Detection

M. Rippa (Institute of Applied Sciences and Intelligent Systems "E. Caianiello", CNR); R. K. Trojanowicz (Wroclaw University of Science and Technology);
R. Castagna (Institute of Applied Sciences and Intelligent Systems "E. Caianiello", CNR); J. Zyss (LPQM-Ecole Normale Superieurede Cachan); K. Matczyszyn (Wroclaw University of Science and Technology); Lucia Petti (Institute of Applied Sciences and Intelligent Systems — ISASI, CNR);

13:20 Photothermal Conjugated Polymer Films for Optical Invited Actuation

Hanwhuy Lim (Yonsei University); Jong Un Hwang (Yonsei University); Jinbo Kim (Yonsei University); Minsu Han (Yonsei University); Eunkyoung Kim (Yonsei University);

13:40 Photonic Crystal Slab for Terahertz Applications Invited

Masayuki Fujita (Osaka University);

14:00 The Physics and Applications of Coherent Control of KeynoteMetasurfaces

Nikolay I. Zheludev (University of Southampton); Kevin F. MacDonald (University of Southampton); Eric Plum (University of Southampton); Daniele Faccio (Heriot-Watt University);

14:30 Dynamics and Spectral Dependence of Ultrafast

Invited Optical Nonlinearities in Doped Semiconductors at Epsilon-near-zero Sepehr A. Benis (University of Central Florida); E. W. van Stryland (University of Central Florida); David J. Hagan (University of Central Florida);

14:50 Superlight Inverse Doppler Effect Xiao Lin (Nanyang Technological University); Baile Zhang (Nanyang Technological University);

- 15:10 Extreme Nonlinear Optics with Liquid Crystalline Photonic Crystals Iam-Choon Khoo (Pennsylvania State University);
- 15:30 Plasmonic Enhanced Sensing Using Random Lasers Judith M. Dawes (Macquarie University);
 W. Z. W. Ismail (Macquarie University); C. Hurot (Macquarie University); C. Huard (Macquarie University); N. Sitpathom (Macquarie University);

15:40 Coffee Break

Session 1P10 FocusSession.SC3: Enabling Solutions of Nano-photonics 2

Wednesday PM, August 1, 2018

Room A2

Organized by Sergei Popov, Ari T. Friberg Chaired by Sergei Popov, Ari T. Friberg

13:20 Designing Spatially Dispersive Optical Nanomaterials

Andriy Shevchenko (Aalto University); Markus Nyman (Aalto University); Ville Kivijarvi (Aalto University); Matti Kaivola (Aalto University);

13:40 Quantum-mimetic Approach to Optical Coherence Invited Tomography

Tomohiro Shirai (National Institute of Advanced Industrial Science and Technology (AIST));

14:00 Optomechanical Interaction in Complex Dielectric Invited Media

Pedro David Garcia Fernandez (Catalan Institute of Nanoscience and Nanotechnology (ICN2)); C. M. Sotomayor-Torres (Catalan Institute of Nanotechnology);

- 14:20 Laser Light Sources Spanning the Ultraviolet to Deep-
- Invited infrared: Novel Materials, Devices, and Applications Majid Ebrahim-Zadeh (ICFO — Institut de Ciencies Fotoniques);

14:40 Resonances and Local Fields in the Nonlinear Re-Invited sponse of Metal Nanostructures

> Martti Kauranen (Tampere University of Technology); Antti Kiviniemi (Tampere University of Technology); Robert Czaplicki (Tampere University of Technology); Mikko J. Huttunen (Tampere University of Technology); Kalle Koskinen (Tampere University of Technology); Ismo Vartiainen (University of Eastern Finland); Janne Laukkanen (University of Eastern Finland); Semyon Chervinskii (University of Eastern Finland); Markku Kuitinen (University of Eastern Finland); Sergey Scherbak (Peter the Great St. Petersburg Polytechnic University); Andrey Lipovskii (Peter the Great St. Petersburg Polytechnic University);

15:00 On the Quest for High-efficiency Third-harmonic Gen-Invited eration on the Nanoscale

> Gustavo Grinblat (Imperial College London); Ibrahim Abdelwahab (Imperial College London); Toshihiko Shibanuma (Imperial College London); Pablo Albella (Imperial College London); Kai Leng (National University of Singapore); Xiao Chi (National University of Singapore); Andrivo Rusydi (National University of Singapore); Yi Li (Imperial College London); Kian Ping Loh (National University of Singapore); Stefan Alexander Maier (Imperial College London);

15:40 Coffee Break

Session 1P11 SC3: Fiber Gratings and Optical Sensors

Wednesday PM, August 1, 2018 Room A3 Organized by Chin-Ping Yu

Chaired by Hung-Wen Chang, Nai-Hsiang Sun

- 13:20 Hydrophone Based on a Fiber Bragg Grating Hung-Ying Chang (Feng Chia University); Chan-Yu Kuo (Feng Chia University); Teng-Lung Wang (Feng Chia University); Yu-Chung Chang (National Changhua University of Education); Ming-Yue Fu (Air Force Academy); Wen-Fung Liu (Feng Chia University);
- 13:40 Fiber FPI Sensor Formed by Etching a PCF with a Enhanced Temperature Sensing Sensitivity Ho-Nien Wang (National Sun Yat-Sen University); Jing-Chi Du (National Sun Yat-Sen University); Chin-Ping Yu (National Sun Yat-Sen University);

- 14:00 Sensitivity-enhanced MZI-based Fiber RI Sensor by Collapsed the Middle Region of a Hollow-core Fiber Huai-Hsaun Hsu (National Sun Yat-sen University); Guan-Ting Lin (National Sun Yat-sen University); Chin-Ping Yu (National Sun Yat-Sen University);
- 14:20 Analysis of Metallic Diffraction Grating in Photonic Crystal Fiber Sensor Jung-Sheng Chiang (I-Shou University); Jia-Ming Syu (I-Shou University); Ming-Young Chung (I-Shou University); Nai-Hsiang Sun (I-Shou University);
- 14:40 Detecting Dynamics of Curved Shape Memory Alloy Beams Using Fiber Bragg Gratings Kuo-Chih Chuang (Zhejiang University); Xu-Feng Lv (Zhejiang University); Zhi-Wen Yuan (Zhejiang University); versity); Yu-Han Wang (Zhejiang University);
- 15:00 A Bi-parameter Sensor Based on Integrating a Fiber Mach-Zehnder Interferometer and a Fiber Bragg Grating Shao-Wei Wang (National Sun Yat-Sen University);

Shao-Wei Wang (National Sun Fal-Sen University); Hung-Ying Chang (Feng Chia University); Wen-Fung Liu (Feng Chia University); Chin-Ping Yu (National Sun Yat-Sen University);

- 15:20 Highly Sensitive Open-cavity Fiber-optic FPI Sensor by Using Beveled Fiber and Hollow-core Fiber Shi-Yuan Lin (National Sun Yat-sen University); Chin-Ping Yu (National Sun Yat-Sen University);
- 15:40 Coffee Break

Session 1P12 FocusSession.SC3: Ultra-high Capacity Optical Communication

Wednesday PM, August 1, 2018

Room A4

Organized by Sergei Popov, Sergei K. Turitsyn Chaired by Sergei Popov

13:20 Exploration of Optical Amplifiers Based on Erbium Invited $({\rm Er}^{3+})$ and Ytterbium $({\rm Yb}^{3+})$ Doped Fiber Segments

and Its Emerging Applications Ingrida Lavrinovica (Riga Technical University); Andis Supe (Riga Technical University); Aleksejs Udalcovs (RISE Acreo AB); Oskars Ozolins (RISE Acreo AB); Sergei Popov (KTH Royal Institute of Technology); Jurgis Porins (Riga Technical University);

13:40 Phase-sensitive Optical Amplification in Optical Fiber Invited and Free-space Communication

> Peter A. Andrekson (Chalmers University of Technology);

14:00 Deep Learning for Interference Cancellation in Non-

Invited orthogonal Signal Based Optical Communication Systems

Tongyang Xu (University College London); Tianhua Xu (University of Warwick); Izzat Darwazeh (University College London);

14:20 Ultra-low Loss Fiber Technologies for High-capacity Invited Transmission

Takemi Hasegawa (Sumitomo Electric Industries, Ltd.);

14:40 Towards Coherent Detection in SDM-based Optical Invited Access Networks

Aleksejs Udalcovs (RISE Acreo AB); Oskars Ozolins (RISE Acreo AB); Xiaodan Pang (KTH Royal Institute of Technology); Jaime Rodrigo Navarro (Network and Transmission Laboratory, Acreo AB); Rui Lin (KTH Royal Institute of Technology); Marco Levantesi (KTH Royal Institute of Technology); Lin Gan (Huazhong University of Science and Technology); Richard Schatz (Royal Institute of Technology (KTH)); Anders Djupsjobacka (RISE Acreo AB); Jonas Martensson (RISE Acreo AB); Ming Tang (Huazhong University of Science and Technology (HUST)); Songnian Fu (Huazhong University of Science and Technology (HUST)); Deming Liu (Huazhong University of Science and Technology); Weijun Tong (Yanatze Optical Fibre and Cable Company Ltd. (YOFC)); Jiajia Chen (KTH Royal Institute of Technology); Gunnar Jacobsen (Acreo Swedish ICT AB); Sergei Popov (KTH Royal Institute of Technology);

15:00 Opportunities and Challenges of Silicon Photonics

Invited Based Optical-layer Switching Toward Post-Moore's Law Era

Shu Namiki (National Institute of Advanced Industrial Science and Technology (AIST));

15:20 Nonlinearity Mitigation in Systems with Distributed Invited Raman Amplification

Giuseppe Rizzelli (Instituto de Optica CSIC); Pawel Rosa (Consejo Superior de Investigaciones Científicas); Juan Diego Ania Castanon (Consejo Superior de Investigaciones Científicas);

15:40 Coffee Break

Session 1P13 FocusSession.SC3: Silicon Lasers and Integrated Silicon Photonics

Wednesday PM, August 1, 2018 Room A5 Organized by Shuyu Zhang, Xiang Wu Chaired by Shuyu Zhang, Xiang Wu

13:20 Modulation of Luminescence Behaviors by Incorpo-Invited rating Phosphorus into Si Nanocrystals/SiO₂ Multilavers

Jun Xu (Nanjing University);

- 13:40 Design of Si-based Quasi-direct Band Ge Light Emit-Invited ting Diodes for Enhanced Electroluminescence
 - Cheng Li (Xiamen University); Guangyang Lin (Xiamen University); Jianyuan Wang (Xiamen University);
- 14:00 On-chip Detection from Directly Modulated Quantum Invited Dot Microring Lasers on Si
 - Yating Wan (University of California Santa Barbara); Daehwan Jung (University of California Santa Barbara); Daisuke Inoue (Tokyo Institute of Technology); Justin C. Norman (University of California Santa Barbara); Chen Shang (University of California Santa Barbara); Arthur C. Gossard (University of California Santa Barbara); John E. Bowers (University of California);
- 14:20 Silicon-based Polarization Analyzer by Polarization-Invited frequency Mapping
 - Hailong Zhou (Huazhong University of Science and Technology); Siqi Yan (Huazhong University of Science and Technology); Jianji Dong (Huazhong University of Science and Technology); Xinliang Zhang (Huazhong University of Science and Technology);
- 14:40 Ellipsometric Study on Photoluminescence-enhanced
- Invited Silicon Nanocrystals Embedded in SiO₂ Matrices Obtained by Annealing Hydrogen Silsesquioxane
 Wenjie Zhou (Fudan University); Yu-Xiang Zheng (Fudan University); Chi Zhang (Fudan University); Xiao-Feng Ma (The Shanghai Institute of Technical Physics of the Chinese Academy of Sciences); Da-Hai Li (Fudan University); Lei Ma (Fudan University); Fei Hu (Fudan University); Shang-Dong Yang (Fudan University); Liao Yang (Fudan University); Meng-Yu Gao (Fudan University); Ming Lu (Fudan University); Rongjun Zhang (Fudan University); Songyou Wang (Fudan University); Liangyao Chen (Fudan University);

15:00 An All-silicon Distributed Feedback Laser Based on Invited Silicon Nanocrystals with High Optical Gains

Chi Zhang (Fudan University); Dong-Chen Wang (Fudan University); Pan Zeng (Fudan University); Wenjie Zhou (Fudan University); Lei Ma (Fudan University); Hao-Tian Wang (Fudan University); Zhi-Quan Zhou (Fudan University); Fei Hu (Fudan University); Shuyu Zhang (Fudan University); Ming Lu (Fudan University); Xiang Wu (Fudan University);

15:40 Coffee Break

Session 1P14 SC3: Photonics and Optoelectronics Integration for Terahertz Processing

Wednesday PM, August 1, 2018 Room A6

Organized by Kazutoshi Kato Chaired by Kazutoshi Kato, Seiji Fukushima

13:00 Tunable Dual-mode Laser with Heterogeneous Struc-Invited ture of Quantum Dot and Si Photonics-based Pho-

tonic Integrated Circuits for Terahertz Application Atsushi Matsumoto (National Institute of Information and Communications Technology); Kouichi Akahane (National Institute of Information and Communications Technology); Toshimasa Umezawa (National Institute of Information and Communications Technology); Naokatsu Yamamoto (National Institute of Information and Communications Technology); Hirohito Yamada (Tohoku University); Tomohiro Kita (Tohoku University);

13:20 Optoelectronic Frequency Conversion Employing an Invited Electro-absorption Modulated Laser for a Cube Satel-

lite Eart	th Station			
Seiji	Fukushima	(Kagoshima	University);	
Tomono	ri Uezono	(Kagoshima	University);	
Sotaro	Ohshima	(Kagoshima	University);	
To shio	Watanabe (K	Cagoshima Unive	ersity); Tsu -	
tomu Nagayama (Kagoshima University);				

13:40 Surface Micromachining Using Ultra-precision Invited Ductile-mode Cutting Method for Strongly Confined

Low-loss LiNbO₃ Waveguides Ryo Takigawa (Kyushu University); Tetsuya Kawanishi (National Institute of Information and Communications Technology); Eiji Higurashi (The University of Tokyo); Tanemasa Asano (Kyushu University); 14:00 300-GHz 100-Gb/s Wireless Transceiver Based on Invited InP-HEMT MMICs

Hiroshi Hamada (NTT Corporation); Takuya Fujimura (Tokyo Institute of Technology); Ibrahim Abdo (Tokyo Institute of Technology); Kenichi Okada (Tokyo Institute of Technology); Takuya Tsutsumi (NTT Corporation); Ho-Jin Song (NTT Corporation); Hiroki Sugiyama (NTT Corporation); Hideaki Matsuzaki (NTT Corporation); Hideyuki Nosaka (NTT corporation);

14:20 Precise Frequency Measurement of THz Radiations Invited Using Ultra-compact Electro-optic Probe

Isao Morohashi (National Institute of Information and Communications Technology); Norihiko Sekine (National Institute of Information and Communications Technology); Iwao Hosako (National Institute of Information and Communications Technology);

14:40 High SHF Band RF Signal Relay Employing Radio Invited over Multi-mode Fibers

- Takamitsu Aiba (Yazaki Corporation); Atsushi Kanno (National Institute of Information and Communications Technology); Naokatsu Yamamoto (National Institute of Information and Communications Technology); Tetsuya Kawanishi (National Institute of Information and Communications Technology); Tomohiro Wakabayashi (Yazaki Corporation);
- 15:00 600 GHz Wave Combiner Using Arrayed Photomixer Nanami Nishiyama (Kyushu University); Zhou Yang (Kyushu University); Gouki Sakano (Kyushu University); Hiroshi Ito (Kitasato University); Tadao Ishibashi (NTT Electronics Techno Corporation); Kazutoshi Kato (Kyushu University);
- 15:20 THz-wave Beam Steering by Utilizing Photomixing and Chromatic Dispersion of Two Lightwaves Yuta Naito (Kyushu University); Yusuke Yamanaka (Kyushu University); Nanami Nishiyama (Kyushu University); Kazutoshi Kato (Kyushu University);
- 15:40 Coffee Break

Session 1P15

Advances in the Electromagnetic Modelling of Complex, Heterogeneous and Fractal Structures

Wednesday PM, August 1, 2018

Room A7

Organized by Muhammad Zubair, Yee Sin Ang Chaired by Muhammad Zubair, Yee Sin Ang

- 13:20 Modelling Defects on Junction between Coaxial Cables in View of Fault Diagnostic *Geoffrey Beck (CEA-LIST)*;
- 13:40 Surface Electromagnetic Waves Propagation Guided by Dissipative Dielectric Material Sandwich between Two Periodic Multilayered Isotropic Materials in Prism Coupled Configuration Muhammad Danyal (GIK Institute); Arbab Abdur Rahim (GIK Institute of Engineering Sciences and Technology); Husnul Maab (Ghulam Ishaq Khan Institute of Science and Technology); Muhammad Mahmood Ali (Ghulam Ishaq Khan Institute of Engineering Sciences and Technology);
- 14:00 Modified Wang Shaped Ultra-wideband (UWB) Fractal Patch Antenna for Millimetre-wave Applications Rana M. Hassan Bilal (GIK Institute); Arbab Abdur Rahim (GIK Institute of Engineering Sciences and Technology); Husnul Maab (Ghulam Ishaq Khan Institute of Science and Technology); Muhammad Mahmood Ali (Ghulam Ishaq Khan Institute of Engineering Sciences and Technology);
- 14:20 Combined Electric and Magnetic Field Tuning of the Impedance of Lanthanum Strontium Manganite Thin Film Interdigital Electrode Devices Mahmoud Al Ahmad (United Arab Emirates University);
- 14:40 Magnetization State Determination Using Deep Learning
 Mehroz Alam (National University of Computer and Emerging Sciences); Akhtar Ali (National University of Computer and Emerging Sciences); Muhammad Shahzad Sultan (National University of Computer and Emerging Sciences); Mohammad Nauman (National University of Computer and Emerging Sciences); Omar Usman Khan (National University of
- 15:00 Modelling of Field-induced Electron Emission from Rough Surfaces: A Fractional Calculus Approach Muhammad Zubair (Information Technology University (ITU)); Yee Sin Ang (Singapore University of Technology and Design (SUTD)); Lay Kee Ang (Singapore University of Technology and Design (SUTD));

Computer and Emerging Sciences);

15:20 Ultra-broadband Tungsten Absorber Ahsan Sarwar Rana (Information Technology University (ITU)); Muhammad Qasim Mehmood (Information Technology University (ITU)); Heongyeong Jeong (Pohang University of Science and Technology (POSTECH)); Inki Kim (Pohang University of Science and Technology (POSTECH)); Junsuk Rho (Pohang University of Science and Technology (POSTECH)); 15:40 Coffee Break

Session 1P16 SC5: Noninvasive Examination Techniques in Industry and Biomedicine

Wednesday PM, August 1, 2018

Room A8

Organized by Fedor Alexandrovich Gubarev

Chaired by Fedor Alexandrovich Gubarev, Andrei Vladimirovich Mostovshchikov

- 13:00 Evaluation of Fractal Water Structures in Various Invited Aqueous Systems by Broadband Dielectric Spec-
- troscopy with Open-end Coaxial Electrodes Shin Yagihara (Tokai University); K. Shoji (Tokai University); T. Saito (Tokai University); Y. Maruyama (Tokai University); H. Saito (Tokai University); R. Kita (Tokai University); N. Shinyashiki (Tokai University); M. Fukuzaki (Tokai University);
- 13:20 A Refined VR Based Video Indirect Ophthalmoscope Kala Bharathan (PESIT — Bangalore South Campus); S. P. Tejas (PESIT — Bangalore South Campus); G. C. Tejas (PESIT — Bangalore South Campus); T. E. Ashraya Nayaka (The Eye Foundation);
- 13:40 Non-invasive and Non-destructive Measurements of Human Skin Using Dielectric Spectroscopy Yuko Maruyama (Tokai University); H. Kamata (Tokai University); R. Kita (Tokai University); N. Shinyashiki (Tokai University); Shin Yagihara (Tokai University);

14:00 Fundamental Study for Optical Transillumination Imaging of Arteriovenous Fistula — System Integration into Practical Compact Device for Bedside Application Hideaki Kamiyama (Hokkaido University of Science); Masataka Kitama (Hokkaido University of Science); Masaji Yamashita (Hokkaido University of Science); Hisae O. Shimizu (Hokkaido University of Science); Yohichiro Kojima (Hokkaido University of Science); Go Okuyama (Hokkaido University of Science); Akihiro Kikuchi (Hokkaido University of Science); Koichi Shimizu (Waseda University); 14:20 Monitoring of Nanopowder Combustion Ignited by Laser Radiation

> Lin Li (National Research Tomsk Polytechnic University); Andrei Vladimirovich Mostovshchikov (National Research Tomsk Polytechnic University); Alexander Petrovich Ilyin (Tomsk Polytechnic University); Andreas Smirnov (Technische Hochschule Nürnberg Georg-Simon-Ohm); Fedor Alexandrovich Gubarev (National Research Tomsk Polytechnic University);

14:40 Corrosion Evaluation of Steel Reinforcing Bar Using Electromagnetic Method
Dong Feng He (National Institute for Materials Science); Mitsuharu Shiwa (National Institute for Materials Science); S. Takaya (Kyoto University);
N. Tsutsumi (National Institute for Materials Science); Koichi Tsuchiya (National Institute for Materials Science);

- 15:00 Effect of Microwave Radiation on the Thermal Properties of the Electroexplosive Copper Nanopowder Andrei Vladimirovich Mostovshchikov (Tomsk Polytechnic University); Alexander Petrovich Il'in (Tomsk Polytechnic University); Vladislav Sergeevich Igumnov (Tomsk Polytechnic University); Pavel Yurievich Chumerin (Tomsk Polytechnic University); Fedor Alexandrovich Gubarev (Tomsk Polytechnic University);
- 15:20 Application of Laser-speckle Correlation Method for Blood Coagulation Estimation Lin Li (National Research Tomsk Polytechnic University); Iuliia Dmitrievna Sytnik (Tomsk Polytechnic University); Yakov Semyonovich Peker (Siberian State Medical University); Fedor Alexandrovich Gubarev (Tomsk Polytechnic University);
- 15:40 Coffee Break

Session 1P17a SC3: Guided-mode-resonance Devices and Applications 2

Wednesday PM, August 1, 2018

Room A9

Organized by Shogo Ura

Chaired by Shogo Ura

13:00 Structural Color Filters Based on Guided-mode Res-Invited onant Effect

Yoshiaki Kanamori (Tohoku University);

13:20 Improved Infrared Photo-detection via Guided Mode Invited Resonances

Jean-Luc Pelouard (Universite Paris-Sud, Universite Paris-Saclay);

13:40 Sensor Applications of Guided Mode Resonant Grat-Invited ings

Hisao Kikuta (Osaka Prefecture University); Akio Mizutani (Osaka Prefecture University);

14:00 Large Area Fabrication of Patterns of Resonant Waveguide Gratings by Electron Beam Lithography for Up-scalable Applications Giorgio Quaranta (Swiss Center of Electronics and Microtechnology (CSEM S.A.)); Guillaume Basset (Swiss Center of Electronics and Microtechnology (CSEM S.A.)); Zdenek Benes (Swiss Federal Institute of Technology (EPFL)); Olivier J. F. Martin (Swiss Federal Institute of Technology (EPFL)); Benjamin Gallinet (Ecole Polytech Fed Lausanne);

Session 1P17b SC1: Interaction of Electromagnetic Wave with Complex Media

Wednesday PM, August 1, 2018

Room A9

Organized by Mei Song Tong, Lin E. Sun Chaired by Mei Song Tong

14:20 3D Inversion of Anisotropic Permittivities by Modelbased Method

Lin E. Sun (Youngstown State University); Y. J. Zhang (Tongji University); Mei Song Tong (Tongji University);

- 14:40 Three-dimensional Electromagnetic Scattering and Inverse Scattering from Inhomogeneous Anisotropic Objects Embedded in Layered Uniaxial Anisotropic Media by the BCGS-FFT-VBIM Method Feng Han (Xiamen University); Jianliang Zhuo (Xiamen University); Na Liu (Xiamen University); Qing Huo Liu (Duke University);
- 15:00 Characterizing the Electromagnetic Properties of Fiber Materials Using Effective Medium Technique Yen-Ren Chen (National Tsing-Hua University); Hsien-Wen Chao (National Tsing Hua University); Tsun-Hun Chang (National Tsing Hua University);
- 15:20 Solvent Effect Induced Optical Nonlinearities in Absorbing Liquids Studied with Z-scan Technique Yi-Ci Li (National Chung Cheng University); Po-Yuan Huang (National Chung Cheng University); Yu-Ting Kuo (National Chung Cheng University); Tai-Huei Wei (National Chung Cheng University);

15:40 Coffee Break

Session 1P18 SC1: Soft Magnetic Wires and Giant Magnetoimpedance Effect for High Sensitive Magnetic Sensors and Non-destructive Control

> Wednesday PM, August 1, 2018 Room A10 Organized by Arkady P. Zhukov Chaired by Arkady P. Zhukov

13:00 Real-time Magnetoencephalogram Measurement Us-Invited ing Highly Sensitive GMI Magnetic Sensor

Tsuyoshi Uchiyama (Nagoya University);

13:20 The Invention of a High Sensitive Micro Size Magnetic

Invited Sensor Named as GSR Sensor Excited by GHz Pulse Current

Yoshinobu Honkura (Magnedesign Corporation); S. Honkura (Nanocoil Incorporation);

13:40 Recent Developments on Wiegand Wire and Its De-Invited vice Applications

Yasushi Takemura (Yokohama National University);

14:00 Magnetic Properties of GSR Sensor on Hysteresis and Linearity

Yoshinobu Honkura (Magnedesign Corporation); Shinpei Honkura (Nanocoil Incorporation);

- 14:20 The Development of an Ultra-small Type GSR Sensor with Its Element Formed on ASIC Surface Yoshinobu Honkura (Magnedesign Corporation); J. Tanabe (Magnedesign Corporation); E. Kikuch (Magnedesign Corporation); E. Kudo (Nanocoil Incorporation); Shinpei Honkura (Nanocoil Incorporation);
- 14:40 Comprehensive Analysis of Frequency Dependence on Miniaturized Thin-film Magnetoimpedance Element Hiroaki Kikuchi (Iwate University); S. Oe (Iwate University); C. Sumida (Iwate University); T. Shima (Iwate University); S. Kamata (Iwate University);
- 15:00 Engineering of GMI Effect of Fe-rich Microwires by Stress Annealing
 Arkady P. Zhukov (Universidad del Pais Vasco); Mihail Ipatov (Universidad del Pais Vasco);
 J. M. Blanco (Universidad del Pais Vasco);
 V. Zhukova (UPV/EHU);
- 15:20 Optimization of GMI Effect and Magnetic Properties of Co-rich Microwires by Joule Heating Arkady P. Zhukov (Universidad del Pais Vasco and Ikerbasque); Paula Corte-Leon (UPV/EHU); Mihail Ipatov (Universidad del Pais Vasco); Valentina Zhukova (UPV/EHU);

15:40 Coffee Break

Session 2A1 FocusSession.SC5: Remote Sensing for Hydrological Applications 2

> Thursday AM, August 2, 2018 Room T1

Organized by Jian-Cheng Shi, Hui Lu Chaired by Jian-Cheng Shi, Hui Lu

08:30 Development of an Enhanced Rainfall Product on the

Invited Tibetan Plateau: An Integrated Use of GPM, SMAP, and MODIS Products

Hui Lu (Tsinghua University); Fan Yang (Tsinghua University); Peng Gong (Tsinghua University); Wei Wang (Tsinghua University);

08:50 Trend Analysis of Total Precipitable Water in Recent Decade

Dabin Ji (Jointly Sponsored by Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Jiancheng Shi (Institute of Remote Sensing and Digital Earth, CAS); Tianjie Zhao (Jointly Sponsored by Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Tianxing Wang (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences);

- 09:10 Critical Fluctuations for Prediction of Monsoon Timing: Observational Evidence Elena Surovyatkina (Potsdam Institute for Climate Impact Research);
- 09:30 Satellite-based Estimation of All-sky Land Surface Shortwave and Longwave Radiation Tianxing Wang (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Jian-Cheng Shi (Institute of Remote Sensing Applications, Chinese Academy of Sciences);

09:50 Eutrophication Analysis of Water Reservoirs by Remote Sensing and Neural Networks Hieda Adriana Nascimento Silva (University of Rome "La Sapienza"); Massimo Panella (University of Rome "La Sapienza");

10:40 Coffee Break

Session 2A2 FocusSession.SC5: Inverse Scattering, Imaging, and Remote Sensing 3

Thursday AM, August 2, 2018 Room T2 Organized by Xudong Chen, Xiuzhu Ye Chaired by Xiuzhu Ye

08:30 A Hybrid Cross-regularized Inversion Method for Invited Highly Nonlinearly Inverse Scattering Problems

Kuiwen Xu (Hangzhou Dianzi University); Yu Zhong (Institute of High Performance Computing, A*STAR);

08:50 Filtered Back Projection and Simultaneous Algebraic Reconstruction Technique for Image Formation on Square-shaped Physical Phantom Aimed at Microwave Imaging Applications Syahrul Ramdani (Universitas Indonesia); Aiyuni Putri Astyani (Universitas Indonesia); Basari (Universitas Indonesia);

- 09:10 Detection of Moving Object by Using Fractal Analysis of the Bird's-eye View Images Takashi Kuroiwa (Nihon University); Syota Yazawa (Nihon University); Kiyozumi Niizuma (Nihon University);
- 09:30 Estimation of the Energy Characteristics of a Multiposition Radar System for the Control of Small-sized Space Debris for Various Orbital Zones
 A. I. Baskakov (National Research University "Moscow Power Engineering Institute"); Aleksey Aleksandrovich Komarov (National Research University "Moscow Power Engineering Institute");
 A. V. Ruban (National Research University "Moscow Power Engineering Institute");
- 09:50 Estimation of the Resolution of a Multi-position Radar for the Control of Small-sized Space Debris Objects That Are Not Resolved by Angular Coordinates A. I. Baskakov (National Research University "Moscow Power Engineering Institute"); Aleksey Aleksandrovich Komarov (National Research University "Moscow Power Engineering Institute");

10:10 Thermoacoustic Monitoring Technique for Microwave Invited Hyperthermia

Lifan Xu (ShanghaiTech University); Xiong Wang (ShanghaiTech University);

10:40 Coffee Break

PIERS 2018 Toyama Program

Session 2A3 FocusSession.SC1&SC2: Multiscale and Multiphysics Computation and Applications 1

> Thursday AM, August 2, 2018 Room T3

Organized by Qing Huo Liu

Chaired by Qing Huo Liu, Mei Song Tong

8:30 Efficient Electromagnetic Scattering Analysis for Invited Multi-scale Problems Using Green's Functions of Ar-

> bitrary Scatterers Shurun Tan (University of Michigan); Leung Tsang (University of Michigan);

8:50 Multiscale Seismic Tomography of the Earth and KeynoteMoon

Dapeng Zhao (Tohoku University);

9:20 Multiscale Discontinuous Galerkin Time Domain

- Invited Methods for Electromagnetic and Elastic Waves Qing Huo Liu (Duke University); Qiwei Zhan (Duke University); Qingtao Sun (Duke University); Qiang Ren (Duke University); Ke Chen (Xiamen University); Na Liu (Xiamen University);
- 9:40 Low Frequency Ultrasound Imaging for Human Invited Throax

Xiaoqian Song (Tsinghua University); Maokun Li (Tsinghua University); Fan Yang (Tsinghua University); Shenheng Xu (Tsinghua University); Aria Abubakar (Schlumberger Houston Formation Evaluation);

10:00 Transient Multiphysics Simulation of High-speed Invited Graphene-based Interconnects

Shuzhan Sun (Purdue University); Dan Jiao (Purdue University);

10:20 Plasmonic Properties of Electrolytes beyond Classical Nanophotonics — A Two-fluid, Hydrodynamic Approach to Nonlocal Soft Plasmonics Christin David (Madrid Institute for Advanced Studies in Nanoscience (IMDEA Nanoscience));

10:40 Coffee Break

Session 2A4 SC1&SC3: Design and Simulation of Electromagnetic and Optical Devices 1

> Thursday AM, August 2, 2018 Room T4

Organized by Shinichiro Ohnuki, Jun Shibayama Chaired by Shinichiro Ohnuki, Jun Shibayama 08:30 Software-automatically-designed Ultrathin Broadband Metamaterial Absorber Based on Magnetic Rubber Plate and LC Resonator Zeshan Shi (Lanzhou University); Yiwen Hu (Lanzhou

University); Zhong-Lei Mei (Lanzhou University);

- 08:50 Structural Design of an Electromagnetic Wave Shield Composed of Multi-materials Hong Kyoung Seong (Yonsei University); Jeonghoon Yoo (Yonsei University);
- 09:10 Modeling the Magnetic Field Radiated from a Ferrite Rod Antenna for Mining Proximity Detection Systems Chenming (Jim) Zhou (National Institute for Occupational Safety and Health (NIOSH)); Jingcheng Li (National Institute for Occupational Safety and Health (NIOSH)); Jacob Carr (National Institute for Occupational Safety and Health (NIOSH));
- 09:30 A Dielectric Rod Antenna Tapered Curvilinearly from the Inside of a Launching Horn
 J. Yamauchi (Hosei University); Ryu Ando (Hosei University); H. Nakano (Hosei University);
- 09:50 Dielectric Feedome for Controlling Higher-order Mode Coefficients on a Square-aperture Horn Antenna Raynell Andal Inojosa (Doshisha University); Hiroyuki Deguchi (Doshisha University); Mikio Tsuji (Doshisha University);
- 10:10 A Novel Approach to Microfabrication of Planar Microstrip Meander-line Slow Wave Structures for Millimeter-Band TWT

Andrei Victorovich Starodubov (Saratov State University);Alexeu Alexandrovich Serdobintsev(Saratov StateUniversity); Anton Mikhailovich Pavlov (Saratov State University); Victor Vladimirovich Galushka (Saratov State University); Peter Vladimirovich Ryabukho (Saratov State University); Nikita Mikhailovich Ryskin (V. A. Kotel'nikov Institute of Radio Engineering and Electronics RAS);

10:40 Coffee Break

Session 2A5

SC3&SC4: Antenna Measurement and Electromagnetic Field Application Using Photonic Technique

Thursday AM, August 2, 2018

Room T5

Organized by Maya Mizuno, Yukihisa Suzuki Chaired by Kiyotaka Sasagawa, Shintaro Hisatake

- 08:30 Comparison System for THz Generators and Detectors in Time-domain Spectroscopy Maya Mizuno (National Institute of Information and Communications Technology); Isao Morohashi (National Institute of Information and Communications Technology);
- 08:50 Microwave Guided-mode Propagation and Reflection along Fiber-reinforced Plastic Mortal Pipe Walls and Their Applications to Nondestructive Measurement *Hiroshi Murata (Mie University)*;
- 09:10 Microwave Receiving System Using VCSEL Based Low Cost Photonics Applied Electromagnetic Measurement Technology Satoru Kurokawa (National Institute of Advanced Industrial Science and Technology); Masanobu Hirose (National Institute of Advanced Industrial Science and Technology); S. Murata (Koden Electronics Company Limited); Tsutomu Mitui (Koden Electronics Company Limited);
- 09:30 Radiation Pattern Inspection of the FMCW Signal Using Asynchronous Electro-optic Measurement System

K. Horio (Gifu University); H. Uchida (Arkray Inc.); M. Tojyo (Think-Lands Co., Ltd.); Y. Oikawa (Think-Lands Co., Ltd.); K. Miyaji (Think-Lands Co., Ltd.); Shintaro Hisatake (Gifu University);

- 09:50 Magnetic Near Field Measurement by Pulsed Laser Kazushi Ishiyama (Tohoku University);
- 10:10 Visualization and Quantification of Temperature Distributions Due to the Millimeter Wave Exposure with Micro-encapsulated Thermo-chromic Liquid Crystals Yukihisa Suzuki (Tokyo Metropolitan University);
 T. Tasaki (Kanazawa Medical University); M. Kojima (Kanazawa Medical University);

10:40 Coffee Break

Session 2A6 Biomedical Imaging and Sensing Involving both Light and Ultrasound 1

Thursday AM, August 2, 2018 Room T6

Organized by Xueding Wang, Chulhong Kim Chaired by Xueding Wang, Chulhong Kim

08:30 One Step Forward to Clinical and Commercial Pho-Invited to acoustic Imaging

Chulhong Kim (Pohang University of Science and Technology);

08:50 Photoacoustic Imaging and Evaluation of Cancer His-Invited tological Microfeatures and Microenvironment

Xueding Wang (Tongji University); Guan Xu (University of Michigan); Janggun Jo (University of Michigan); Joel Tan (University of Michigan); Chang Lee (University of Michigan); Raoul Kopelman (University of Michigan);

09:10 Three Dimensional Photoacoustic Breast Imaging Us-Invited ing the Handheld Ultrasound Linear Probe

Tao Han (Peking University); Meng Yang (Peking Union Medical College Hospital, Chinese Academy of Medical Sciences & Peking Union Medical College); Fang Yang (Shenzhen Mindray Bio-Medical Electronics Co., Ltd.); Lingyi Zhao (Peking University); Yuxin Jiang (Peking Union Medical College Hospital, Chinese Academy of Medical Sciences & Peking Union Medical College); Changhui Li (Peking University);

09:30 Wide-field Forward-viewing Photoacoustic Endoscopy Invited Using a Fiber Bundle

> Guangyao Li (Shanghai Jiao Tong University); Zhendong Guo (Shanghai Jiao Tong University); Sung-Liang Chen (Shanghai Jiao Tong University);

09:50 Synergy of Light and Sound for Deep-tissue Biomed-Invited ical Optical Focusing and Imaging

> H. Li (The Hong Kong Polytechnic University); Z. Yu (The Hong Kong Polytechnic University); Y. Zhou (The Hong Kong Polytechnic University); Puxiang Lai (The Hong Kong Polytechnic University);

10:10 Quantitative Photoacoustic Imaging Based on Para-

Invited metric Spectral Analysis and Machine Learning Chuangjian Cai (Tsinghua University); Kexin Deng (Tsinghua University); Jianwen Luo (Tsinghua University); Cheng Ma (Tsinghua University);

10:40 Coffee Break

Session 2A7 SC2: Advances in Metasurfaces 1

Thursday AM, August 2, 2018

Room T7

Organized by Shulin Sun, Qiong He Chaired by Shulin Sun

08:30 Dielectric Metasurfaces-based Hologram and Crypto-Invited display

Junsuk Rho (Pohang University of Science and Technology (POSTECH));

08:50 Dispersion Engineering in Metasurfaces for Applica-Invited ble Optical Devices

Tao Li (Nanjing University); Shuming Wang (Nanjing University); P. C. Wu (Academia Sinica); C. Chen (Nanjing University); Ji Chen (Nanjing University); Shi-Ning Zhu (Nanjing University); Din Ping Tsai (Academia Sinica);

09:10 Time-variant Metasurfaces as a Frequency Converting Invited Platform

Bumki Min (Korea Advanced Institute of Science and Technology (KAIST));

09:30 Microwave Digital Metasurface Controlled by Illumi-Invited nating Light

> Wei Xiang Jiang (Southeast University); Xin Ge Zhang (Southeast University);

09:50 Designing Silicon Mie Resonators as Subwavelength Invited Color Pixels

Yusuke Nagasaki (Osaka University); Masafumi Suzuki (Osaka University); Ikuto Hotta (Osaka University); Junichi Takahara (Osaka University);

10:10 Extreme Nonlinear Optics Using Epsilon-near-zero Invited Thin Films

Yuanmu Yang (Tsinghua University);

10:40 Coffee Break

Session 2A8 SC2: Theory and Applications of Anisotropic and Bianisotropic Metamaterials 1

Thursday AM, August 2, 2018

Room T8

Organized by Liang Peng, Yuntian Chen Chaired by Liang Peng, Yuntian Chen

08:30 Anisotropic Coding Metasurfaces for Wave Manipula-Invited tion

> Qiang Cheng (Southeast University); Jin Yang (Southeast University);

08:50 Non-Abelian Gauge Field Optics

Invited

Zhongfei Xiong (Huazhong University of Science and Technology); Ruo-Yang Zhang (Nankai University); Jian Qi Shen (Zhejiang University); Yuntian Chen (Huazhong University of Science and Technology); Che Ting Chan (The Hong Kong University of Science and Technology); 09:10 Resonant Laser Printing of Functional Metasurfaces Xiaolong Zhu (Technical University of Denmark); N. Asger Mortensen (University of Southern Denmark); Uriel Levy (Hebrew University of Jerusalem); Anders Kristensen (Technical University of Denmark);

09:30 Highly Squeezed Anisotropic Polaritons in van der Invited Waals Metamaterials

Xiao Lin (Nanyang Technological University); Baile Zhang (Nanyang Technological University);

- 09:50 Bianisotropy Induced Forbidden in Metamaterials Liang Peng (Hangzhou Dianzi University); Kewen Wang (Hangzhou Dianzi University); Gaofeng Wang (Hangzhou Dianzi University);
- 10:10 Full Wave Scattering Solution of Localized Defects/Sources in a Periodic Lattice Using Green's Function of Periodic Scatterers
 Shurun Tan (University of Michigan); Leung Tsang (University of Michigan);
- 10:40 Coffee Break

Session 2A9 FocusSession.SC3: Novel Photonic Materials for Advanced Applications 3

Thursday AM, August 2, 2018 Room A1 Organized by Iam-Choon Khoo

Chaired by Iam-Choon Khoo

08:30 Photonic Devices Based on Liquid Crystals for Low Invited Power Applications

> Rita Asquini (University of Rome La Sapienza); Luca Civita (University of Rome La Sapienza); Antonio d'Alessandro (University of Rome La Sapienza);

08:50 Plasmonic Self-growth of Plasmonic 3D Nanostruc-Invited tures

Satoshi Kawata (Osaka University);

 $09{:}10 \quad {\rm Optical \ and \ Magnetic \ Functions \ of \ Organic-inorganic}$

Invited Hybrids with Non-covalent Coupling of Functionalized Nanoparticles on Graphene

> Sung-Hyun Kim (Hannam University); Juhyoung Jung (Hannam University); Heungseob Shin (Hannam University); Sungwoo Jeon (Hannam University); Sinil Choi (Hannam University); Prem Prabhakaran (Hannam University); Kwang-Sup Lee (Hannam University);

- 09:30 Nonlinear Vortex Beam Array Generation by Spa-Invited tially Modulated Fundamental Wave
 - Hui Li (Shanghai Jiao Tong University); Haigang Liu (Shanghai Jiao Tong University); Xianfeng Chen (Shanghai Jiao Tong University);

09:50 Nonreciprocal Optical Metasurfaces

Invited

Xingjie Ni (Pennsylvania State University);

- 10:10 Gold Nanorod@NaYF₄:Yb³⁺,Er³⁺ Multifunctional
- Invited Nanocomposites for Simultaneous Diagnostic In Vitro Photothermal Therapy, Temperature Sensing and Bioimaging of Oral Cancer Cells Duc Tu Vu (National Chung Cheng University);

Le Quoc Minh (Institute of Materials Science); Churng Ren Chris Wang (National Chung Cheng University); Lai-Kwan Chau (National Chung Cheng University); Tzyy Schiuan Yang (National Chung Cheng University); Michael W. Y. Chan (National Chung Cheng University); Cheng-I Lee (National Chung Cheng University); Chu-Chi Ting (National Chung Cheng University); Jiunn-Yuan Lin (National Chung Cheng University); Hung-Chih Kan (National Chung Cheng University); Chia Chen Hsu (National Chung Cheng University); Chia Chen Hsu (National Chung Cheng University);

10:40 Coffee Break

Session 2A10 Optoelectronic Devices and Integration

> Thursday AM, August 2, 2018 Room A2

Chaired by Massimo Panella, Lin Yang

- 08:30 Optoelectronic Implementation of Echo State Networks for Real-time Big Data Forecasting Massimo Panella (University of Rome "La Sapienza"); Rita Asquini (University of Rome "La Sapienza");
- 08:50 2D Electronic and Photoelectronic Devices Driven by Ferroelectric Xudong Wang ();

09:10 High-speed Silicon Mach-Zehnder Optical Modulators with Large Optical Bandwidths

Lin Yang (Institute of Semiconductors, Chinese Academy of Sciences); Jianfeng Ding (Institute of Semiconductors, Chinese Academy of Sciences); Sizhu Shao (Institute of Semiconductors, Chinese Academy of Sciences); Lingchen Zheng (Institute of Semiconductors, Chinese Academy of Sciences); Lei Zhang (Institute of Semiconductors, Chinese Academy of Sciences);

09:30 2D Integrating Cell for on Chip Absorption Measurement

> Alexander Yu. Petrov (Hamburg University of Technology); Lena Simone Fohrmann (Hamburg University of Technology); Gerrit Sommer (Hamburg University of Technology); Giampaolo Pitruzzello (University of York); Thomas F. Krauss (University of York); Manfred Eich (Hamburg University of Technology);

- 09:50 Novel Measurement Set-ups of FTB Stress Propagation in an IC Yann Bacher (); Lorenzo Quazzo (Nice Sophia Antipolis University); Henri Braquet (Nice Sophia Antipolis University); Nicolas Froidevaux (ST Microelectronics); Gilles Jacquemod (Nice Sophia Antipolis University);
- 10:10 All Optical Logic Gates Using Hybrid Insulator Metal Insulator Plasmonic Waveguide
 Prateeksha Sharma (Indian Institute of Information Technology, Design & Manufacturing); Kumar Vishwakarma Dinesh (Indian Institute of Information Technology, Design & Manufacturing);
- 10:40 Coffee Break

Session 2A11 MS-1: Mini-symposium on Microwave Photonics 1

Thursday AM, August 2, 2018

Room A3

Organized by Christina Lim, Jianji Dong Chaired by Jianji Dong

- 08:30 Optical Access Technologies with Digital and Analog Approaches for 5G and Beyond Hwan Seok Chung (Electronics and Telecommunications Research Institute (ETRI));
- 08:50 Direct Modulation Technology for RoF-based Mobile Fronthaul Networks *Hoon Kim (KAIST*);

09:10 Sigma-Delta Modulated Radio over Fiber Transmission

Guy Torfs (Ghent University); Haolin Li (Ghent University); Laurens Breyne (Ghent University); J. Van Kerrebrouck (Ghent University); Chia-Yi Wu (Ghent University); Johan Bauwelinck (Ghent University); Piet Wambacq (IMEC); Piet Demeester (Ghent University);

09:30 Analog Radio over Fiber Systems for Future Mobile Fronthaul Networks Pham Tien Dat (National Institute of Information and Communications Technology); Atsushi Kanno (National Institute of Information and Communications Technology); Naokatsu Yamamoto (National Institute of Information and Communications Technology); Tetsuya Kawanishi (National Institute of Information and Communications Technology);

- 09:50 Radio-over-fiber Fronthaul Approaches for 5G Systems Operating at 60 GHz Band Thas Ampalavanapillai Nirmalathas (The University of Melbourne); Y. Tian (The University of Melbourne); Christina Lim (The University of Melbourne); K.-L. Lee (The University of Melbourne);
- 10:10 Photonic-based Mobile Front-haul Network for 5G Systems in Dense User Environment Hiroshi Murata (Osaka University); Andreas Stohr (Universität Duisburg-Essen);

10:40 Coffee Break

Session 2A12 FocusSession.SC3: Advanced Optofluidics: Photonic Systems for Fluids and Life Science 1

Thursday AM, August 2, 2018

Room A4

Organized by Francesco Simoni, Luigino Criante Chaired by Luigino Criante

08:30 Optofluidic Polymer Chips for Raman Spectroscopy Invited and Optical Trapping

> Heidi Ottevaere (Vrije Universiteit Brussel); Qing Liu (Vrije Universiteit Brussel); Hugo Thienpont (Vrije Universiteit Brussel);

08:50 A Hollow Fiber Coupler Sensor

Invited Nithin Kuruba (University of Victoria); Tao Lu (University of Victoria); 09:10 Photo-induced Orientation Change of Photo-Invited responsive Liquid Crystals

Kenji Katayama (Chuo University);

09:30 New Frontiers in Optofluidics: Trapping with Plas-

Invited monic Optical Lattice, and Optogenetic Bioreactors Ya-Tang Yang (National Tsing Hua University);

09:50 Single-step Solvent-free Lift-off Nanolithgraphy for

Invited Wearable Photo- and Plasmonic-mobile SERS Nanosensors

> Riccardo Castagna (Institute of Applied Sciences and Intelligent Systems "E. Caianiello", CNR); Massimo Rippa (Institute of Applied Sciences and Intelligent Systems "E. Caianiello", CNR); Lucia Pettti (Institute of Applied Sciences and Intelligent Systems "E. Caianiello", CNR);

10:10 Integrated In-plane Hemispherical Active Resonator Invited for Lab-on-a-chip Platforms

Silvio Bonfadini (Istituto Italiano di Tecnologia); Paolo Spegni (Universita Politecnicadelle Marche); Francesco Simoni (Universita Politecnica delle Marche); Luigino Criante (Istituto Italiano di Tecnologia);

10:40 Coffee Break

Session 2A13 Extended/Unconventional Electromagnetic Theory, EHD(Electrohydrodynamics)/EMHD(Electro-magnetohydrodynamics), and Electro-biology

Thursday AM, August 2, 2018

Room A5

Organized by Eva Gescheidtova Chaired by Petr Marcon

08:30 Speed of Light in Vacuum in the Case of a Lumped Electric Circuit

Namik Yener (Kocaeli University);

08:50 Numerical Models of a Multilayered Graphene Structure

Pavel Fiala (Brno University of Technology); J. Maxa (Brno University of Technology);

09:10 Algorithms to Detect and Localize the Source of a Wideband Pulse Signal Radim Kadlec (Brno University of Technology); Petr Drexler (Brno University of Technology); P. Machala (Brno University of Technology); 09:30 A Numerical Analysis of a Periodic Resonant Structure at THz Frequencies Tomas Kriz (Brno University of Technology); Petr Drexler (Brno University of Technology);

Radim Kadlec (Brno University of Technology);

09:50 Vision-based and Differential Global Positioning System to Ensure Precise Autonomous Landing of UAVs Petr Marcon (Brno University of Technology); Jiri Janousek (Brno University of Technology); Radim Kadlec (Brno University of Technology);

10:40 Coffee Break

Session 2A14 Oral Presentations for Best Student Paper Awards — SC1: CEM, EMC, Scattering & EM Theory

Thursday AM, August 2, 2018

Room A6 Chaired by Paul D. Smith, Mei Song Tong

- 8:30 High Frequency Scattering from Conducting Rectangular Cylinder via Surface Equivalence Theorem *Hieu Ngoc Quang (Chuo University); Hiroshi Shirai (Chuo University);*
- 8:50 *H*-polarized Plane Wave Diffraction by Thick Conducting Slits *Khanh Nam Nguyen (Chuo University); Hiroshi Shi*rai (Chuo University);
- 9:10 An Enhanced Model for the Analysis of Non-uniform Multiconductor Transmission Lines Based on Scattering Theory Manuja Gunawardana (University of Manitoba); Behzad Kordi (University of Manitoba);
- 9:30 Spatial Prediction of Electromagnetic Fields Using Few Measurements Chandan Bhat (Indian Institute of Technology Madras); Ankit Gupta (Indian Institute of Technology Madras); Radhakrishna Ganti (Indian Institute of Technology Madras); Uday K. Khankhoje (Indian Institute of Technology Madras);
- 9:50 Coupling of Differential and Common Modes of Twoline Circuits in the Multi-conductor Transmission-line Theory Including Radiation Shuji Kitora (Osaka University); Souma Jinno (Osaka University); H. Toki (Osaka University); M. Abe (Osaka University);

10:40 Coffee Break

Session 2A15 Oral Presentations for Best Student Paper Awards — SC2: Metamaterials, Plasmonics and Complex Media

Thursday AM, August 2, 2018 Room A7 Chaired by Tadao Nagatsuma, Andrey V. Osipov

8:30 Orbital Angular Momentum Generation Using Com-

Invited posite Quasi-continuous Metasurfaces with a Perfect Efficiency

Menglin L. N. Chen (The University of Hong Kong); Li Jun Jiang (University of Hong Kong);

8:50 Giant Nonlinear Response of Subwavelength Dielectric Resonators Enhanced by Bound States in the Continuum Kirill L. Koshelev (ITMO University); L. Carletti (University of Brescia); C. De Angelis (University of Brescia); Yu. S. Kivshar (Australian National University);

9:10 Metasurfaces for Improvement Magnetic Resonance Imaging Characteristics: Novel Designs and In Vivo Studies

> AlenaShchelokova V_{\cdot} (ITMOUniversity); Alexey P.Slobozhanyuk (ITMOUniversity); Stanislav B. Glybovski (ITMOUniversity): Irina Melchakova (ITMO University); Pavel A. Belov (ITMO University);

9:30 Characterization of Terahertz Plasmonic Structures Based on Metallic Wire Woven Meshes Dejun Liu (University of Tsukuba); Borwen You (University of Tsukuba); Ja-Yu Lu (National Cheng Kung University); Toshiaki Hattori (University of Tsukuba);

9:50 Helicity-induced Multifunctional Devices Based on Invited Hybrid Metasurfaces

He-Xiu Xu (Air Force Engineering University); Lei Han (National University of Singapore); Yunming Sun (Key Lab of Aeronautics Computing Technique); Tong Liu (Fudan University); Cheng-Wei Qiu (National University of Singapore);

10:40 Coffee Break

Session 2A16 Oral Presentations for Best Student Paper Awards — SC3: Optics and Photonics

Thursday AM, August 2, 2018 Room A8

Chaired by Stavros Iezekiel, Hiroyuki Toda

8:30 Integrated Circuits Using Photonic-crystal Slab Waveguides and Resonant Tunneling Diodes for Terahertz Communication

Xiongbin Yu (Osaka University); Ryoumei Yamada (Osaka University); Jae-Young Kim (Fundamental Research and Development Division, ROHM Co., Ltd.); Masayuki Fujita (Osaka University); Tadao Nagatsuma (Osaka University);

8:50 Improved Detection Strategies for Nonlinear Invited Frequency-division Multiplexing

Stella Civelli (TeCIP Institute, Scuola Superiore Sant'Anna); Enrico Forestieri (TeCIP Institute, Scuola Superiore Sant'Anna); Marco Secondini (TeCIP Institute, Scuola Superiore Sant'Anna);

9:10 An Examination of Simulation for PAPR Reduction in OFDM Wave Yu Kobari (Tokyo Metropolitan College of Industrial Technology); Kazuyuki Takasaki (Tokyo Metropolitan College of Industrial Technology); Ryoji Wakabayashi (Tokyo Metropolitan College of Industrial Technology);

9:30 Open Area Concealed Weapon Detection Sensor System Development Yuxiang Huang (University of Huddersfield); Peter Mather (University of Huddersfield); Martin James Norbury Sibley (University of Huddersfield);

9:50 Design and Analysis of Inductive Reluctance Position Sensor Chi-Fu Hong (National Tsing Hua University); Shang-Hsun Mao (ANSYS Taiwan); Pei Jen Wang (National

10:40 Coffee Break

Tsing Hua University);

Session 2A17 Oral Presentations for Best Student Paper Awards — SC4: Antennas and Microwave Technologies

Thursday AM, August 2, 2018 Room A9 Chaired by Koichi Ito, Malay Ranjan Tripathy

- 8:30 Wireless Energy Harvesting in RFID Applications at 5.8 GHz ISM Band, a System Analysis
 Sanaz Haddadian (University of Paderborn);
 J. Christoph Scheytt (University of Paderborn);
- 8:50 A Novel Microwave Applicator for Sandy Soil Disinfection Abdelrhman Sabry (Egypt-Japan University of Science and Technology); Ahmed Allam (Egypt-Japan University of Science and Technology); Adel B. Abdel-Rahman (South Valley University); Diaa El-Ansary (Alexandria University);
- 9:10 Study of Simultaneous Switching Noise in Twodimensional Transport Theory including Radiation Effect Souma Jinno (Osaka University); Shuji Kitora (Osaka University); Hiroshi Toki (Osaka University); M. Abe (Osaka University);
- 9:30 Effect of Absorbing Coating on Shielding Effectiveness of Electromagnetic Shielding Fabric
 Jiajia Duan (Zhongyuan University of Technology);
 Xiuchen Wang (Zhongyuan University of Technology);
 Yayun Li (Zhongyuan University of Technology);
 Zhe Liu (Zhongyuan University of Technology);
- 9:50 Optimal Design of Yagi Microstrip Antenna Based on Particle Swarm Optimization with Fitness Estimation Xiao-Hong Fan (Jiangsu University of Science and Technology); Yu-Bo Tian (Jiangsu University of Science and Technology); Yi Zhao (Jiangsu University of Science and Technology);
- 10:40 Coffee Break

Session 2A18 Oral Presentations for Best Student Paper Awards — SC5: Remote Sensing, Inverse Problems, Imaging, Radar and Sensing

Thursday AM, August 2, 2018 Room A10 Chaired by Motoyuki Sato 8:30 Analysis of Singular-point Generating Mechanisms 1 Based on the Correlations among the Parameters in Coherency Matrix and Those in the Optimized Scattering-mechanism Vector in PolInSAR Yuta Otsuka (The University of Tokyo); Tomoharu Shimada (The University of Tokyo); Ryo Natsuaki (The University of Tokyo); Akira Hirose (The University of Tokyo);

8:50 Imaging Performance of Backward and Forward Invited Bistatic SAR

Tingting Li (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Kun-Shan Chen (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Ming Jin (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences);

- 9:10 Adaptive Subsurface Visualization System Using Phase Retrieval Method and Complex-valued Selforganizing Map Soshi Shimomura (The University of Tokyo); Akira Hirose (The University of Tokyo);
- 9:30 Influence Analysis of Uneven Surface on Landmine Detection Using Holographic Radar Tan Qin (Tongji University); Luca Bossi (University of Florence); Alessandro Bartolini (University of Florence); Pierluigi Falorni (Universita di Firenze); Pietro Giannelli (University of Florence); Yonghui Zhao (Tongji University); Lorenzo Capineri (Universita di Firenze);
- 9:50 A 3.5–8 GHz Analog Complex Cross-correlator for Interferometric Passive Millimeter-wave Security Imaging Systems Chao Wang (Beihang University); Xiuzhu Ye (Beihang University); Xi Chen (Beihang University); Xin Xin (Beihang University); Bingyuan Liang (Beihang University); Zhi-Ping Li (Beihang University); Anyong Hu (Beihang University); Jungang Miao (Beihang University);

10:40 Coffee Break

Session 2A0 Poster Session 1

Thursday AM, August 2, 2018 8:30 AM - 11:30 AM Room Foyer Numerical Estimation Based on Ray Tracing for Automotive Radar Beam Through Curved Dielectric Slab Seongjae Kim (Gwangju Institute of Science and Technology); Kangwook Kim (Gwangju Institute of Science and Technology);

2 Electric Field Strength in Layered Materials with Varied Parameters Radim Kadlec (Brno University of Technology); Tomas Kriz (Brno University of Technology);

On the Evaluation of Sources in Highly Accurate Time Domain Simulations on the Basis of Faber Polynomials

Hendrik Kleene (TU Dortmund University); Dirk Schulz (TU Dortmund University);

Extra Large Electromagnetics Simulation with LRnLA Algorithms

V. D. Levchenko (Keldysh Institute of Applied Mathematics RAS); Anastasia Y. Perepelkina (Keldysh Institute of Applied Mathematics RAS); A. V. Zakirov (Kintech Lab); Y. Zempo (Hosei University);

Analysis of Uniform Heating of Food in Microwave Oven by Changing Location of Two Input Ports Supplied In-phase or Anti-phase Power Alternately Ryota Shinozaki (National Institute of Technology, Kisarazu College); Keisuke Ejiri (National Institute of Technology, Kisarazu College); Takanobu Ohno (Kisarazu National College of Technology); Kosei Tanii (National Institute of Technology, Kisarazu College); Masahiro Uehara (National Institute of Technology, Kisarazu College);

Extension of the Parabolic Equation Method in the Time Domain

Mikhail Sergeyevich Mikhailov (National Research University "Moscow Power Engineering Institute"); Aleksey Aleksandrovich Komarov (National Research University "Moscow Power Engineering Institute");

- The Design and Optimization of Optical Structure by Using Genetic Algorithm Bo Wang (Fudan University); Wenzhe Liu (Fudan University); Lei Shi (Fudan University);
- Method for High Sensitivity in Hall Plates Jin-Sup Kim (Korea Electronics Technology Institute);

A Fast Algorithm for Electromagnetic Scattering from One-dimensional Dielectric Rough Surface

Jing-Jing Wang (Anhui University); An-Qi Wang (Xidian University); Tiezhen Jiang (Anhui University); Zhi-Xiang Huang (Anhui University);

3

4

5

6

7

8

9
10 SRCNN-based Enhanced Imaging for Low Frequency 18 Radar

> Yongpeng Dai (National University of Defense Technology); Tian Jin (National University of Defense Technology); Yongping Song (National University of Defense Technology); Hao Du (National University of Defense Technology); Dizhi Zhao (National University of Defense Technology);

11 An Improved Algorithm for Enhancing Fingerprint Image Quality Lan Chen (Shanghai Institute of Technology); Haiyang Yin (Shanghai Institute of Technology); Tao Wang (Shanghai Institute of Technology); He Xu (Tongji University); Mei Song Tong (Tongji University);

12 A High-speed Data Acquisition and Preprocessing Method for Wirelessly Supervising Train Braking System Guo Chun Wan (Tongji University); Jian Zhou

(Tongji University); Mei Song Tong (Tongji University);

13 Propagation Dynamics of a Vector Beam with Radially-variant Polarization in a Strongly Nonlocal Nonlinear Medium

> Xiaoyu Zhang (Zhejiang Sci-Tech University); Caixia Liu (Zhejiang Sci-Tech University); Zhongxing Wang (Zhejiang Sci-Tech University); Huiwen Zhu (Zhejiang Sci-Tech University); Rui Pin Chen (Zhejiang Sci-Tech University);

- 14 Characteristic Parameter Estimation of Chipless RFID Signals Based on USRP Jia Xin Wan (East China Normal University); Wen Jing Liu (Tongji University); Ling Yi Tang (Tongji University); Mei Song Tong (Tongji University);
- 15 Electromagnetic Waves in Bi-isotropic Medium Song-Tsuen Peng (National Chiao Tung University); Heng-Tung Hsu (National Chiao Tung University); Ting-Jui Huang (National Chiao Tung University); Yi-Fan Tsao (National Chiao Tung University); Tso-Jung Chang (National Chiao Tung University);
- 16 Giant Overreflection of Magnetohydrodynamic Waves in a Stratified Plasma with Inhomogeneous Shear Flows Seulong Kim (Ajou University); Kihong Kim (Ajou University);
- 17 New Method for Rekindling the Nonlinear Solitary Waves in Maxwellian Dusty Plasmas in Spaces Ganesh Chandra Das (Panjabari Namghar Path); Ridip Sarma (University of Science and Technology);

A Modified High Order FDTD (2, 4)-compatible Conformal Scheme for Electromagnetic Scattering of a Curved PEC Object

Pengcheng Ren (East China Normal University); Lei Kuang (East China Normal University); Ruonan Chen (East China Normal University); Qing Huo Liu (Duke University);

19 NDF and On-axis Resolution of an Axicon in Near Zone: Numerical Experiments Maria Antonia Maisto (Universita degli studi della Campania Luigi Vanvitelli); Raffaele Solimene (Universita degli studi della Campania Luigi Vanvitelli); Rocco Pierri (Universita degli studi della Campania Luigi Vanvitelli);

20 On the Number of Independent Equations in Phase Retrieval Problem: Numerical Results in Circular Case

> Maria Antonia Maisto (Universita degli studi della Campania Luigi Vanvitelli); Raffaele Moretta (Università degli studi della Campania "Luigi Vanvitelli"); Raffaele Solimene (Universita degli studi della Campania Luigi Vanvitelli); Rocco Pierri (Universita degli studi della Campania Luigi Vanvitelli);

21 Programmable Pulse Processor Using Cascaded Microrings on Silicon Photonic Circuits Yuhe Zhao (Huazhong University of Science and Technology); Jianji Dong (Huazhong University of Science and Technology);

WT-based Data-length-variation Technique for Fast Heart Rate Detection
Rongjun Qian (National University of Defense Technology); Tian Jin (National University of Defense Technology); Haoran Li (National University of Defense Technology); Yongpeng Dai (National University of Defense Technology);

- Transmission Line Analogy for Wave Propagation in Graphene-based Structures
 Hirofumi Sanada (Hokkaido University of Science);
 Hiroki Matsuzaki (Hokkaido University of Science);
 Naofumi Wada (Hokkaido University of Science);
 Megumi Takezawa (Hokkaido University of Science);
- 24 Simulation of Laser Speckle from a Rough Object in Atmospheric Turbulence Based on Slip-step Method Liguo Wang (Xidian University); Ya Qing Li (Xidian University); Lei Gong (Xidian University);

22

25 Emulating Tunneling with Elastic Vibrating Beams F. Ramirez-Ramirez (Universidad Autonoma Metropolitana-Azcapotzalco); Rafael A. Mendez-Sanchez (Universidad Nacional Autonoma de Mexico); G. Baez (Universidad Autonoma Metropolitana Azcapotzalco); A. Morales (Universidad Nacional Autonoma de Mexico); L. Gutierrez (Universidad Nacional Autonoma de Mexico); Jorge Flores (Universidad Nacional Autonoma de Mexico);

26 Quantitative Evaluation of Car Body Effect for Car Mounted Antenna Tetsuya Ogawa (Tokyo University of Agriculture and Technology); Toru Uno (Tokyo University of Agriculture and Technology); Takuji Arima (Tokyo University of Agriculture and Technology); Yujiro Kushiyama (Tokyo University of Agriculture and Technology); Osamu Kagaya (Asahi Glass Co., Ltd);

27 Three-dimensional Radiation of Coupled Smart Periodic Antennas Using Floquet Modal Analysis Nader Benlatifa (El Manar University); Bilel Hamdi (University of Tunis); Taoufik Aguili (University of Tunis El Manar (UTM));

28 Design of RFID Tag Antenna Based on the Cole-Cole Model of Human Abdomen Yun Jing Zhang (Tongji University); Dan Wang (Tongji University); Xiao Jia Huang (Tongji University); Mei Song Tong (Tongji University);

29 A Space Scanning Reflective Array Antenna Realized by Plasma Metamaterial with the Phase Splicing Technique

Wenyu Li (Nanjing University of Aeronautics and Astronautics); Hai Feng Zhang (Nanjing University of Aeronautics and Astronautics); Ting Liu (Nanjing University of Aeronautics and Astronautics); Yu Ma (Nanjing University of Posts and Telecommunications);

- 30 Compact and Broadband 50-Ohms CPW-to-RWG Transition Shih-Han Wang (National Taiwan University of Science and Technology); Chun-Long Wang (National Taiwan University of Science and Technology);
- 31 Characteristics of 340 GHz Slow Wave Structure for Staggered Double-vane Traveling Wave Tube Yanbin He (Beihang University); Cun-Jun Ruan (Beihang University);
- 32 Design and Modeling of Tunable Band-stop Filter Using Evanescent Mode Resonators Shang Yu Hung (University of California); G. P. Li (University of California);

33 An Example of Notch Filter Design Spec for the IM Noise Signal Cancellation in 800 MHz CDMA Frequency Band

Deock-Ho Ha (Pukyong National University); Sung-Un Kim (Pukyong National University); Jee-Youl Ryu (Pukyong National University); Sung-Mook Kang (Pukyong National University); Yong-Jun Choi (Pukyong National University); Woo-Hyun Ju (Pukyong National University);

- 34 Design of In-building DAS System to Eliminate Shadow Areas Ho-Jun Lee (Korea Electronics Technology Institute); Ki-Hyeok Jeong (Korea Electronics Technology Institute);
- 35 Chaos-secured Software-defined Visible Light Communications

Nguyen Tan Hung (The University of Danang — University of Science and Technology); Nguyen Van Tho (Duy Tan University); Nguyen Quoc Hieu (The University of Danang — University of Science and Technology); Truong Cao Dung (Posts and Telecomunications Institute of Technology); Pham Tien Dat (National Institute of Information and Communications Technology);

Modeling of SAR Intensity for Coastal Survey
 Franck Garestier (UMR 6143 CNRS M2C);
 Stephane Guillaso (GFZ); Thomas Chevalier
 (UMR 6143 CNRS M2C); Emilie Poullain (Areva);
 Laurent Froideval (UMR 6143 CNRS M2C);

Using Polarimetry in D-INSAR for Ground Deformation Estimation over Permafrost Environment
 Franck Garestier (UMR 6143 CNRS M2C);
 Stephane Guillaso (GFZ); Elena Zakharova (Insitut of Water Problemes); Alexei Kouraev (UMR 5566 CNRS LEGOS); Roman Desyatkin (Melnikov Permafrost Institute, SB RAS);

38 Propagation of Airy Beam with OAM in a Moderateto-strong Maritime Environment Yun Zhu (Jiangnan University); Yixin Zhang (Jiangnan University);
39 Influence of Tropospheric Ducts on Radio Propaga-

Influence of Tropospheric Ducts on Radio Propagation over Sea Surface
Mikhail Sergeyevich Mikhailov (National Research University "Moscow Power Engineering Institute");
Valery A. Permyakov (Moscow Power Engineering Institute (Technical University)); M. V. Isakov (JSC SPP Salyut);

- 40 Design and Development of a Magnetic Field Measuring System for High Field Applications
 H. Dorantes (Universidad Nacional Autonoma de Mexico); Fabian Vazquez (Universidad Nacional Autonoma de Mexico); S. E. Solis-Najera (Universidad Nacional Autonoma de Mexico); F. Moumtadi (Universidad Nacional Autonoma de Mexico); R. Martin (Universidad Nacional Autonoma de Mexico);
- 41 Permafrost Taiga Analysis by Means of SAR Data Time Series Stephane Guillaso (GFZ); Franck Garestier (UMR 6143 CNRS M2C);
- 42 Abnormal Propagation of Broadcast Wave and Atmospheric Duct Ryoichi Higashi (National Institute of Technology); Tetsuo Fukami (National Institute of Technology);

43 Monitoring for Resonant Modes in Seismic Wave Spectra Threatening to Structures for Public and Citizens Activities

Shigehisa Nakamura (Kyoto University);

- 3D Electromagnetic Particle Simulations about the Low Frequency Component of Ben Observed by Geotail Spacecraft Taketoshi Miyake (Toyama Prefectural University); Masaki Okada (National Institute of Polar Research); Yoshiharu Omura (Research Institute for Sustainable Humanosphere);
- Mode Absorption Filters Based on Graphene-onsilicon Waveguides
 Peng Xing (Singapore University of Technology and Design); Kelvin J. A. Ooi (Singapore University of Technology and Design); Dawn T. H. Tan (Singapore University of Technology and Design);
- 46 1T/2H MoS₂ Monolayer Analyzed by Hyperspectral Imaging Yu-Ting Lee (National Chung Cheng University); Zong-Bao Ye (National Chung Cheng University); Chie-Tong Kuo (National Sun Yat-Sen University); Ming-Yen Lu (National Tsing-Hua University); Chun-Ping Jen (National Chung Cheng University); Hsiang-Chen Wang (National Chung Cheng University);
- 47 Optical Force for Particle Trapping in a Nanobeam Photonic Crystal Cavity Lin Ren (Aviation University of Air Force); Yunpeng Li (Aviation University of Air Force); Xin Li (Aviation University of Air Force); Ying Yu (Aviation University of Air Force);

Quantum Cascade Laser-based Optical Monitoring of N_2O_5 in a Nocturnal Tropospheric Chemical Reaction Process

48

Hongming Yi (Universite du Littoral Cote d'Opale); Tao Wu (Universite du Littoral Cote d'Opale); Amelie Lauraguais (Universite du Littoral Cote d'Opale); Vladimir Semenov (Moscow Institute of Physics and Technology); Cecile Coeur (Universite du Littoral Cote d'Opale); Andy Cassez (Universite du Littoral Cote d'Opale); Eric Fertein (University of the Littoral Opal Coast); Xiaoming Gao (Anhui Institute of Optics and Fine Mechanics, Chinese Academy of Sciences); Wei Dong Chen (Universite du Littoral Cote d'Opale);

- 49 Structural and Optical Properties of GaN Micro-walls Binbin Zhu (Kuang-Chi Institute of Advanced Technology); Swee Tiam Tan (Nanyang Technological University); Shunpeng Lu (Nanyang Technological University); Yiping Zhang (Nanyang Technological University); Weigao Xu (Nanyang Technological University); Namig Hasanov (Nanyang Technological University); Qihua Xiong (Nanyang Technological University); Chunlin Ji (Kuang-Chi Institute of Advanced Technology); Hilmi Volkan Demir (Nanyang Technological University);
- 50 Calculation of EMI Shielding Effectiveness of 2D MXenes Films

Zhenyu Li (Soochow University); Xiaoxi Zhou (Soochow University); Weixin Lu (Soochow University); Bo Hou (Soochow University);

- 51 Optical Binding on Self Organization of Gold Colloids Jiunn-Woei Liaw (Chang Gung University); Mao-Chang Huang (National Taiwan University); Cheng-Wei Huang (National Taiwan University); Mao-Kuen Kuo (National Taiwan University);
- 52 All-dielectric Dual-band Reflective Polarization Conversion

Yong-Diao Wen (Nanjing University of Aeronautics and Astronautics); Hai Feng Zhang (Nanjing University of Posts and Telecommunications);

53 Waveform-selective Metasurfaces Responding to Lowpower Signals

> Mizuki Tanikawa (Nagoya Institute of Technology); K. Asano (Nagoya Institute of Technology); D. Ushikoshi (Nagoya Institute of Technology); K. Sanji (SOKEN, INC.); M. Ikeda (SOKEN, INC.); Daisuke Anzai (Nagoya Institute of Technology); Hiroki Wakatsuchi (Nagoya Institute of Technology);

60

61

54 The Leaky Property of Dyakonov Waves at an Interface between a Dielectric and a Metal-dielectric Multilayered Structure

Pi-Kuei Shih (National Taiwan University); Hung-Chun Chang (National Taiwan University);

55 Analysis of Interferogram Phase Noise by Bi-static Data Sets of TerraSAR-X Takashi Nonaka (Nihon University); Tomohito Asaka (Nihon University); Keishi Iwashita (Nihon University);

56 Modified Helical Coils Structure for Uniform Magnetic Flux Density Sang-Won Kim (Electronics and Telecommunications Research Institute (ETRI)); Jung-Ick Moon (Electronics and Telecommunications Research Institute); Seong-Min Kim (Electronics and Telecommunications Research Institute); In-Kui Cho (Electronics and Telecommunications Research Institute);

57 Analytical Study on Complex Relative Permittivity of High Loss Materials by TM₀₂₀ Mode Cavity Resonator Shuya Miyakoshi (National Institute of Technology,

Shuya Miyakoshi (National Institute of Technology, Kisarazu College); Naoki Keicho (National Institute of Technology, Kisarazu College); Takanobu Ohno (Kisarazu National College of Technology); Kosei Tanii (National Institute of Technology, Kisarazu College); Masahiro Uehara (National Institute of Technology, Kisarazu College);

- 58 Analytical Study on Selective Heating of Food in Microwave Oven by Using Diplexer Yukiya Sagawa (National Institute of Technology, Kisarazu College); Keisuke Ejiri (National Institute of Technology, Kisarazu College); Takanobu Ohno (Kisarazu National College of Technology); Kosei Tanii (National Institute of Technology, Kisarazu College); Masahiro Uehara (National Institute of Technology, Kisarazu College);
- 59 Analytical Study on Extracting Complex Permittivity Using Rectangular Cavity Resonator with Four Ports Naoki Keicho (National Institute of Technology, Kisarazu College); Shuya Miyakoshi (National Institute of Technology, Kisarazu College); Takanobu Ohno (Kisarazu National College of Technology); Kosei Tanii (National Institute of Technology, Kisarazu College); Masahiro Uehara (National Institute of Technology, Kisarazu College);

0 A Study of Microstrip Dual-band Bandpass Filter Using Open-ring Resonators

Yutaro Ikeda (National Institute of Technology, Kisarazu College); Kosei Tanii (National Institute of Technology, Kisarazu College); Takanobu Ohno (Kisarazu National College of Technology); Masahiro Uehara (National Institute of Technology, Kisarazu College);

A Study of Compact Bandpass Filter Composed of a Spiral Coupled Line
Tomoya Suzuki (National Institute of Technology, Kisarazu College); Kosei Tanii (National Institute of Technology, Kisarazu College); Takanobu Ohno (Kisarazu National College of Technology); Masahiro Uehara (National Institute of Technology, Kisarazu College);

Session 2P1 Innovative Microwave Remote Sensing

Thursday PM, August 2, 2018 Room T1

Organized by Josaphat Tetuko Sri Sumantyo, Ming Yam Chua Chaired by Josaphat Tetuko Sri Sumantyo, Ming

Yam Chua

13:00 Multiband Circularly Polarized Synthetic Aperture Radar (CP-SAR) Onboard Microsatellite Constellation

Josaphat Tetuko Sri Sumantyo (Chiba University); Nobuyoshi Imura (Chiba University); Katia Nagamine Urata (Chiba University); Robertus Heru Triharjanto (Indonesian National Institute of Aeronautics and Space); Steven Gao (University of Kent);

13:20 Comparison Design of X-band Microstrip Antenna for SAR Application
Farohaji Kurniawan (Chiba University); Josaphat Tetuko Sri Sumantyo (Chiba University); Peberlin Parulian Sitompul (Chiba University); Gunawan Setyo Prabowo (National Institute of Aeronautics and Space); Agus Aribowo (National Institute of Aeronautics and Space); Atik Bintoro (National Institute of Aeronautics and Space);

13:40 Gain Enhancement of C Band Linearly-polarized Microstrip Antenna with Square Parasitic Patch for Airborne LP-SAR Sensor Cahya Edi Santosa (Chiba University); Josaphat Tetuko Sri Sumantyo (Chiba University); 14:00 Dual-band Circularly-polarized Microstrip Antenna for Nano Satellite

Peberlin Parulian Sitompul (Chiba University); Josaphat Tetuko Sri Sumantyo (Chiba University); Farohaji Kurniawan (Chiba University); Cahya Edi Santosa (Chiba University); Timbul Manik (National Institute of Aeronautics and Space); Asif Awaludin (Chiba University); Ming Yam Chua (Multimedia University);

14:20 3D Printed Wideband Circularly Polarized Pyramidal Horn Antenna Agus Hendra Wahyudi (Chiba University); Josaphat Tetuko Sri Sumantyo (Chiba University); Ari Sugeng Budiyanta (National Institute of Aeronautics and Space-LAPAN); Achmad Munir (Institut Teknologi Bandung);

14:40 Unidirectional Radiation and Gain Enhancement of Circularly Polarized Printed Slot Antenna by Several Shapes of Reflector

> Asif Awaludin (Chiba University); Cahya Edi Santosa (Chiba University); Josaphat Tetuko Sri Sumantyo (Chiba University);

- 15:00 An 8-channels FPGA-based Reconfigurable Chirp Generator for Multi-band Full Polarimetric Airborne/Spaceborne CP-SAR Ming Yam Chua (Multimedia University); Josaphat Tetuko Sri Sumantyo (Chiba University); Ya Qi Ji (Chiba University);
- 15:20 An PC-based Airborne SAR Baseband System Ming Yam Chua (Multimedia University); Josaphat Tetuko Sri Sumantyo (Chiba University); Cahya Edi Santosa (Chiba University); Good Fried Panggabean (Chiba University); Ya Qi Ji (Chiba University); Sitompul Peberlin Parulian (Chiba University); Mohammad Nasucha (Chiba University);

15:40 Coffee Break

16:00 Verification of Airborne CP-SAR Calibration Method Using Cylinder Corner Reflector Tomoro Watanabe (Chiba University): Josaphat TetukoSriSumantyo(Chiba University); Ming Yam Chua (Multimedia Univer-Cahya Edi Santosa (Chiba University); sity); Good Fried Panggabean (Chiba University);

16:20 Numerical Solution for Received Power Estimation in a Wave Propagation — A Case of Ground Based Cband SAR Test

Mohammad Nasucha (Chiba University); Josaphat Tetuko Sri Sumantyo (Chiba University); Ming Yam Chua (Multimedia University); Cahya Edi Santosa (Chiba University); Yuta Izumi (Tohoku University); Pakhrur Razi (Chiba University);

16:40 Indoor Experiment of SAR Interferometry with
79 GHz MIMO Sensor
Man Chung Chim (Purdue University); Josaphat Tetuko Sri Sumantyo (Chiba University);
Daniele Perissin (Purdue University);

17:00 Single Post-event PolSAR Data Based Earthquake/Tsunami Damage Information Extraction in Urban Areas Ya Qi Ji (Chiba University); Jos-

17:20 Interferometry Synthetic Aperture Radar (InSAR) Application for Flood Area Detection Observed by Sentinel 1A Pakhrur Razi (Chiba University); Jos-

Pakhrur Kazi (Chiba University); Josaphat Tetuko Sri Sumantyo (Chiba University); Fajar Febriany (Universitas Negeri Padang); Mohammad Nasucha (Chiba University); Jamrud Aminuddin (Chiba University);

17:40 Multi-temporal Land Deformation Monitoring in V Shape Area Using Quasi-Persistent Scatterer (Q-PS) Interferometry Technique

Pakhrur Razi (Chiba University); Josaphat Tetuko Sri Sumantyo (Chiba University); Daniele Perissin (Purdue University); Fajar Febriany (Universitas Negeri Padang); Yuta Izumi (Chiba University);

18:00 Detection of Dry-flammable Peatland Area by Using Backscattering Coefficient Information of ALOS-2 Data L-band Frequency
Joko Widodo (Chiba University); Yuta Izumi (Chiba University); Ayaka Takahashi (Chiba University); Husnul Kausarian (Universitas Islam Riau); Hiroaki Kuze (Chiba University); Josaphat Tetuko Sri Sumantyo (Chiba University);

Session 2P2 Light Scattering and Radiative Transfer: Basic Research and Applications 1

Thursday PM, August 2, 2018

Room T2

Organized by Ping Yang, Michael I. Mishchenko Chaired by Lei Bi, Bingqi Yi

13:00 Far-IR Remote Sensing of Our Planet: Challenges and Invited Opportunities

Xianglei Huang (The University of Michigan);

- 13:20 Shapes and Light Scattering Properties of Snow Particles Estimated from X-ray Micro-CT Imagery and Geometrical Optics Method Calculations Hiroshi Ishimoto (Meteorological Research Institute); Tomonori Tanikawa (Meteorological Research Institute); Satoru Adachi (National Research Institute for Earth Science and Disaster Prevention); Kazuhiko Masuda (Meteorological Research Institute);
- 13:40 Examining the Contrast in the Ice Cloud Fractions between Eastern and Western Eurasia in Winter with CALIPSO Data Kazuaki Kawamoto (Nagasaki University); Akira Yamauchi (Nagasaki University);
- 14:00 Measurements of Cloud Radiative Forcing and Its Connection to Climate Sensitivity Andrew E. Dessler (Texas A&M University);
- 14:20 Sensitivities of GCM Simulations to Ice Cloud Optical Property Parameterizations Bingqi Yi (Sun Yat-sen University);
- 14:40 Investigation of Ice Cloud Properties from Himawari-8 Satellite Measurements
 Husi Letu (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences (CAS));
 Hiroshi Ishimoto (Meteorological Research Institute);
 Takashi M. Nagao (Earth Observation Research Center (EORC)); Takashi Y. Nakajima (Tokai University); Jerome Riedi (Universite de Lille 1);
- 15:00 A Fast Vector Radiative Transfer Model for Atmospheric Remote Sensing Jiachen Ding (Texas A&M University); Ping Yang (Texas A&M University); Michael D. King (University of Colorado);
- 15:20 Solution of Polarized Radiative Transfer in Gradient Index Media Using Spectral Element Method Junmin Zhao (Harbin Institute of Technology); J. Y. Tan (Harbin Institute of Technology); Linhua Liu (Harbin Institute of Technology);

15:40 Coffee Break

- 16:00 Light Scattering by Small Atmospheric Ice Crystals: Impacts of Orientation, Shape, and Size on In-situ Aircraft Measurements Junshik Um (Pusan National University); Greg M. McFarquhar (University of Oklahoma);
- 16:20 Scattering Property Database of Oriented Hexagonal Plates and Its Application to Lidar Measurements Masanori Saito (Texas A&M University); Ping Yang (Texas A&M University); Bingqiang Sun (Texas A&M University);
- 16:40 Backscattering Peak of Large Single Particle: Phenomenon and Theory Chen Zhou (Nanjing University);
- 17:00 Derivation and Analysis of the Volume Integral Equation Formulation of Electromagnetic Scattering Maxim A. Yurkin (Institute of Chemical Kinetics and Combustion); Michael I. Mishchenko (NASA Goddard Institute for Space Studies);
- 17:20 Use of Simplified Models to Simulate the Optical Properties of Atmospheric Dust Aerosols: A New Perspective Lei Bi (Zhejiang University); Wushao Lin (Zhejiang University); Xiaoyu Zhang (Zhejiang University);
- 17:40 Application of Himawari-8 AHI Imagery to Hightemporal Aerosol Optical Depth Retrieval Tang-Huang Lin (National Central University); Yuan-Hsiang Chang (National Central University); Gin-Rong Liu (National Central University);
- 18:00 Kerker Effects and Beyond Jeng Yi Lee (National Taitung University); Andrey E. Miroshnichenko (Australian National University); Ray-Kuang Lee (National Tsing-Hua University);

Session 2P3a FocusSession.SC1&SC2: Multiscale and Multiphysics Computation and Applications 2

Thursday PM, August 2, 2018 Room T3

Organized by Qing Huo Liu Chaired by Qing Huo Liu, Mei Song Tong

13:20 Modeling Photonic Crystal Slab Devices by Multi-Invited resolution Unit Cell Boundary Operators Ya Yan Lu (City University of Hong Kong); 13:40 Multiscale Computation with the Discontinuous Invited Galerkin Time Domain Method and Geometrical Optics

> Sawyer D. Campbell (The Pennsylvania State University); Huaguang Bao (The Pennsylvania State University); Jogender Nagar (The Pennsylvania State University); Pingjuan L. Werner (The Pennsylvania State University); Douglas H. Werner (The Pennsylvania State University);

14:00 An Upscaled DGTD Method for Time-domain Elec-Invited tromagnetics

> Alexis Gobe (Cote d'Azur University); Stephane Lanteri (Cote d'Azur University, Inria, CNRS, LJAD); Claire Scheid (Cote d'Azur University, LJAD, CNRS, Inria); Frederic Valentin (National Laboratory for Scientific Computing);

14:20 Numerical Analysis of Electromagnetic Wave-matter Invited Interaction

Shinichiro Ohnuki (Nihon University); Ryohei Uemura (Nihon University); Ryota Oida (Nihon University); Kazuyuki Tanaka (Nihon University);

14:40 Green's Functions in Waveguides and Periodic Struc-Keynotetures

> Leung Tsang (University of Michigan); Shurun Tan (University of Michigan); Tien-Hao Liao (California Institute of Technology); Kung-Hau Ding (Air Force Research Laboratory, Wright-Patterson AFB);

15:00 More-refined Typhoon Geometry Center Derived from a High Temporal-spatial Resolution Geostationary Satellite Imaging System Fenglin Sun (National Satellite Meteorological Center, China Meteorological Administration (NSMC/CMA));

15:40 Coffee Break

Session 2P3b SC1: Fast and Efficient Algorithms of CEM

Thursday PM, August 2, 2018

Room T3

Organized by Vladimir Okhmatovski, Weng Cho Chew

Chaired by Vladimir Okhmatovski, Weng Cho Chew

16:00 Parallel Brute-force Evaluation of Dipole Radiation Operators on GPUs
Alexander Paulus (Technical University of Munich); Josef Knapp (Technical University of Munich); Thomas F. Eibert (Technical University of Munich);

- 16:20 An Implementation of the Calderon Preconditioning for the EFIE without the Barycentric Elements *Kazuki Niino (Kyoto University); N. Nishimura (Kyoto University);*
- 16:40 Double-layer Modeling to Overcome Internal Resonance Problem of MFIE
 Sadri Guler (Middle East Technical University);
 Hande Ibili (Middle East Technical University);
 Ozgur Ergul (Middle East Technical University);
- 17:00 Accuracy Controlled H²-matrix-matrix Product in Linear Complexity Miaomiao Ma (Purdue University); Dan Jiao (Purdue University);
- 17:20 *H*-matrix Accelerated Method of Moments Solution of Surface-volume-surface EFIE for Scattering Problems on Composite Dielectric Objects *R. Gholami (University of Manitoba); Z. Chen (University of Manitoba); Vladimir Okhmatovski (University of Manitoba);*
- 17:40 Time-frequnecy Analysis of Electromagnetic Wave Using a Pefectly Parallel Algorithm Di Wu (Nihon University); R. Ohnishi (Nihon University); Takashi Yamaguchi (Tokyo Metropolitan Industrial Technology Research Institute); Shinichiro Ohnuki (Nihon University);
- 18:00 Efficent Algorithms for Parallelization of (Non)oscillatory Pair potentials Steve Hughey (Michigan State University); H. M. Aktulga (Michigan State University); B. Shanker (Michigan State University);
- 18:20 Efficient Integration Paths for Fast 2.5-D Scattering Mert Hidayetoglu (University of Illinois at Urbana-Champaign); Wen-Mei Hwu (University of Illinois at Urbana-Champaign); Weng Cho Chew (University of Illinois);

Session 2P4

SC1&SC3: Design and Simulation of Electromagnetic and Optical Devices 2

Thursday PM, August 2, 2018

Room T4

Organized by Shinichiro Ohnuki, Jun Shibayama Chaired by Shinichiro Ohnuki, Jun Shibayama

- 13:20 Digital Signal Processing in Nonlinear Photonic Crystal Waveguides Based on Bandgap Transmission Tornike Onoprishvili (Free University of Tbilisi); Vakhtang Jandieri (University of Duisburg-Essen); Ramaz Khomeriki (Tbilisi State University); Daniel Erni (University of Duisburg-Essen, Campus Duisburg);
- 13:40 Study of Three-layer Gratings at First Order Bragg Condition
 Nai-Hsiang Sun (I-Shou University); Ya-Zhou Li (I-Shou University); Sheng-Hua Jin (I-Shou University); Yi-Ming Wang (I-Shou University); Jung-Sheng Chi-
- 14:00 Modeling of Carrier Transport of Host-guest System in Organic Light-emitting Diodes by 2D Random Model
 Jun-Yu Huang (National Taiwan University); Jiun-Haw Lee (National Taiwan University); Yuh-Benn Wu

ang (I-Shou University);

Haw Lee (National Taiwan University); Yuh-Renn Wu (National Taiwan University);

14:20 Study on Polarization Converter Based on Doublehole Unit Photonic Crystal Fiber
Zejun Zhang (Kanagawa University); Yasuhide Tsuji (Muroran Institute of Technology); Masashi Eguchi (Chitose Institute of Science and Technology); Chun-Ping Chen (Kanagawa University);

- 14:40 Analytical and Numerical Investigation of Silicon Photonic 2D Grating Couplers with a Waveguide-to-Grating Shear Angle Galina Georgieva (Technische Universität Berlin); Klaus Petermann (Technische Universität Berlin);
- 15:00 Design Optimization of Nonlinear Optical Waveguide Devices Considering Output Signal Phase
 K. Mori (Muroran Institute of Technology); Yasuhide Tsuji (Muroran Institute of Technology);
- 15:40 Coffee Break
- 16:00 Analysis of a Periodic Array Consisting of InSb-coated Cylinders in the THz Region Jun Shibayama (Hosei University); Sumire Takahashi (Hosei University); Junji Yamauchi (Hosei University); H. Nakano (Hosei University);
- 16:20 Dispersion Relationship of Four-section Gratings Nai-Hsiang Sun (I-Shou University); Sheng-Hua Jin (I-Shou University); Ya-Zhou Li (I-Shou University); Shi-Yao Chen (I-Shou University); Hai-Yan Zhang (Huaiyin Institute of Technology); Jung-Sheng Chiang (I-Shou University);

16:40 Experimental and Numerical Study of Electromagnetic Parameters of V-band Planar Meander Slowwave Structure

> Andrei Victorovich Starodubov (Saratov StateUniversity);Alexey Alexandrovich Ser-(Saratov StateUniversity); dobintsevAnton Mikhailovich Pavlov (Saratov State University); Victor Vladimirovich Galushka (Saratov State University); Peter Vladimirovich Ryabukho (Saratov State University); Andrei Georgievich Rozhnev (Saratov State University); Roman Antonovich Torqashov (V. A. Kotel'nikov Institute of Radio Engineering and Electronics RAS); Gennadiy Vasilievich Torgashov (V. A. Kotel'nikov Institute of Radio Engineering and Electronics RAS); Nikita Mikhailovich Ryskin (V. A. Kotel'nikov Institute of Radio Engineering and Electronics RAS);

Session 2P5a SC4: Leading Design Techniques for Wideband, Miniaturized, and Circularly Polarized Antennas

Thursday PM, August 2, 2018

Room T5 Organized by Takeshi Fukusako Chaired by Takeshi Fukusako

- 13:00 Experimental Study on Performance Improvement of a DBM Integrated Circularly Polarized Microstrip Antenna Using Stacked Structure Eisuke Nishiyama (Saga University); T. Ino (Saga University); I. Toyoda (Saga University);
- 13:20 Miniaturization of Folded Bow-tie Antenna Jun Abiru (National Defense Academy); Naobumi Michishita (National Defense Academy of Japan); Hisashi Morishita (National Defense Academy); Kenji Kawabata (Fujitsu Limited); Yasuhiro Murakami (Fujitsu Limited);
- 13:40 Optimum Design to Achieve Small Arbitrarily Configured Wire Antenna Array Using GA for EV Model Running by WPT
 Tamami Maruyama (National Institute of Technology); S. Ishisa (National Institute of Technology);
 K. Kawamori (National Institute of Technology);
 K. Ozeki (National Institute of Technology); T. Ohsawa (National Institute of Technology);

- 14:00 Circularly-polarized Small Microstrip Antenna for ISM Band
 Takafumi Fujimoto (Nagasaki University); Ryo Yamaguchi (Nagasaki University); Yoichi Ishizuka (Nagasaki University); Tomoyuki Fujishima (Nagasaki University); Satoshi Suqimoto (Nagasaki University);
- 14:20 Design and Measured Performance of a Varactorloaded Frequency-tunable Dual-band Ring Microstrip Antenna with Reduced Bias Circuits Toru Ikeda (Saitama University); Sakuyoshi Saito (Saitama University); Yuichi Kimura (Saitama University);
- 14:40 A Wide-band Microstrip Array Antenna Fed by a Metamaterial Power-splitter Changhyeong Lee (Incheon National University); Heejun Park (Incheon National University); Gwang-Gyoon Namgung (Incheon National University); Sungtek Kahng (University of Incheon);
- 15:00 Overview on Metasurface Based Wideband Circularly Polarized Antennas Takeshi Fukusako (Kumamoto University);
- 15:20 A Low Profile Integrated DSRC/GPS Antenna System for V2X Applications Ling Huang (Nanyang Technological University); Yi-Long Lu (Nanyang Technological University);
- 15:40 Coffee Break

Session 2P5b SC1: Recent Progress in Antenna Analysis and Design

Thursday PM, August 2, 2018 Room T5 Organized by Keisuke Fujita

Chaired by Keisuke Fujita

16:00 Dual-band Antenna Configuration Comprising Two Invited Unsymmetrical Rectangular Loops with Gaps for

> GNSS Applications Makoto Sumi (NTT DOCOMO, INC.); Jun-Ichi Takada (Tokyo Institute of Technology);

16:20 A Millimeter-wave Aperture Coupled High-gain Antenna Array Shailendra Kaushal (Fujikura Ltd.); Ryuta Yamamoto (Fujikura Ltd.); Kiyoshi Kobayashi (Fujikura Ltd.); Ning Guan (Fujikura Ltd.); 16:40 Small Four-branch Diversity Antenna with Two-Invited element Array

Kengo Nishimoto (Mitsubishi Electric Corporation); Y. Nishioka (Mitsubishi Electric Corporation); Naofumi Yoneda (Mitsubishi Electric Corporation);

17:00 High-order Spherical Modes Analysis for Small Spherical Helix Antennas Keisuke Fujita (National Institute of Technology, Yuge College):

Session 2P5c SC4: Evaluation Techniques of Substrate Materials for MM-wave Planar Antennas

Thursday PM, August 2, 2018 Room T5 Organized by Yoshinori Kogami

Chaired by Yoshinori Kogami Chaired by Yoshinori Kogami

- 17:20 A Millimetre Wave Embroidary Beam Forming Antenna Array for UWB Applications Daggupati Anil Kumar (Indian Institute of Technology); Mohammed Zafar Ali Khan (Indian Institute of Technology);
- 17:40 Millimeter Wave Complex Permittivity Measurements for the Flexible Dielectric Substrates Used with the Printed Electronics Technology Yoshinori Kogami (Utsunomiya University); Takashi Shimizu (Utsunomiya University); Yu Mogami (Utsunomiya University);
- 18:00 Evaluation of the Relative Permittivity of Dielectric Sheet Materials in Millimeter Wave Region Using Te_{111} Mode Cylindrical Cavity Resonator Yoshinori Kogami (Utsunomiya University); Takashi Shimizu (Utsunomiya University);
- 18:20 Complex Permittivity Evaluation for Uniaxial Anisotropic Dielectric Materials in Millimeter Wave Region Using the Whispering Gallery Mode Dielectric Disk Resonator

Kota Tsunoda (Utsunomiya University); Kentaro Takano (Utsunomiya University); Takashi Shimizu (Utsunomiya University); Yoshinori Kogami (Utsunomiya University);

Session 2P6 Biomedical Imaging and Sensing Involving both Light and Ultrasound 2

Thursday PM, August 2, 2018

Room T6

Organized by Xueding Wang, Chulhong Kim Chaired by Chulhong Kim, Sung-Liang Chen

- 13:20 Photoacoustic Microscopy to Improve Spatial Reso-
- Invited lution and Imaging Contrast Near Optical Diffusion Limit

Yoshihisa Yamaoka (Saga University);

- 13:40 Ultrafast MIP Viewer with Unique Image Processing Invited Designed for Photoacoustic Tomography
- Hiroyuki Sekiguchi (Kyoto University); Kaori Togashi (Kyoto University);
- 14:00 Three-dimensional Tumor Imaging In Vivo Using Invited Multispectral Optoacoustic Mesoscopy
- Jiao Li (Tianjin University); Shaoze Song (Tianjin University); Lu Tong (Tianjin University); Feng Gao (Tianjin University); Vasilis Ntziachristos (Technische Universitat Munchen);
- 14:20 High Frame Rate Photoacoustic Imaging of Micro Invited Vessel

Yoshifumi Saijo (Tohoku University); Kodai Ishikawa (Tohoku University); Ryo Shintate (Tohoku University); Ryo Nagaoka (University of Toyama);

- 14:40 High-resolution Photoacoustic Microscopy of Single Invited Cells and Single Vessels
 - Chao Tian (University of Science and Technology of China); Wei Qian (IMRA America, Inc.); Xueding Wang (University of Michigan); Yannis M. Paulus (University of Michigan);
- 15:00 Photoacoustic Sensing and Mapping of Neuro-Invited electrical Activity

Parag V. Chitnis (George Mason University);

- 15:20 Label-free Counting of Circulating Cells by *in vivo* Invited Photoacoustic Flow Cytometry
- Quanyu Zhou (Shanghai Jiao Tong University); Xunbin Wei (Shanghai Jiao Tong University);
- 15:40 Coffee Break

16:00 Three-dimensional Modelling of Photon Transportation Aided by Ultrasound for Quantitative Clinical Photoacoustic Breast Cancer Studies

Tao Han (Peking University); Meng Yang (Peking Union Medical College Hospital, Chinese Academy of Medical Sciences & Peking Union Medical College); Fang Yang (Shenzhen Mindray Bio-Medical Electronics Co., Ltd.); Lingyi Zhao (Peking University); Yuxin Jiang (Peking Union Medical College Hospital, Chinese Academy of Medical Sciences & Peking Union Medical College); Changhui Li (Peking University);

- 16:20 Photoacoustic/Ultrasound Dual Imaging of Human Invited Superficial Lesions: An Initial Clinical Study
 - Meng Yang (Peking Union Medical College Hospital, Chinese Academy of Medical Sciences & Peking Union Medical College); Yuxin Jiang (Peking Union Medical College Hospital, Chinese Academy of Medical Sciences & Peking Union Medical College); Lingyi Zhao (*Peking University*): Changhui Li (*Peking University*): Fang Yang (Shenzhen Mindray Bio-Medical Electronics Co., Ltd.); Na Su (Peking Union Medical College Hospital, Chinese Academy of Medical Sciences & Peking Union Medical College); Ming Wang (Peking Union Medical College Hospital, Chinese Academy of Medical Sciences & Peking Union Medical College); Hewen Tang (Peking Union Medical College Hospital, Chinese Academy of Medical Sciences & Peking Union Medical College); Chengyang Zhao (Peking Union Medical College Hospital, Chinese Academy of Medical Sciences & Peking Union Medical College);
- 16:40 Biomedical Applications for Photoacoustic Mi-Invited croscopy and Endoscopy
 - Zhongjiang Chen (South China Normal University); Haigang Ma (South China Normal University); Kedi Xiong (South China Normal University); Yujiao Shi (South China Normal University); Sihua Yang (South China Normal University);
- $17{:}00\,$ Photoacoustic Spectral Characteristics and Its Ap-
- Invited plication in Tissue Characterization and Noncontact Elasticity Evaluation Chao Tao (Nanjing University); Xiao-Jun Liu (Naniing University); Xunding Wang (University of Mishi
 - jing University); Xueding Wang (University of Michigan);

17:20 Photoacoustic Imaging Guided Photothermal Ther-

Invited apy Based on the Combination of Silicon Coated Gold Nanoparticles and Stem Cells

Yingna Chen (Tongji University); Chang Xu (Tongji University School of Medicine); Xueding Wang (University of Michigan); Yu Cheng (Tongji University School of Medicine); Qian Cheng (Tongji University); Session 2P7a SC1: Recent Approaches to Periodic Structures 3

Thursday PM, August 2, 2018

Room T7 Organized by Koki Watanabe, Gerard Granet Chaired by Koki Watanabe, Gerard Granet

- 13:20 Exceptional Points on a Periodic Dielectric Slab
 Amgad Abdrabou (City University of Hong Kong);
 Ya Yan Lu (City University of Hong Kong);
- 13:40 Shadow Theory of Diffraction by a Periodic Rough Surface: Image Integral Equation Junichi Nakayama (Kyoto Institute of Technology); Yasuhiko Tamura (Kyoto Institute of Technology);
- 14:00 Method of Image Green's Function for Periodic Rough Dielectric Surfaces Yasuhiko Tamura (Kyoto Institute of Technology);
- 14:20 Analyzing Honeycomb Photonic Crystal Waveguides by Dirichlet-to-Neumann Maps Zhen Hu (Hohai University);
- 14:40 A New Boundary Integral Equation Method for Wave Scattering in Layered Media with Periodic Interface Wangtao Lu (Zhejiang University); Guanghui Hu (Beijing Computational Science Research Center); Ya Yan Lu (City University of Hong Kong);

15:00 Inverse Scattering Algorithm for Reconstruction of the Defect Profile in Infinite Periodic Surface Relief Structure Jun-ichiro Sugisaka (Kitami Institute of Technology); Takashi Yasui (Kitami Institute of Technology); Koichi Hirayama (Kitami Institute of Technology);

15:40 Coffee Break

Session 2P7b SC1: Wave Scattering from Random Surfaces and Periodic Structures

Thursday PM, August 2, 2018

Room T7

Organized by Junichi Nakayama, Akira Komiyama Chaired by Junichi Nakayama, Akira Komiyama

16:00 Fields in One-dimensional Random Media: Degeneracy Problem Junichi Nakayama (Kyoto Institute of Technology);

- 16:20 Incoherent Scattering of a TE Plane Wave from a Slab with a Two-dimensional Random Fluctuation Yasuhiko Tamura (Kyoto Institute of Technology);
- 16:40 Scattering of Light from a Surface of Frozen Salmon Fillets — Influence of Ice Crystal Size on the Surface Color

Kazuhiro Hattori (Kyoto Institute of Technology); Yasuhiko Tamura (Kyoto Institute of Technology);

17:00 Shadow Theory of Diffraction by a Periodic Rough Surface: Decomposition Formulas Junichi Nakayama (Kyoto Institute of Technology); Yasuhiko Tamura (Kyoto Institute of Technology);

- 17:20 Properties of the Scattering Factors for a Periodic Rough Interface Yasuhiko Tamura (Kyoto Institute of Technology); Junichi Nakayama (Kyoto Institute of Technology);
- 17:40 Accuracy Evaluation on Numerical Analysis of Scattering Fields by Dielectric Gratings in Terms of Reciprocity Theorem
 Hideaki Wakabayashi (Okayama Prefectural University); M. Asai (Kindai University); Jiro Yamakita

(Okayama Prefectural University);18:00 Scattering of a Plane Wave from a Dielectric Grating with Finite Extent

Akira Komiyama (Osaka Electro-Communication University);

Session 2P8a

SC2: Homogenization and Effective Medium Theories for Artificial Materials

Thursday PM, August 2, 2018

Room T8

Organized by Ying Wu, Jun Mei Chaired by Ying Wu, Jun Mei

- 13:20 Effective-medium Theory for Multilayer Metamaterials: Role of Near-field Corrections

 Tong Liu (Fudan University); Shaojie Ma (Fudann University); Shiyi Xiao (Shanghai University);
 Lei Zhou (Fudan University);

 13:40 Using Photonic Crystals to Realize Intriguing Effective Medium Properties

 Yu Ting Yang (Soochow University); Jie Luo (Soochow University);
 14:00 Homogenization of Generalized Core-shell Ellipsoidal
 - Scatterers Ari Sihvola (Aalto University); Dim-

itrios C. Tzarouchis (Aalto University); Dim-

- 14:20 Effective Medium Theory for Gratings Xiujuan Zhang (King Abdullah University of Science and Technology); Ying Wu (King Abdullah University of Science and Technology (KAUST)); Ross C. McPhedran (University of Sydney);
- 14:40 Elastic Metamaterial Plate with Configurable Effective Mass Density, Bending Stiffness, and Resonant Frequencies Jinjie Shi (Soochow University); Chenkai Liu (Soochow University); Yun Lai (Soochow University);
- 15:00 Acoustic Metamaterials with Broadband and Wideangle Impedance Matching Chenkai Liu (Soochow University); Jie Luo (Soochow University); Yun Lai (Soochow University);
- 15:20 Realization of Three-dimensional Acoustic Doublezero-index Materials in Phononic Crystals with Diraclike Conical Dispersion at the Brillouin Zone Center Chang Qing Xu (Soochow University); Yun Lai (Soochow University); Guancong Ma (Hong Kong Baptist University); Ying Wu (King Abdullah University of Science and Technology (KAUST));

15:40 Coffee Break

Session 2P8b Metamaterials and Transformation Optics

Thursday PM, August 2, 2018

Room T8

Organized by Yu Luo, Hongsheng Chen Chaired by Hongsheng Chen, Bin Zheng

16:00 Controlling Surface Plasmons by Covariant Curved Invited Spaces in One-dimensional Transformation Optical

> Nanostructures Fan Zhong (Nanjing University); Jensen Li (University of Birmingham); Hui Liu (Nanjing University); Shining Zhu (Nanjing University);

16:20 Reflection-type United Frequency-space-domain Dig-Invited ital Coding Metamaterial

Haotian Wu (Southeast University); Tie Jun Cui (Southeast University);

- 16:40 Magnetic Illusion Device for Laplace Equation by Us-
- Invited ing Homogeneous and Anisotropic Magnetic Material Yinrui Zhao (Lanzhou University); Cui Lu (Lanzhou University); Zhong-Lei Mei (Lanzhou University);
- 17:00 Numerical Simulation of Reversed Cherenkov Radia-
- Invited tion Using a Time-domain DG Method Sidney Shields (Pacific Union College); Jichun Li (University of Nevada, Las Vegas);

17:20 Enhancing Optical Nonlinearity Using Quantum Non-Invited local Effect

Hu Hao (Nanyang Technological University); Yu Luo (Nanyang Technological University);

17:40 Anamorphic Fractional Fourier Transform Lens De-Invited signed by Transformation Optics

Xiao-Bo Yang (Beijing Institute of Technology); Jin Hu (Beijing Institute of Technology);

Session 2P9a FocusSession.SC3: Novel Photonic Materials for Advanced Applications 4

Thursday PM, August 2, 2018

Room A1

Organized by Iam-Choon Khoo Chaired by Iam-Choon Khoo

13:20 Output Power Enhancement in Photonic-based RF

- Invited Generation by Optical Pulse Compression with Fiber Takashi Yamaguchi (Doshisha University); Hiroyuki Toda (Doshisha University);
- 13:40 Post Processing Based Silicon Photonic Devices Em-Invited ploying Photonic Molecules

Newton C. Frateschi (Universidade Estadual de Campinas);

14:00 Liquid Crystals for Photonic Integrated Circuit Applications Joanna Ptasinski (Space and Naval Warfare Sys-

tems Center Pacific); Iam-Choon Khoo (Pennsylvania State University); Yeshaiahu Shaya Fainman (University of California at San Diego);

14:20 Study of the Angular Momentum of Light from Plas-Invited monic Crystals

Hock Chun Ong (The Chinese University of Hong Kong);

14:40 Nanophotonic Light Emitters

Keynote

Yeshaiahu Shaya Fainman (University of California at San Diego);

15:10 The Prospect of Low-loss Semiconductors Replacing Invited Noble Metals for High Field Enhancement

Greg Sun (University of Massachusetts Boston); W. Hsieh (University of Massachusetts Boston); Pin Chieh Wu (National Taiwan University); Din Ping Tsai (Academia Sinica); Jacob B. Khurgin (Johns Hopkins University); 15:40 Coffee Break

Session 2P9b SC3: Short Distance Communication for Next Generation Access Networks

Thursday PM, August 2, 2018

Room A1

Organized by Atsushi Kanno, Sevia Mahdaliza Idrus Chaired by Atsushi Kanno, Sevia Mahdaliza Idrus

16:00 High-capacity Mobile Fronthaul Transmission Using IF-over-Fiber Technology for Next-generation C-RAN Architectures Shota Ishimura (KDDI Research, Inc.); Abdelmoula Bekkali (KDDI Research, Inc.); Kazuki Tanaka (KDDI Research, Inc.); Kosuke Nishimura (KDDI Research, Inc.); Masatoshi Suzuki (KDDI Research,

Inc.);

- 16:20 SI-POF-based Radio Relay System Based on IF over Fiber Technique Atsushi Kanno (National Institute of Information and Communications Technology); Naokatsu Yamamoto (National Institute of Information and Communications Technology); Tetsuya Kawanishi (National Institute of Information and Communications Technology);
- 16:40 Energy Efficient Performance Evaluation of XG-PON for Sustainable Green Communication Infrastructure Nor Affida M. Zin (Universiti Teknologi Malaysia); Sevia Mahdaliza Idrus (Universiti Teknologi Malaysia); Nur Asfahani Ismail (Universiti Teknologi ogy Malaysia); Arnidza Ramli (Universiti Teknologi Malaysia); Rizwan Aslam Butt (Universiti Teknologi Malaysia);

17:00 The Integration of Security Mitigation Techniques with Dynamic Bandwidth Allocation Algorithms in Long Reach Gigabit Passive Optical Networks Fadila Mohd Atan (Universiti Teknologi MARA); Nadiatulhuda Zulkifli (Universiti Teknologi Malaysia); Sevia Mahdaliza Idrus (Universiti Teknologi Malaysia); Azura Hamzah (Malaysia-Japan International Institute of Technology (MJIIT)); 17:20 Lightwave Vector Signal by Direct Laser and Electroabsorption Modulation with Digital Pre-coding and Pre-compensation

> Ukrit Mankong (Chiang Mai University); Praimezt Mekbungwan (Chiang Mai University); Keizo Inagaki (National Institute of Information and Communications Technology); Tetsuya Kawanishi (National Institute of Information and Communications Technology);

 17:40 Determination of Critical Paths for Multipath Propagation in Broadband Powerline Communication Networks
 Modisa Mosalaosi (University of KwaZulu-Natal);
 Thomas Logchim Odhiambo Afullo (University of

Thomas Joachim Odhiambo Afullo (University of KwaZulu-Natal (UKZN));

18:00 Short Range Propagation Simulation of Modified Ground Microstrip Antenna Design for Near Field Communication Application at Frequency of 0.35 THz Gradi Adriandi (Universitas Indonesia); Catur Apriono (Universitas Indonesia);

Session 2P10 FocusSession.SC3: Advanced Nano/Quantum Photonic Technologies 1

Thursday PM, August 2, 2018 Room A2

Organized by Jin Liu, Juntao Li Chaired by Jin Liu, Juntao Li

13:20 Optical Nanoscopy: Truly Non-intrusive Keynote

Jianying Zhou (Sun Yat-sen University); Guorong Guan (Sun Yat-Sen University); Ken Yang (Sun Yat-sen University); Aiqing Zhang (Sun Yat-sen University); Xiaonan Li (Sun Yat-sen University); Haowen Liang (Sun Yat-sen University); Yikun Liu (Sun Yat-sen University); 13:50 Photonic Glass out of Core-shell Particles for High Invited Purity Structural Color

- Alexander Yu. Petrov (Hamburg University of Technology); Guoliang Shang (Hamburg University of Technology); Quynh Yen Nguyen (Hamburg University of Technology); Kaline Furlan (Hamburg University of Technology); Lukas Maiwald (Hamburg University of Technology); Hagen Renner (Hamburg University of Technology); Bagen Renner (Hamburg University of Technology); Robert Zierold (Universitat Hamburg); Robert Blick (Universitat Hamburg); Maksym Dosta (Hamburg University of Technology); Stefan Heinrich (Hamburg University of Technology); Rolf Janssen (Hamburg University of Technology); Gerold A. Schneider (Hamburg University of Technology); Manfred Eich (Hamburg University of Technology);
- 14:10 Functional Plasmonic Printing Technologies for Imag-Invited ing Devices

Zhang-Kai Zhou (Sun Yat-Sen University);

14:30 Accessing the Near Field of Coupled Plasmonic Invited Nanostructures from Multiple Domains

Quan Sun (Hokkaido University); Kosei Ueno (Hokkaido University); Hiroaki Misawa (Hokkaido University);

14:50 Photonic Applications of Epsilon near Zero Metama-Invited terials

> Xin Li (University of St Andrews); Carlo Rizza (Consiglio Nazionale delle Ricerche, CNR-SPIN); Alessandro Ciattoni (Consiglio Nazionale delle Ricerche, CNR-SPIN); Daniele Faccio (Heriot-Watt University); Andrea Di Falco (University of St Andrews);

15:10 High Numerical Aperture Crystalline Silicon Metal-Invited enses and Applications at Visible Wavelengths

Haowen Liang (Sun Yat-sen University); Qiaoling Lin (Sun Yat-sen University); Yin Wang (Sun Yat-sen University); Qian Sun (Sun Yat-sen University); Juntao Li (Sun Yat-sen University);

15:40 Coffee Break

16:00 Generation of Structured Electron Beams Invited

> Yuanjie Yang (University of Electronic Science and Technology of China); G. Thirunavukkarasu (University of York); Mohamed Babiker (University of York); J. Yuan (University of York);

16:20 Fabrication and Reliable Characterization of High-Invited performance Hyperbolic Metamaterials

> Cheng Zhang (National Institute of Standards and Technology); Henri J. Lezec (National Institute of Standards and Technology); Wenqi Zhu (National Institute of Standards and Technology); Amit K. Agrawal (National Institute of Standards and Technology);

16:40 Ultrafast Light Field Manipulation Using Cholesteric Invited Liquid Crystals

Yikun Liu (Sun Yat-sen University); Haowen Liang (Sun Yat-sen University); Chun-Wei Chen (Pennsylvania State University); Jianying Zhou (Sun Yat-sen University); Tsung-Hsien Lin (National Sun Yat-Sen University); Iam-Choon Khoo (Pennsylvania State University);

17:00 Optical Sharp Edge Diffraction and Its Applications Invited

Shenhe Fu (Jinan University); Yanwen Hu (Jinan University); Taotao Zhao (Jinan University); Zhenqiang Chen (Jinan University);

17:20 Hybrid Silicon and Lithium Niobate Mach-Zehnder Invited Modulators

Xinlun Cai (Sun Yat-Sen University);

17:40 Few-layer MoTe_2-on-silicon Laser at Near Infrared Wavelength

Hanlin Fang (Sun Yat-Sen University); Jin Liu (Sun Yat-Sen University); Hongji Li (Sun Yat-Sen University); Juntao Li (Sun Yat-Sen University); Thomas F. Krauss (University of York); Yue Wang (University of York);

Session 2P11 MS-1: Mini-symposium on Microwave Photonics 2

Thursday PM, August 2, 2018

Room A3

Organized by Christina Lim, Jianji Dong Chaired by Hoon Kim, Thas Ampalavanapillai Nirmalathas

- 13:00 Integrated Microwave Photonics Chip Platform
- Chris G. H. Roeloffzen (LioniX International BV); Ilka Visscher (LioniX International BV); Caterina Taddei (LioniX International BV); Marcel Hoekman (LioniX BV); Ruud M. Oldenbeuving (SATRAX BV); Paulus W. L. Van Dijk (LioniX International BV); Roelof Bernardus Timens (LioniX International BV); Jorn P. Epping (LioniX International BV); Jorn P. Epping (LioniX International BV); Lennart Wevers (LioniX International BV); Robert Grootjans (LioniX International BV); Dimitri Geskus (LioniX International BV); Ronald Dekker (LioniX International BV); Rene G. Heideman (LioniX BV);
- 13:20 Si Electronic-photonic Integrated Circuits for Realization of Single-chip Optical Single-sideband Modulators

Woo-Young Choi (Yonsei University); Byung-Min Yu (Yonsei University); Jeong-Min Lee (Yonsei University); Christian Mai (IHP); Stefan Lischke (IHP); Lars Zimmermann (IHP);

- 13:40 Integrated Optical Filters for Microwave Photonics Signal Processing
 Xiaoke Yi (University of Sydney); Shijie Song (University of Sydney); Suenxin Chew (University of Sydney); Linh Nguyen (University of Sydney); Robert A. Minasian (University of Sydney);
- 14:00 Microwave Signal Processing Using a Ultra-high-Q Silicon Microresonator

Jianji Dong (Huazhong University of Science and Technology); Feng Zhou (Huazhong University of Science and Technology); Xu Wang (Huazhong University of Science and Technology); Xinliang Zhang (Huazhong University of Science and Technology);

- 14:20 Photonic Microwave Signal Processing Using Integrated Ring Resonators Linjie Zhou (Shanghai JiaoTong University);Liangjun Lu (Shanghai Jiao Tong University); Xinyi Wang (Shanghai Tong University); Jiao Qiankun Sun (Shanghai Jiao Tong University);Lin Shen (Shanghai Jiao Tong University); Jianping Chen (Shanghai Jiao Tong University);
- 14:40 Wireless Millimeter-wave to Lightwave Signal Converter Utilizing Antenna-integrated Electro-optic Modulators *Hiroshi Murata (Osaka University)*;
- 15:00 Microwave Photo Absorption Method Used for Investigating Minority Carrier Annihilation Behavior in Silicon Semiconductor Toshiyuki Sameshima (Tokyo University of Agriculture and Technology); Masahiko Hasumi (Tokyo University of Agriculture and Technology); Tomohisa Mizuno (Kanagawa University);

15:20 Signal Spectral-interval Estimation in Fast Photonic Analog-to-digital Converters

Sergey M. Kontorov (National Research Nuclear University MEPhI); Vladimir Alekseevich Cherepenin (Institute of Radio Engineering and Electronics, Russian Academy of Sciences); Victor V. Kulagin (Sternberg Astronomical Institute of Moscow State University); Denis A. Prokhorov (National Research Nuclear University MEPhI); Alexey N. Shulunov (Research Centre "Module"); Nikolay I. Kargin (National Research Nuclear University MEPhI); Victor V. Valuev (Kotel'nikov Institute of Radio-engineering and Electronics of RAS);

15:40 Coffee Break

- 16:00 Microwave Photonic Signal Processing Based on Integrated Microresonator Frequency Combs Xiaoxiao Xue (Tsinghua University); Xiaoping Zheng (Tsinghua University); Bingkun Zhou (Tsinghua University);
- 16:20 Microwave Photonic System with Bandwidth Scaling Yitang Dai (Beijing University of Posts and Telecommunications); Jilong Li (Beijing University of Posts and Telecommunications); Yan Zheng (Beijing University of Posts and Telecommunications); Feifei Yin (Beijing University of Posts and Telecommunications); Kun Xu (Beijing University of Posts and Telecommunications);
- 16:40 Compact 0.5–40 GHz RF Scanning Receiver Based on Photonics
 F. Scotti (CNIT — Photonics Networks and Technologies Laboratory); Antonella Bogoni (CNIT — Photonics Networks and Technologies Laboratory); P. Ghelfi (CNIT — Photonics Networks and Technologies Laboratory);
- 17:00 Ultra-high Resolution Real-time Radar Imaging Based on Microwave Photonics Fangzheng Zhang (Nanjing University of Aeronautics and Astronautics); Shilong Pan (Nanjing University of Aeronautics and Astronautics);
- 17:20 Hybrid Optoelectronic Loop Microwave Photonic Filters for Application in Optoelectronic Oscillators
 G. Charalambous (University of Cyprus);
 G. K. M. Hasanuzzaman (University of Cyprus);
 Stavros Iezekiel (University of Cyprus);
- 17:40 Photonic Microwave Signal Processing Using Semiconductor Lasers at Period-one Nonlinear Dynamics Sheng-Kwang Hwang (National Cheng Kung University); Yu-Han Hung (National Cheng Kung University); Kun-Lin Hsieh (National Cheng Kung University);

18:00 Photonic Generation of Linearly Chirped Microwave Signals Using Period-one Dynamics of Semiconductor Lasers

> Chin-Hao Tseng (National Cheng Kung University); Yu-Han Hung (National Cheng Kung University); Sheng-Kwang Hwang (National Cheng Kung University);

18:20 Output Power Enhancement in Photonic-based RF Generation by Optical Pulse Compression with a Dispersion Managed Fiber Reinhard Karembera (Doshisha University); Takashi Yamaguchi (Doshisha University); Hi-

royuki Toda (Doshisha University);

Session 2P12a Advanced Nanomaterials and Nanostructures for Optical-to-Electrical Energy Conversion

Thursday PM, August 2, 2018

Room A4

Organized by Long Wen, Shaolong Wu Chaired by Long Wen, Shaolong Wu

13:00 Applications of ${\rm MoS}_{\bf 2}$ Multi-layer Nanoribbons on In-Invited termediate Band Solar Cell

Shuo-Fan Chen (National Taiwan University); Yuh-Renn Wu (National Taiwan University);

13:20 Modulating Oxygen Vacancy in Sn-doped Hematite

Invited Film Grown on Silicon Microwires for Efficient Photoelectrochemical Water Oxidation Zhongyuan Zhou (Soochow University); Shaolong Wu (Soochow University); Linling Qin (Soochow Univer-

sity); Liang Li (Soochow University); Liujing Li (Soochow University); Xiaofeng Li (Soochow University);

- 13:40 A Facile Solution Procession Technique for Synthesis
- Invited of Ternary Semiconductor Quantum Dots for Applications in Solar Cells

Ming-Way Lee (National Chung Hsing University);

14:00 High-Performance, Ultra-flexible and Transparent Metallic Mesh Electrodes for Solid-state Supercapacitors

Yanhua Liu (Soochow University);

14:20 Hot Electron Harvesting via Photoelectric Ejection Invited and Photothermal Heat Relaxation

Long Wen (Jinan University); Yifu Chen (Jinan University); Li Liang (Jinan University); Qin Chen (Jinan University);

14:40 Bidirectional Absorbers in the Visible Regime Using Invited Bio-inspired Moth-eye Nanostructures

> Su Shen (Soochow University); Yun Zhou (Soochow University); Yanhua Liu (Soochow University); Nan Liu (Soochow University); Shaolong Wu (Soochow University);

15:00 High Performance Photodetector Based on 2D Materials and Ferroelectric Relaxor Polymer Hybrid System

Yan Chen (Shanghai Institute of Technical Physics, Chinese Academy of Sciences); Jianlu Wang (Shanghai Institute of Technical Physics, Chinese Academy of Sciences); Junhao Chu (Shanghai Institute of Technical Physics, Chinese Academy of Sciences);

15:20 High Sensitivity Refractive Index Sensor by Silicongold Core-shell Nanowire Array Based on Plasmonic Resonance and Schottky Junction Linling Qin (Soochow University); Cheng Zhang (Soochow University); Xiaofeng Li (Soochow University);

15:40 Coffee Break

Session 2P12b FocusSession.SC3: Advanced Optofluidics: Photonic Systems for Fluids and Life Science 2

Thursday PM, August 2, 2018

Room A4

Organized by Francesco Simoni, Luigino Criante Chaired by Luigino Criante

16:00 Silicon Photonics Solutions for On-chip Optical Trap-Invited ping and Manipulation

Christophe Pin (Hokkaido University); Claude Renaut (Universite de Bourgogne-Franche Comte); Jean-Baptiste Jager (Universite Grenoble Alpes, CEA, INAC-PHELIQS-SINAPS); Manon Tardif (Universite Grenoble Alpes, CEA, INAC-PHELIQS-SINAPS); Emmanuel Picard (Universite Greno-INAC-PHELIQS-SINAPS); ble Alpes, CEA, David Peyrade (Universite Grenoble Alpes, CNRS); Emmanuel Hadji (Universite Grenoble Alpes, CEA, INAC-PHELIQS-SINAPS); Frederique de Fornel (CNRS, Universite de Bourgogne-Franche Comte); Benoit Cluzel (Institut Carnot de Bourgogne (ICB UMR CNRS 5209));

16:20 Raman Spectroscopy in Microfluidic Systems Invited

> Moritz Matthiae (Technical University of Denmark); Xiaolong Zhu (Technical University of Denmark); Rodolphe Marie (Technical University of Denmark); Anders Kristensen (Technical University of Denmark);

16:40 LSPR Dual Resonance Sensor for a Sensitive Detec-Invited tion of Bacteriophages

M. Rippa (Institute of Applied Sciences and Intelligent Systems "E. Caianiello", CNR); R. Castagna (Institute of Applied Sciences and Intelligent Systems "E. Caianiello", CNR); J. Zyss (LPQM-Ecole Normale Superieurede Cachan); Lucia Petti (Institute of Applied Sciences and Intelligent Systems — ISASI, CNR);

17:00 Microfiber-hollow Fiber-integrated Microfluidic De-Invited vices

Fei Xu (Nanjing University); Xiao Peng Hu (Nanjing University);

17:20 Micro-optics for Microfluidics in Biomedical Applica-Invited tions

Paddy French (EI/EWI, TU Delft);

Session 2P13 FocusSession.SC3.SC5: Advanced Optical Sensing and Imaging for Label-free Biodetection

Thursday PM, August 2, 2018

Room A5

Organized by Yihui Wu, Natan T. Shaked Chaired by Yihui Wu, Natan T. Shaked

13:20 Rapid and Label-free Detection of Anthrax Spores Us-

Invited ing Quantitative Phase Imaging and Deep Learning Yong Keun Park (Korea Advanced Technology of Science and Technology (KAIST));

13:40 Label-free Quantitative Phase Signatures of Cancer Invited Cells

Natan T. Shaked (Tel-Aviv University);

14:00 Raman-activated Droplet Sorting (RADS) for Label-

Invited free High-throughput Screening of Single-cells Xixian Wang (Qingdao Institute of Bioenergy and Bioprocess Technology, Chinese Academy of Sciences); Bo Ma (Qingdao Institute of Bioenergy and Bioprocess Technology, Chinese Academy of Sciences); 14:20 In Situ Finger Prints of Photon Status Parameters in Invited Limited Space Scattering for Biomacromolecule Imag-

ing and Structural Characterization Xuefeng Liu (Nanjing University of Science and Technology);

14:40 Non-diffracting Beams for Imaging through Turbid Invited Media

Yael Roichman (Tel Aviv University); Harel Nagar (Tel Aviv University);

- 15:00 Simulating the Amplitude Pattern in Differential Phase Contrast Microscope by Numerical Simulation Cheng-Wei Ho (National Taiwan University); Snow H. Tseng (National Taiwan University);
- 15:15 Spectral Sensing with High Resolution and Signal-tonoise Ratio Based on Hadamard Transform Mingbo Chi (Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences); Xinxin Han (Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences); Yihui Wu (Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences);

15:40 Coffee Break

16:00 Microfluidic Flow Cytometer with Spark-generated KeynoteMicrobubble Cell Sorter

Jingjing Zhao (Tsinghua University); Zheng You (Tsinghua University);

16:30 Plasmonic Nano-imaging of Intracellular Dynamics Keynoteand Molecular Distribution in a Living Cell Satoshi Kawata (Osaka University);

17:00 A Novel Optofluidic Lab-on-chip Device with Inte-Invited grated Super-resolution Imaging System

Bing Yan (Bangor University); Liyang Yue (Bangor University); James Norman Monks (Bangor University); Owen Guy (Swansea University); Perumal Nithiarasu (Swansea Universit); Feng Jiang (Central South University of Forestry and Technology); Zengbo Wang (Bangor University);

17:20 Realization of Hyperlens Imaging Platform for Highthroughput Super-resolution Imaging Dasol Lee (Pohang University of Science and Technology (POSTECH)); Minkyung Kim (Pohang University of Science and Technology (POSTECH)); Sunae So (Pohang University of Science and Technology (POSTECH)); Jungho Mun (Pohang University of Science and Technology (POSTECH)); Taejun Lee (Pohang University of Science and Technology (POSTECH)); Junsuk Rho (Pohang University of Science and Technology (POSTECH)); 17:40 Label-free Super Resolution Imaging with Or without Invited Evanescent Waves

Yihui Wu (Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences); Wenchao Zhou (Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences); Huaming Xing (Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences); Yongbo Deng (Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences); Yongshun Liu (Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences); Zhou Song (Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences); Sine Mechanics and Physics, Chinese Academy

- 18:00 Titanium Nitride Thin Film and Nanostructure for Label-free Surface Plasmon Resonance Biodetection Guangyu Qiu (City University of Hong Kong); Chen Xu (City University of Hong Kong); Siu Pang Ng (City University of Hong Kong); Chi Man Lawrence Wu (City University of Hong Kong);
- 18:20 Biosensing Based on Fano Resonance in Whispering Gallery Mode Resonators

Yue Wang (Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences); Hong-Chun Zhao (Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences); Yihui Wu (Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences);

Session 2P14 FocusSession.SC2: Topology and PT Symmetry Based Optical Devices

Thursday PM, August 2, 2018 Room A6

Organized by Jian-Wen Dong, Renmin Ma Chaired by Renmin Ma, Jian-Wen Dong

13:00 Topological Edge States in Non-Hermitian Honey-Invited comb CROW Lattices

> Ming-Hui Lu (Nanjing University); Xueyi Zhu (Nanjing University); Samit Kumar Gupta (Nanjing University); Yan-Feng Chen (Nanjing University);

13:20 Generalization of Optical Theorem for Complex Vec-Invited torial Beams

> Alexey V. Krasavin (King's College London); Paulina Segovia (Pedro de Alba S/N Ciudad Universitaria); Rostislav Dubrovka (Queen Mary University of London); Nicolas Olivier (King's College London); Gregory A. Wurtz (King's College London); Pavel B. Ginzburg (ITMO University); Anatoly V. Zayats (King's College London);

13:40 Topologically Protected Condensates and Lasers Invited

Henning Schomerus (Lancaster University);

 $14{:}00~$ Spin Orbital Coupling of Light with 2D and 3D Meta-Keynote materials

Shuang Zhang (University of Birmingham);

14:30 Quantum Spin Hall Effect Analog for Vortices in an Invited Interacting Bosonic Quantum Fluid

Dmitry Solnyshkov (Universite Clermont-Auvergne, CNRS); Olivier Bleu (Universite Clermont-Auvergne, CNRS); Guillaume Malpuech (Universite Clermont-Auvergne, CNRS);

14:50 High Order Topological Insulators Based on Acoustic Invited Kagome Lattices

Haoran Xue (Nanyang Technological University); Fei Gao (Nanyang Technological University); Baile Zhang (Nanyang Technological University);

15:10 Realization of Topologically Robust Transport and

Invited Photonic Routing in Silicon-on-insulator Valley Photonic Crystals

> Xin-Tao He (Sun Yat-Sen University); En-Tao Liang (Sun Yat-Sen University); Jia-Jun Yuan (Sun Yat-Sen University); Jian-Wen Dong (Sun Yat-Sen University);

15:40 Coffee Break

16:00 Manipulation of Chiral Edge States in Photonic Chern Invited Insulators with Pseudospin

> Zeguo Chen (King Abdullah University of Science and Technology); Ying Wu (King Abdullah University of Science and Technology (KAUST)); Xiao Hu (National Institute for Materials Science);

16:20 Observation of Polarization Vortices in Momentum Invited Space

Yiwen Zhang (Fudan University); Ang Chen (Fudan University); Wenzhe Liu (Fudan University); Chia Wei Hsu (Yale University); Bo Wang (Fudan University); Fang Guan (Fudan University); Xiaohan Liu (Fudan University); Lei Shi (Fudan University); Ling Lu (Institute of Physics, Chinese Academy of Sciences); Jian Zi (Fudan University);

- 16:40 Silicon Nitride Waveguide Based Optical Vortex Emit-Invited ter
 - Zengkai Shao (Sun Yat-sen University); Jiangbo Zhu (University of Bristol); Yanfeng Zhang (Sun Yat-sen University); Yujie Chen (Sun Yat-sen University); Siyuan Yu (Sun Yat-sen University);
- 17:00 PT-symmetry and Radiative Surface Modes in Gyro-Invited magnetic/Gyroelectric Photonic Boundaries
- Jin Wang (Southeast University); Kai Fung Lee (The Hong Kong Polytechnic University); Kin Hung Fung (The Hong Kong Polytechnic University);
- 17:20 hiral-reversing Single Emitter Radiation by Eigen-Invited states Phase Locking
 - Xing-Yuan Wang (Peking University); Hua-Zhou Chen (Peking University); Suo Wang (Peking University); Li Ge (City University of New York); Shuang Zhang (University of Birmingham); Renmin Ma (Peking University);
- 17:40 Conjectural PT Symmetry Breaking for Switchable Lasing Anti-lasing of a Two Dimensional Arrayed Nanoparticle System James Norman Monks (Bangor University); Bing Yan (Bangor University); Rakesh Dhama (Bangor University); Liyang Yue (Bangor University); Zengbo Wang (Bangor University);
- 17:55 Tunable Coalescence of Exceptional Points in PT-symmetric Waveguides
 Jin Wang (Southeast University); Hui Yuan Dong (Nanjing University of Posts and Telecommunications); Qian Yi Shi (Southeast University); Zheng-Gao Dong (Southeast University); Kin Hung Fung (The Hong Kong Polytechnic University);
- 18:10 Brewster-tilted Tamm Plasmon-polariton with Tunable Q Factor

Pavel Sergeevich Pankin (Siberian Federal University); Jhen-Hong Yang (National Chiao-Tung Univesity); Bing-Ru Wu (National Chiao-Tung Univesity); Kuo-Ping Chen (National Chiao-Tung University); Stepan Yakovlevich Vetrov (Siberian Federal University); Ivan Vladimirovich Timofeev (Siberian Federal University); Almas Fattakhovich Sadreev (L. V. Kirensky Institute of Physics); Session 2P15a SC3: Photonic Microstructures/Nanostructures and Their Applications

Thursday PM, August 2, 2018 Room A7 Organized by Masayuki Fujita, Kengo Nozaki

Chaired by Masayuki Fujita, Kengo Nozaki

13:20 Evolution of High-speed Plasmonic Modulators from Invited SOI to (Almost) Any Substrate

- Yuriy Fedoryshyn (Institute of Electromagnetic Fields (IEF), ETH Zurich); W. Heni (Institute of Electromagnetic Fields (IEF), ETH Zurich); B. Baeuerle (Institute of Electromagnetic Fields (IEF), ETH Zurich); A. Josten (Institute of Electromagnetic Fields (IEF), ETH Zurich); C. Haffner (Institute of Electromagnetic Fields (IEF), ETH Zurich); C. Hoessbacher (Institute of Electromagnetic Fields (IEF), ETH Zurich); M. Ayata (Institute of Electromagnetic Fields (IEF), ETH Zurich); U. Koch (Institute of Electromagnetic Fields (IEF), ETH Zurich); Y. Salamin (Institute of Electromagnetic Fields (IEF), ETH Zurich); D. L. Elder (University of Washington); Larry R. Dalton (University of Washington); Juerg Leuthold (Institute of Electromagnetic Fields (IEF), ETH Zurich);
- 13:40 Ultrahigh-Q/V H1 Slotted Photonic Crystal Nanocavity for Bio-sensing Application
 Eiichi Kuramochi (NTT Corporation); Haiqi Wen (NTT Corporation); Shota Kita (NTT Corporation); Akihiko Shinya (Nippon Telegraph & Telephone Corp); Masaya Notomi (NTT Corporation);
- 14:00 Photolithographically Fabricated Silicon Photonic Crystal Nanocavity Photoreceiver with a Laterally Integrated **pin** Diode Nurul Ashikin Binti Daud (Keio University); Tomohiro Tetsumoto (Keio University); Takasumi Tanabe (Keio University);

14:20 InP-on-SOI Photonic Crystal-based Nano Optoelec-Invited tronic Devices

D. Fitsios (Universite Paris Saclay); D. Sanchez (Universite Paris Saclay); G. Crosnier (Universite Paris Saclay); F. Manegatti (Universite Paris Saclay); S. Bouchoule (Universite Paris Saclay); I. Sagnes (Universite Paris Saclay); R. Raj (Universite Paris Saclay); Fabrice Raineri (Universite Paris Saclay);

- 14:40 Numerical Simulation of Highly Efficient Terahertz Wave Generation in a Low-group-velocity and Lowdispersion 2D GaAs Photonic Crystal Waveguide Teruyuki Nakahama (Wakayama University); Nobuhiko Ozaki (Wakayama University); Hisaya Oda (Chitose Institute of Science and Technology); Naoki Ikeda (National Institute for Materials Science); Yoshimasa Sugimoto (National Institute for Materials Science);
- 15:00 Terahertz Luneburg Lens Antenna with Photonic Crystal Waveguide Daniel Headland (The University of Adelaide); Ryoumei Yamada (Osaka University); Withawat Withayachumnankul (The University of Adelaide); Masayuki Fujita (Osaka University); Tadao Nagatsuma (Osaka University);
- 15:20 Photonic Crystal Resonators for Terahertz Sensing Invited Applications

Stephen M. Hanham (University of Birmingham); Clare Watts (Imperial College London); Munir M. Ahmad (Imperial College London); William J. Otter (Imperial College London); Stepan Lucyszyn (Imperial College London); Norbert Klein (Imperial College London);

15:40 Coffee Break

Session 2P15b SC5: Visualization of Electromagnetic Fields and Waves

Thursday PM, August 2, 2018

Room A7

Organized by Satoshi Yagitani, Aya Ohmae Chaired by Satoshi Yagitani

16:00 AC Magnetic Field Projection with Atomic Magnetometer

Shuji Taue (Okayama University); Yoshitaka Toyota (Okayama University);

- 16:20 A High Flexibility Near-field Electromagnetic Visibility System Takeshi Ishida (Noise Laboratory Co., Ltd.);
- 16:40 Measurement of Two-dimensional Power and Phase Distributions of Radio Waves Takuya Tsubota (Kanazawa University); Naoki Tonooka (Kanazawa University); Hiro-

humi Segawa (Kanazawa University); Satoshi Yagitani (Kanazawa University); Tomohiko Imachi (Kanazawa University); Mitsunori Ozaki (Kanazawa University);

17:00 In-situ Visualization System for Radio Waves Using a Head-mounted Display

Hirohumi Segawa (Kanazawa University); Takuya Tsubota (Kanazawa University); Naoki Tonooka (Kanazawa University); Atsuya Sakano (Kanazawa University); Satoshi Yagitani (Kanazawa University); Mitsunori Ozaki (Kanazawa University); Tomohiko Imachi (Kanazawa University);

17:20 Near-field Terahertz Imaging Using Bi₂FeCrO₆ (BFCO) Thin-film Sensor
Francois Blanchard (École de Technologie Superieure (ÉTS)); Riad Nechache (École de Technologie Superieure (ÉTS)); Ryoichi Sakata (Kyoto University); Fatemeh Amirkhan (École de Technologie Superieure (ÉTS)); Kenji Takiguchi (Kyoto University); T. Arikawa (Kyoto University); Koichiro Tanaka (Kyoto University);

- 17:40 Real-time 5G Radio Wave Visualizer Tetsuro Imai (NTT DOCOMO INC.); Minoru Inomata (NTT DOCOMO INC.); Yukihiko Okumura (NTT DOCOMO INC.);
- 18:00 Radio Environment Visualization and Metamaterialinspired Compact Antenna Systems Yasuhiko Matsunaga (NEC Corporation); Masaki Kitsunezuka (NEC Corporation); Kenta Tsukamoto (NEC Corporation); Kazuaki Kunihiro (NEC Corporation); Keishi Kosaka (NEC Corporation); Eiji Hankui (NEC Corporation); Hiroshi Toyao (NEC Corporation);

Session 2P16 SC4: Recent Diagnostic and Therapeutic Applications of Microwaves

Thursday PM, August 2, 2018 Room A8

Organized by Lorenzo Crocco, Koichi Ito Chaired by Lorenzo Crocco, Koichi Ito

13:20 Feasibility of Quantitative Mapping of Microscopic Cerebrospinal Fluid Motion Based on Q-space Imaging

> Kenta Maruyama (Tokai University); Takayoshi Kamata (Tokai University); Yu Hattori (Tokai University); Ayane Yoshida (Tokai University); Kaya Murakami (Tokai University); Mitsunori Matsumae (Tokai University School of Medicine); Hideki Atsumi (Tokai University School of Medicine); Kagayaki Kuroda (Tokai University);

- 13:40 Two-channel Bioradar for Stress Monitoring Lesya N. Anishchenko (Bauman Moscow State Technical University); Vladimir V. Razevig (Bauman Moscow State Technical University);
- 14:00 Performance Evaluations of Surgical Snare Using Microwave Energy Masashi Sugiyama (Chiba University); Kazuyuki Saito (Chiba University);
- 14:20 Microwave Thermal Ablation near Metallic Bronchial Prostheses: Numerical Models and Experiments Lorenzo Capineri (Università di Firenze); Mattia Dimitri (Università di Firenze); Guido Biffi Gentili (Università degli Studi di Firenze);
- 14:40 Monitoring Ablation Treatments via Microwave Tomography: Towards an Experimental Proof Rosa Scapaticci (Institute for Electromagnetic Sensing of the Environment); Marta Cavagnaro (Universita degli Studi di Roma "La Sapienza"); Vanni Lopresto (Research Center ENEA Casaccia); Rosanna Pinto (ENEA); Lorenzo Crocco (CNR — National Research Council of Italy);
- 15:00 Towards Optimization of Open Ended Contact Probes for Breast Cancer Diagnosis Tuba Yilmaz (Istanbul Technical University);

15:40 Coffee Break

16:00 A Novel Bending U-shaped Metal Strip Design on RF Tracking Tag with a High-level Isolation for Minimally Invasive Surgery Applications Yuan-Chih Lin (Metal Industries Research & Development Centre); N. J. An (Metal Industries Research & Development Centre); H. A. Tsai (Metal Industries Research & Development Centre); S. C. Chen (Metal Industries Research & Development Centre);

16:20 Wireless ECG Patient Monitoring System Performance Aimed at Off-/On-body Communications Basari (Universitas Indonesia); M. Anugrah Agung (Universitas Indonesia);

16:40 RF Electrical Detection and Characterization of Exosomes Released from Epstein-Barr Virus Infected and Uninfected Cells Mahmoud Al Ahmad (United Arab Emirates Uni-

versity); Waqar Ahmed (UAE University); Gulfaraz Khan (UAE University); Session 2P17 FocusSession.SC1: Kohei Hongo Memorial Session

Thursday PM, August 2, 2018 Room A9

Organized by Andrey V. Osipov, Kazuya Kobayashi Chaired by Andrey V. Osipov, Kazuya Kobayashi

13:20 Diffraction Study with Prof. Kohei Hongo Keynote

Hiroshi Shirai (Chuo University);

13:50 Late Professor Kohei Hongo and His Research Style Keynotein Electromagnetic Community

Masahiro Hashimoto (Osaka Electro-Communication University);

14:20 Solving Electrically Large Electromagnetic Scattering KeynoteProblems by Hybridizing Numerical and Asymptotic Techniques Raj Mittra (University of Central Florida); Chao Li (University of Jinan);

14:50 Mathematical Analysis of Electromagnetic Guided KeynotePropagation and Scattering in Millimeter-wave and Optical Fields

Yasumitsu Miyazaki (Aichi University of Technology);

15:40 Coffee Break

16:00 Expression of the Electromagnetic Field near a Caus-Invited tic

Akira Komiyama (Osaka Electro-Communication University);

16:20 Extreme Properties of Electromagnetic Scattering Invited from Impedance-matched Bodies

Andrey V. Osipov (Microwaves and Radar Institute, German Aerospace Center (DLR));

16:40 High-frequency Diffraction Theory with Professor Invited Hongo as Memory

Hirokazu Kobayashi (Osaka Institute of Technology);

- $17{:}00~$ Diffraction by a Finite Parallel-plate Waveguide with
- Invited Material Loading: A Review on the Wiener-Hopf Analysis

Kazuya Kobayashi (Chuo University);

17:20 Transmission Resonance Phenomena for a Narrow Invited Rectangular Slot in Thick Conducting Screen

Kyoung-Je Park (Kyungpook National University); Young-Ki Cho (Kyungpook National University); 17:40 Diffraction by Multiple Rectangular Holes in a Thin Invited Conducting Screen — Calculation of Double Infinite Integrals for the Bessel Functions

> Hirohide Serizawa (Numazu National College of Technology); Yukito Takahashi (National Institute of Technology, Numazu College);

Session 2P18a Biological Effects of EM Fields

Thursday PM, August 2, 2018

Room A10

Organized by Jan Vrba Chaired by Jan Vrba

13:00 Selective Chemotherapy: Directing Chemotherapeutic Agents to Cancer Cells with Noninvasively Applied High Peak Power, Low Duty Cycle Radiofrequency or Microwave Pulsing

Fred Sterzer (MMTC, Inc.);

- 13:20 Research of Biological Effects of EM Field in Microwave Frequency Band
 Jan Vrba (Czech Technical University in Prague);
 Jan Vrba, Jr. (Czech Technical University in Prague);
 David Vrba (Czech Technical University in Prague);
 Ilja Merunka (Czech Technical University in Prague);
 Ondrej Fiser (Czech Technical University in Prague);
- 13:40 A Co-design of Current Reuse RFPA and Compact Spiral Printed Antenna
 Ayman M. Ismaiel (Egypt-Japan University of Science and Technology); Abdelrhman Sabry (Egypt-Japan University of Science and Technology); Ahmed Allam (Egypt-Japan University of Science and Technology); Adel B. Abdel-Rahman (South Valley University);
- 14:00 Microwave Radiation from Mobile Phone Base Transceiver Stations May Disrupt Rest-activity Rhythm and Sleep Quality in Humans: A Preliminary Study

Margaret Messiah Singh (Pt. Ravishankar Shukla University); Priyanka Chandel (Pt. Ravishankar Shukla University); Arti Parganiha (Pt. Ravishankar Shukla University); Atanu Kumar Pati (Pt. Ravishankar Shukla University);

14:20 Does Exposure to Radiation from Mobile Phone Towers Affect Sleep and Cognition in Humans? Results from a Pilot Field Study

Priyanka Chandel (Pt. Ravishankar Shukla University); Margaret Messiah Singh (Pt. Ravishankar Shukla University); Arti Parganiha (Pt. Ravishankar Shukla University); Atanu Kumar Pati (Pt. Ravishankar Shukla University);

14:40 The Value of Phase Angle in Electrical Impedance Tomography Breath Detection

> Davood Khodadad (Linnaeus University); Sven Nordebo (Linnaeus University); Nima Seifnaraghi (Middlesex University); Rebecca Yerworth (University College London); Andreas D. Waldmann (Swisstom AG); Beat Muller (Swisstom AG); Inez Frerichs (University Medical Centre Schleswig-Holstein); Anton van Kaam (Emma Children's Hospital, Academic Medical Center); Martijn Miedema (Emma Children's Hospital, Academic Medical Center); Richard Bayford (Middlesex University);

- 15:00 Monopole Antenna Array with Individual Shields for Ultra High Field Magnetic Resonance Imaging A. S. M. Zahid Kausar (University of Queensland); David C. Reutens (University of Queensland); Ewald Weber (The University of Queensland); Viktor Veqh (University of Queensland);
- 00:00 The Biological Effects of 2.45 GHz Microwaves on Bacterial and Yeast Cells Evans Kwame Ahortor (Cardiff University); Adrian Porch (Cardiff University); Leslie Baillie (Cardiff University);
- 15:40 Coffee Break

Session 2P18b FocusSession.SC2&SC3: Light Manipulation and Micro-/Nano-structured Optoelectronic Devices 1

> Thursday PM, August 2, 2018 Room A10 Organized by Liu Yang, Yoichi Okuno

Chaired by Liu Yang, Yoichi Okuno

16:00 Nonlinear Kerr-optics with Plasmonic Nanorod Meta-Invited materials

Luke H. Nicholls (King's College London); Andrers D. Neira (King's College London); Francisco J. Rodriguez Fortuno (King's College London); Mazhar E. Nasir (King's College London); Alexey V. Krasavin (King's College London); Gregory A. Wurtz (King's College London); Anatoly V. Zayats (King's College London); 16:20 Strong Coupling between Fabry-Pérot Nanocavity Invited and Localized Surface Plasmon Resonance and Its Application for Water Splitting

Xu Shi (Hokkaido University); Kosei Ueno (Hokkaido University); Tomoya Oshikiri (Hokkaido University); Quan Sun (Hokkaido University); Keiji Sasaki (Hokkaido University); Hiroaki Misawa (Hokkaido University); 4

5

6

7

8

9

16:40 Surface Modification and Structure Design of Per-Invited ovskite Solar Cells

Dong Wei (North China Electric Power University); Meicheng Li (North China Electric Power University);

17:00 Nanostructured Solar Energy Harvesting Devices: Invited From Photovoltaics to Nanorectennas

- Joao Cunha (Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences); Remo Proietti Zaccaria (Istituto Italiano di Tecnologia);
- 17:20 Nanostructured Solar Selective Absorbers Invited

Liu Yang (Zhejiang University); Kequn Chi (Zhejiang University); Sailing He (Zhejiang University);

Session 2P0 Poster Session 2

Thursday PM, August 2, 2018 14:00 PM - 17:00 PM Room Foyer

1 Force Analysis of Small-scale Unmanned Rotorcraft for Transmission Line Inspection

Zhe Yuan (Huazhong University of Science and Technology); Qizheng Ye (Huazhong University of Science and Technology); Zhuang Liu (China Electric Power Research Institute); Guiwei Shao (China Electric Power Research Institute);

- 2 Shuffled Structure for 4.225 GHz Antireflective Plates: A Proposal Proven by Numerical Simulation Shin-Ku Lee (National Cheng Kung University); Mingtsu Ho (Wu Feng University);
- 3 Three-dimensional Electromagnetic Modeling Using Volume Integral Equation with Curved Hexahedron Basic Function

Jinghe Li (Guilin University of Technology); Honghua Wang (Guilin University of Technology); Zhi Zhang (Guilin University of Technology); Yuzeng Lv (Guilin University of Technology); Yanli Ding (Guilin University of Technology); Minling Wang (Guilin University of Technology); Local and Macroscopic Applications of a Four-flux Monte Carlo Model

E. De la Hoz (University of Cantabria); Rodrigo Alcaraz de la Osa (Universidad of Cantabria); Dolores Ortiz Marquez (University of Cantabria); Jose Maria Saiz Vega (Universidad de Cantabria); Fernando Moreno (University of Cantabria); Francisco Gonzalez (University of Cantabria);

A Modified Method for Measuring the Faraday Rotation Angle Wenli Yu (Beihang University); Zhaolong Qiao (Beihang University); Xiuzhu Ye (Beihang University);

Data Augmentation Using Conditional GANs for Facial Emotion Recognition Wei Yi (Zhejiang University); Yaoran Sun (Zhejiang University); Sailing He (Zhejiang University);

Ming Bai (Beihang University);

- An Efficient Face Recognition Algorithm Based on Deep Learning for Unmanned Supermarket Fozhi Zhou (Tongji University); Guo Chun Wan (Tongji University); Yong Kang Kuang (Tongji University); Mei Song Tong (Tongji University);
- Efficient Data Record System for Radio Backend Shaoguang Guo (Shanghai Astronomical Observatory, Chinese Academy of Science); Zhijun Xu (Shanghai Astronomical Observatory, Chinese Academy of Science);
- Pre-processing VDIF Data in FPGA Jiangying Gan (Shanghai Astronomical Observatory, Chinese Academy of Science); Zhijun Xu (Shanghai Astronomical Observatory, Chinese Academy of Science);
- 10 A Novel Extraction Method for Melodic Features from MIDI Files Based on Probabilistic Graphical Models Lan Chen (Shanghai Institute of Technology); Ying Jie Ma (Shanghai Institute of Technology); Jun Zhang (Shanghai Institute of Technology); Guo Chun Wan (Tongji University); Mei Song Tong (Tongji University);
- 11 Model Calculations for Hardware Correlator at SHAO Jiangying Gan (Shanghai Astronomical Observatory, Chinese Academy of Science); Zhijun Xu (Shanghai Astronomical Observatory, Chinese Academy of Science);

12 Behavior of Ferrite via Holes in Substrate Integrated Waveguide (SIW) Structure Wissal Elahmar (Ecole Nationale D'ingenieur De Tunis); Noemen Ammar (University of Tunis el Manar); Taoufik Aguili (University of Tunis El Manar (UTM));

- 13 Evolution of Azimuthally-variant Polarized Beams in a Strongly Nonlocally Nonlinear Medium Caixia Liu (Zhejiang Sci-Tech University); Xiaoyu Zhang (Zhejiang Sci-Tech University); Zhongxing Wang (Zhejiang Sci-Tech University); Huiwen Zhu (Zhejiang Sci-Tech University); Rui Pin Chen (Zhejiang Sci-Tech University);
- 14 Discussion on Atmospheric Dielectric Barrier Discharge of Nitrogen Zhuwen Zhou (Key Laboratory of Photoelectron Materials Design and Simulation in Guizhou Province); Xinfeng Diao (Guizhou Education University); Gaofu Liu (Guizhou Education University); Zhou Lu (Guizhou Education University);
- 15 Propagation and Collapse of a Vector Beam with Radially-variant States of Polarization in a Kerr Mediun

Zhongxing Wang (Zhejiang Sci-Tech University); Xiaoyu Zhang (Zhejiang Sci-Tech University); Caixia Liu (Zhejiang Sci-Tech University); Huiwen Zhu (Zhejiang Sci-Tech University); Rui Pin Chen (Zhejiang Sci-Tech University);

- 16 Analytical Study of Microstrip Bandpass Filter by Using Single- and Dual-mode Resonators Yuta Ishikawa (National Institute of Technology, Kisarazu College); Kosei Tanii (National Institute of Technology, Kisarazu College); Takanobu Ohno (Kisarazu National College of Technology); Masahiro Uehara (National Institute of Technology, Kisarazu College);
- 17 Waveguide BPF Composed of Dielectric Frequency Selective Structure with High Suppression of Spurious Mode Hardi Nusantara (Institut Teknologi Bandung); Amanda Argadinata Ginting (Institut Teknologi Bandung); Mohammad Ridwan Effendi (Institut Teknologi Bandung); Achmad Munir (Institut Teknologi Bandung);
- 18 Single-cut Near-field Far-field Transformation Employing Two-dimensional Plane-wave Expansion Shuntaro Omi (Tokyo University of Agriculture and Technology); Takuji Arima (Tokyo University of Agriculture and Technology); Toru Uno (Tokyo University of Agriculture and Technology);

19 Highly Efficient Ultrathin Metalens for Microwave Regime

> Yumna Siddique (Information Technology University (ITU)); Muhammad Qasim Mehmood (Information Technology University (ITU)); Muhammad Mahmood Ali (Ghulam Ishaq Khan Institute of Engineering Sciences and Technology); Ahsan Sarwar Rana (Information Technology University (ITU)); Muhammad Zubair (Information Technology University of the Punjab);

20 Design Optimization of RF-MEMS Based Multiband Reconfigurable Antenna Using Response Surface Methodology

> Fatima Akhtar (National University of Sciences and Technology (NUST)); Muhammad Mubasher Saleem (National University of Science and Technology (NUST)); Muhammad Zubair (Information Technology University (ITU)); Mashhood Ahmad (National University of Science and Technology (NUST));

21 Indoor Localization System Using Commensal Radar Principle

Santu Sardar (Indian Institute of Technology Hyderabad); Ravi Sharan B A G (Indian Institute of Technology Hyderabad); Prabhat Kumar Rai (Indian Institute of Technology Hyderabad); Gautam Kumar (Indian Institute of Technology Hyderabad); Mohammed Zafar Ali Khan (Indian Institute of Technology); Amit Kumar Mishra (University of Cape Town);

22 An Improved Successive-cancellation Decoding Algorithm for Polar Code Based on FPGA Yi Chen (Tongji University); Zi Wei Xia (Tongji University); Ling Yi Tang (Tongji University); Guo Chun Wan (Tongji University); Mei Song Tong (Tongji University);

- 23 Study of NLMS Algorithm Used in the Cancellation of Navigation Interference in the H_I Observation Zhan Wang (National University of Defense Technology); Shuang-Xun Li (National University of Defense Technology);
- 24 Improved Electromagnetic Compatibility Design for Printed Circuit Board of Automobile Atmosphere Lamp

Chen Chen (Tongji University); Zi Wei Xia (Tongji University); Guo Chun Wan (Tongji University); Mei Song Tong (Tongji University);

25 Next Approach of HEMS WPT Takashi Yoshikawa (Kindai University Technical College); Yuuki Kamuro (Kindai University Technical College); 26 3-Dimensional Trap Split in Nonlinear Optical Trapping of Gold Nanoparticles

Lu Huang (Institute of Genetics and Developmental Biology, Chinese Academy of Sciences); Yunfeng Jin (South China Normal University); Hao Shi (Institute of Genetics and Developmental Biology, Chinese Academy of Sciences); Yaqiang Qin (Institute of Genetics and Developmental Biology, Chinese Academy of Sciences); Liantuan Xiao (Shanxi University); Yuqiang Jiang (Institute of Genetics and Developmental Biology, Chinese Academy of Sciences);

 Numerical Study of Hyperthermia Applicator System for Tumor Treatment in Head and Neck Region
 Ondrej Fiser (Czech Technical University in Prague);
 Ilja Merunka (Czech Technical University in Prague);
 Jan Vrba (Czech Technical University in Prague);

28 An Interference EMG Model of Selected Water Samples Pavel Fiala (Brno University of Technology); K. Bartusek (Brno University of Technology); Tibor Bachorec (Brno University of Technology); Premysl Dohnal (Brno University of Technology);

- 29 The Dispersion Properties of 3D Nonlinear Woodpile Plasma Photonic Crystals Hai Feng Zhang (Nanjing University of Aeronautics and Astronautics); Yong-Diao Wen (Nanjing University of Aeronautics and Astronautics); Ling-Ling Wang (Nanjing University of Aeronautics and Astronautics);
- 30 Algorithms for Flying Object Detection Jiri Janousek (Brno University of Technology); Josef Novotny (Brno University of Technology); Petr Marcon (Brno University of Technology); Anna Siruckova (Saint Leo University); Radim Kadlec (Brno University of Technology);
- 31 Formation of Ray Trajectories of HF Radiowaves in Midlatitude and Highlatitude Ionosphere during Halloween Storm 2003 According to Radiotomography Data Elena S. Andreeva (M. V. Lomonosov Moscow

State University); I. A. Nesterov (M. V. Lomonosov Moscow Moscow State University); M. O. Nazarenko (M. V. Lomonosov Moscow State University); A. M. Padokhin (Lomonosov Moscow State University); Nikita Alekseyevich Tereshin (Lomonosov Moscow State University); M. A. Annenkov (M. V. Lomonosov Moscow State University);

32 X₋ CO2 Retrieval from OCO-2 Using the Yonsei Carbon Retrieval Algorithm

> Jaemin Hong (Yonsei University); Yeonsin Jung (Harvard-Smithsonian Center for Astrophysics); Woogyoung Kim (Goddard Space Flight Center, National Aeronautics and Space Administration); Jhoon Kim (Yonsei University); Harmut Boesch (University of Leicester); Tae-Yonug Goo (National Institute of Meteorological Sciences);

33 Multiple-bounce Modeling of High-rise Buildings with Airborne Tomography Array

> Ruichang Cheng (Institute of Electronics, Chinese Academy of Science); Xingdong Liang (Institute of Electronics, Chinese Academy of Sciences); Fubo Zhang (Institute of Electronics, Chinese Academy of Sciences); Long-Yong Chen (Institute of Electronics, Chinese Academy of Sciences);

34 Estimation of Spatial Structure of Sporadic E Layer Observed by Sounding Rocket with 2-dimensional FDTD Simulations

> Taketoshi Miyake (Toyama Prefectural University); Koshiro Minami (Toyama Prefectural University); Keigo Ishisaka (Toyama Prefectural University);

Optimal Algorithms for Statistical Decisions for Small-volume Samples Ferdenant A. Mkrtchyan (V. A. Kotelnikov's Insti-

tute of Radioengineering and Electronics, Russian Academy of Sciences);

- Active and Passive Remote Sensing on Lightning and Precipitation Activities around Toyama Bay, Japan Takeshi Morimoto (Kindai University); Makoto Tojyo (Kindai University); Yoshitaka Nakamura (Kobe City College of Technology); Fumiya Beniya (University of Toyama); Hideo Sakai (University of Toyama); Masahito Shimizu (Chubu Electric Power Co., Inc.); Kodai Nagata (Chubu Electric Power Co., Inc.);
- 37 The Study of Composite Scattering from the Target over a Randomly Rough Surface Using SAR/ISAR Imaging

Pengcheng Gao (Shanghai Key Laboratory of Electromagnetic Environmental Effects for Aerospace Vehicle); Zichang Liang (Science and Technology on Electromagnetic Scattering Laboratory); Dandan Gu (Science and Technology on Electromagnetic Scattering Laboratory); Ming Feng (Science and Technology on Electromagnetic Scattering Laboratory);

ISAR Imaging Based on Single Layer Block Sparse Smoothed L0 Norm Recovery Algorithm Junjie Feng (Nanjing University of Aeronautics and Astronautics); Mingzhe Hu (Liupanshui Normal University);

38

35

36

ture;

39 Scattering Characteristics of Vortex Electromagnetic Waves for a Wedge

Xiangxi Bu (Institute of Electronics, Chinese Academy of Sciences); Xingdong Liang (Institute of Electronics, Chinese Academy of Sciences); Zhuo Zhang (Institute of Electronics, Chinese Academy of Sciences); Long-Yong Chen (Institute of Electronics, Chinese Academy of Sciences); Haibo Tang (Institute of Electronics, Chinese Academy of Sciences); Zheng Zeng (Institute of Electronics, Chinese Academy of Sciences);

- 40 Scattering of Infrared Light by Charged Microparticles with Dynamic Properties Induced by Varying Electric Fields Tatsuki Hangai (The University of Shiga Prefecture); Manami Iga (The University of Shiga Prefecture); Shigeyuki Miyagi (The University of Shiga Prefecture); Osamu Sakai (The University of Shiga Prefec-
- 41 Application of the RK4IP Method for the Numerical Study of Noise-like Pulses in Supercontinuum Generation

Juan C. Hernandez-Garcia (Universidad de Guanajuato); Julian M. Estudillo-Ayala (Universidad de Guanajuato); Olivier Pottiez (Centro de Investigaciones en Optica); Jesus P. Lauterio-Cruz (Universidad de Guanajuato); Jose D. Filoteo-Razo (Universidad de Guanajuato); Jose R. Martinez-Angulo (Universidad de Guanajuato); Carlos M. Carrillo-Delgado (Universidad de Guanajuato); Daniel Jaregui-Vazquez (Universidad de Guanajuato); Juan M. Sierra-Hernandez (Universidad de Guanajuato); Roberto Rojas-Laguna (University of Guanajuato);

42 Numerical Analysis of Chaotic Dynamics Produced in a Photonic Crystal Fibers

Jose D. Filoteo-Razo (Universidad de Guanajuato); Juan C. Hernandez-Garcia (Universidad de Guanajuato); Julian M. Estudillo-Ayala (Universidad de Guanajuato); Olivier Pottiez (Centro de Investigaciones en Optica); Jesus P. Lauterio-Cruz (Universidad de Guanajuato); Carlos M. Carrillo-Delgado (Universidad de Guanajuato); Jose R. Martinez-Angulo (Universidad de Guanajuato); Daniel Jaregui-Vazquez (Universidad de Guanajuato); Juan M. Sierra-Hernandez (Universidad de Guanajuato); Roberto Rojas-Laguna (University of Guanajuato);

- 43 Precise Measurement of Complex Permittivity for High-k Dielectrcs and Liquids Hsien-Wen Chao (National Tsing Hua University); Yen-Ren Chen (National Tsing-Hua University); Tsun-Hun Chang (National Tsing Hua University);
- Ultra-broadband Metasurface Absorbers
 Tomoyuki Nakasha (Nagoya Institute of Technology); K. Asano (Nagoya Institute of Technology); D. Ushikoshi (Nagoya Institute of Technology);
 J. Long (University of California); D. F. Sievenpiper (University of California); Hiroki Wakatsuchi (Nagoya Institute of Technology);
- 45 Analysis of High-speed Moving Metamaterials Using the Lorentz-FDTD Method Yan Zhao (Chulalongkorn University); S. Chaimool (Chulalongkorn University);
- 46 Optical Bistability in Nonlocal Core-shell Structure Yang Huang (Jiangnan University); Wenping Fan (Jiangnan University); Lei Gao (Soochow University);

47 A Novel Metamaterial Rasorber Based on Threedimensional Structure Ling-Ling Wang (Nanjing University of Aeronautics and Astronautics); Hai Feng Zhang (Nanjing University of Posts and Telecommunications); Yong-Diao Wen (Nanjing University of Aeronautics and Astronautics); Wenyu Li (Nanjing University of Aeronautics and Astronautics);

- 48 Surface Waves on Hyperbolic Metamaterials Ruey-Lin Chern (National Taiwan University);
- 49 Application of Finite-difference Frequency-domain Method to Study Photonic Crystals and Metamaterial Composites Takamichi Terao (Gifu University);
- 50 Design of Dual-band Waveform-selective Metasurfaces Daisuke Nita (Nagoya Institute of Technology);
 K. Asano (Nagoya Institute of Technology);
 D. Ushikoshi (Nagoya Institute of Technology);
 Hiroki Wakatsuchi (Nagoya Institute of Technology);

51 Manipulation of Microwave Propagation in and around Cylindrical Plasma with Additional Anisotropic Layers Yuki Kabe (The University of Shiga Prefecture); Syuhei Yamaguchi (The University of Shiga Prefecture); Alexandre Bambina (The University of Shiga Prefecture); Akinori Iwai (Kyoto University); Shigeyuki Miyagi (The University of Shiga Prefecture); Osamu Sakai (The University of Shiga Prefecture); versity);

- 52 Classification and Properties of Modes in Bragg 58
 Fibers
 Tongqing Liao (Anhui University); Chuan-Feng Zhang
 (Anhui University); Tiezhen Jiang (Anhui University); Pei-Jun Cai (Jianghuai College of Anhui Uni-
- 53 Ultrasensitive Detection of Gaseous Compounds Using Cavity Enhanced Laser Spectroscopy Jacek Wojtas (Military University of Technology); Zbigniew Bielecki (Military University of Technology); T. Stacewicz (Military University of Technology); J. Mikolajczyk (Military University of Technology); Beata Rutecka (Military University of Technology); Dariusz Szabra (Military University of Technology); Miroslaw Nowakowski (Military University of Technology); A. Prokopiuk (Military University of Technology); R. Medrzycki (Military University of Technology);

54 Inverse Synthetic Aperture Ladar Imaging Algorithm for Space Maneuvering Target Using Synchrosqueezing Short-time Fourier Transform Yakun Lv (Space Engineering University); Yanhong Wu (Space Engineering University); Hongyan Wang (Space Engineering University); Lei Qiu (Space Engineering University);

55 Radio-optical Wireless Communications Janusz Mikolajczyk (Military University of Technology); Dariusz Szabra (Military University of Technology); Zbigniew Bielecki (Military University of Technology); Jacek Wojtas (Military University of Technology);

56 Analysis of Spectrum Properties of Integrated Optical Chips Applied on IFOG Junjie Yao (Zhejiang University); Ke Li (Zhejiang University); Bei Li (Zhejiang University); Chenge Wang (Zhejiang University); Kan Chen (Zhejiang University); Xuan She (Zhejiang University);

57 A Flower Shaped ACS Fed Printed Antenna for Advanced Portable Systems Praveen Vummadisetty Naidu (JNT University Kakinada — Velagapudi Ramakrishna Siddhartha Engineering College); Arvind Kumar (Kautilya Institute of Technology and Engineering); M. Siva Charan (Velagapudi Ramakrishna Siddhartha Engineering College); Dinesh Sharma (Sri Vasavi Engineering College); Purnima Sharma (Sri Vasavi Engineering College); Semi Circular Printed Monopole Antenna with **U** Shaped Slot for UWB Applications

Praveen Vummadisetty Naidu (JNT University Kakinada — Velagapudi Ramakrishna Siddhartha Engineering College); Dinesh Sharma (Sri Vasavi Engineering College); Arvind Kumar (Kautilya Institute of Technology and Engineering); R. Rohini (V. R. S. E College (Autonomous)); Purnima Sharma (Sri Vasavi Engineering College);

59 Design of 5 Way Wide Band Wilkinson Power Divider for 6 to 18 GHz Applications

> Praveen Vummadisetty Naidu (JNT University Kakinada — Velagapudi Ramakrishna Siddhartha Engineering College); M. Siva Charan (Velagapudi Ramakrishna Siddhartha Engineering College); Arvind Kumar (Kautilya Institute of Technology and Engineering); Dinesh Sharma (Sri Vasavi Engineering College); Purnima Sharma (Sri Vasavi Engineering College); Komanduri Sai Harish (Velagapudi Ramakrishna Siddhartha Engineering College);

60 Magneto-optical Properties of a Magnetic Fluid in the THz Frequency Range

Denis Olegovich Zyatkov (National Research Tomsk State University); Vladimir Borisovich Balashov (Research Institute of Semiconductor Devices); Alexey Vladimirovich Borisov (National Research Tomsk State University); Anastasia Knyazkova (National Research Tomsk State University); Viktor Nikolayevich Cherepanov (National Research Tomsk State University); Basil Yurchenko (Research Institute of Semiconductor Devices);

Dual-gas Sensor Based on Frequency Division Multiplexing Technique of Quartz Tuning Fork Hongpeng Wu (Shanxi University); Lei Dong (Shanxi University); Shangzhi Li (Shanxi University); Ruyue Cui (Shanxi University); Frank K. Tittel (Rice University);

62 The Research of Pre-processing VDIF Data in FPGA Jiangying Gan (Shanghai Astronomical Observatory, Chinese Academy of Science); Zhijun Xu (Shanghai Astronomical Observatory, Chinese Academy of Science);

61

Session 3A1 Advances in Quantitative Land Remote Sensing

Friday AM, August 3, 2018 Room T1 Organized by Shunlin Liang Chaired by Shunlin Liang

- 08:30 Estimations of Land Surface Parameters from MODIS Optical-thermal Observations Based on Data Assimilation and Radiative Transfer Theory Han Ma (Beijing Normal University); Shunlin Liang (University of Maryland);
- 08:50 A Case Study on Pixel-by-pixel Radiometric Normalization between Sentinel-2A and Landsat-8 OLI Yuwen Xu (Institute of Remote Sensing and Digital Earth, Chinese Academy of Science); Hao Zhang (Institute of Remote Sensing and Digital Earth, CAS); Zhengchao Chen (Institute of Remote Sensing and Digital Earth, CAS); Haitao Jing (Henan Polytechnic University);
- 09:10 A Cloud Removal Methodology for MODIS 16-day and 8-day Products Using Time Series Interpolation Nguyen Thanh Hoan (Institute of Geography, Vietnam Academy of Science and Technology); Ryutaro Tateishi (Chiba University);

09:30 An Comparison of Jigger Ships Automatic Detection Method Based on VIIRS DNB Data Caixia Gao (Academy of Opto-electronics, Chinese Academy of Sciences); Chengcheng Xue (Academy of Opto-electronics, Chinese Academy of Sciences); Shi Qiu (Academy of Opto-electronics, Chinese Academy of Sciences); Jian Hu (Academy of Optoelectronics, Chinese Academy of Sciences); Lingling Ma (Academy of Opto-Electronics, Chinese Academy of Sciences); Yonggang Qian (Academy of Opto-Electronics, Chinese Academy of Sciences); Yongguang Zhao (Academy of Opto-electronics, Chinese Academy of Sciences); Lu Ren (Academy of Opto-electronics, Chinese Academy of Sciences); 00:00 Generating the Global Climate Data Records from Satellite Data

Shunlin Liang (University of Maryland); Shihao Tang (National Satellite Meteorological Center, CMA); Jie Zhang (First Institute of Oceanography of State Oceanic Administration); Bing Xu (Tsinghua University); Jie Cheng (Beijing Normal University); Xiao Cheng (Beijing Normal University); Peng Gong (Tsinghua University); Kun Jia (Beijing Normal University); Bo Jiang (Beijing Normal University); Ainong Li (Institute of Mountain Hazards and Environment, Chinese Academy of Sciences); Suhong Liu (Beijing Normal University); Hong Qiu (National Satellite Meteorological Center, CMA); Zhiqianq Xiao (Beijing Normal University); Xianhong Xie (Beijing Normal University); Jun Yang (Tsinghua University); Jungang Yang (First Institute of Oceanography, SOA); Yunjun Yao (Beijing Normal University); Guirui Yu (Institute of Geographic Sciences and Natural Resources Research, Chinese Academy of Sciences); Xiaotong Zhang (Beijing Normal University); Xiang Zhao (Beijing Normal University);

- 00:00 Estimating Global Land Surface Downward Shortwave Radiation Using Moderate Resolution Imaging Spectroradiometer (MODIS) Data Xiaotong Zhang (Beijing Normal University); Yu Wei (Beijing Normal University); Shunlin Liang (University of Maryland);
- 10:40 Coffee Break

Session 3A2 FocusSession.SC5: Microwave Scattering Modelling and Remote Sensing Theory

Friday AM, August 3, 2018 Room T2 Organized by Hong Tat Ewe, Yang Du Chaired by Yang Du

08:30 Bistatic Scattering Response in Delay-doppler Map of GNSS-R Returns from Ocean Surface Yu Liu (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Kun-Shan Chen (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Zhen Xu (Institute of Remote Sensing and Digital Earth, Chinese Academy of Science); Zhao-Liang Li (Institute of Agricultural Resources and Regional Planning, Chinese Academy of Agricultural Sciences); 08:50 Polarized Scattering from an Anisotropically Rough Inhomogeneous Layered Media Ying Yang (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Kun-Shan Chen (Institute of Remote Sensing and Digital

Earth, Chinese Academy of Sciences);

09:10 Practical Implementation of the E-pulse Technique on the Original Antiquates Haythem Hussein Abdullah (Electronics Research Institute (ERI)); Ahmed B. Musa (Electronics Research Institute (ERI)); Tamer Gaber Abulnaga (Electronics Research Institute); Hala A. Elsadek (Electronics Research Institute);

09:30 Understanding the Correlation in Scattering Mechanisms between H-Alpha Decomposition and Theoretical Modelling

Luke Lee Chee Chien (Universiti Tunku Abdul Rahman); Hong Tat Ewe (Universiti Tunku Abdul Rahman); Seow Hui Saw (Universiti Tunku Abdul Rahman);

09:50 Theoretical Modelling Study on MVI Derivation in Multangular Observation Systems Somayeh Talebi (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Jian-Cheng Shi (Institute of Remote Sensing Applications, Chinese Academy of Sciences); Tianjie Zhao (Jointly Sponsored by Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences);

00:00 Physically Based Polarimetric Scattering from Vegetation Canopies

Yang Du (Zhejiang University); Chao Yang (Zhejiang University); Qinhuo Liu (Institute of Remote Sensing Applications, Chinese Academy of Sciences); Zengyuan Li (Research Institute of Forest Resources Information Technique, Chinese Academy of Forestry);

10:40 Coffee Break

Session 3A3 Advanced Mathematical and Computational Methods in Electromagnetic Theory and Their Applications 1

Friday AM, August 3, 2018

Room T3

Organized by Georgi Nikolov Georgiev, Mariana Nikolova Georgieva-Grosse

Chaired by Mariana Nikolova Georgieva-Grosse

08:30 Orthogonal Phase Distortions in Apertures of Linear and Planar Phased Arrays with Different Amplitude Distributions Vladlen I. Gusevsky (National Research University);

Vladien I. Gusevsky (National Research University); Olga N. Tsvetkova (NRU MPEI);

- 08:50 Electromagnetic Fields Produced by Filamentary Sources for Stimulation of a Nerve Fiber Vasiliy Alekseevich Es'kin (University of Nizhny Novgorod); Alexander V. Kudrin (University of Nizhny Novgorod); A. A. Popova (University of Nizhny Novgorod);
- 09:10 Determination of Maximum Influence Zones in the Aperture Amplitude-phase Distribution on Radiation Pattern in the Far-field Radiation Vladlen I. Gusevsky (National Research University); Olga N. Tsvetkova (NRU MPEI); Alena V. Klementyeva (National Research University);
- 09:30 Complex Form of Classical and Quantum Electrodynamics Sergey I. Kryuchkov (Arizona State University); Nathan A. Lanfear (Arizona State University); Sergei K. Suslov (Arizona State University);
- 09:50 Current Distribution and Input Impedance of a Strip Antenna Located at a Plane Interface of an Isotropic Medium and a Gyrotropic Metamaterial Anna S. Zaitseva (University of Nizhny Novgorod); Alexander V. Kudrin (University of Nizhny Novgorod); Tatyana M. Zaboronkova (Technical University of Nizhny Novgorod);
- 10:10 The Electromagnetic Resonant Vector and the Generalized Projection Operator Juan Manuel Velazquez Arcos (Universidad Autonoma Metropolitana); J. Granados-Samaniego (Universidad Autonoma Metropolitana); A. Cid-Reborido (Universidad Autonoma Metropolitana); C. A. Vargas (Universidad Autonoma Metropolitana);
- 10:40 Coffee Break

Session 3A4 SC3: Modeling, Numerical Simulation and

Theory in Optics and Photonics 1

Friday AM, August 3, 2018

Room T4

Organized by Yasuhide Tsuji, Jun Shibayama Chaired by Yasuhide Tsuji, Jun Shibayama 08:30 Slowly Varying Envelope Approximation Based Finite Element Method for Efficient Topology Optimization of Optical Devices

> T. Tanaka (Muroran Institute of Technology); Yasuhide Tsuji (Muroran Institute of Technology);

- 08:50 The Fast Quasiadiabatic Approach to Optical Waveguide Design Hung-Ching Chung (National Cheng Kung University); Zhong-Ying Li (National Cheng Kung University); Kun-Sheng Lee (National Cheng Kung University); Shuo-Yen Tseng (National Cheng Kung University);
- 09:10 Longitudinal Temperature Distribution inside Active Optical Fiber in Lasing Condition Nikita Voronkov (Kotelnikov Institute of Radio Engineering and Electronics of RAS); Victor Sypin (Moscow Institute of Physics and Technology); Oleg A. Ryabushkin (State University);

09:30 Metal Films with Subwavelength Holes: Optical Properties in the Scope of Nonlocal Charge Carrier Dynamics
Christin David (Madrid Institute for Advanced Studies in Nanoscience (IMDEA Nanoscience));
J. Christensen (Universidad Carlos III de Madrid);
N. A. Mortensen (University of Southern Denmark);

- 09:50 Polarization Conversion Properties of a Metallic Waveplate J. Yamauchi (Hosei University); Shunsuke Yoshino (Hosei University); H. Baba (Hosei University); H. Nakano (Hosei University);
- 10:10 Comparison of Various Linearly Polarized Mode Approximations of the Optical Fiber
 Po-Jen Sung (National Sun Yat-Sen University); Sin-Yuan Mu (National Sun Yat-Sen University); Hung-Wen Chang (National Sun Yat-Sen University);
- 10:40 Coffee Break

Session 3A5 Resonators, Filters, Transmission Lines and Waveguide

> Friday AM, August 3, 2018 Room T5 Chaired by Cun-Jun Ruan

08:30 Miniaturization of EBG Unit Cell to Suppress Noise Propagation by Dual Power Planes and Narrow Line Yoshitaka Toyota (Okayama University); Xingxiaoyu Lin (Okayama University); Kengo Iokibe (Okayama University); Toshiyuki Kaneko (Okayama University);

08:50 Microwave Gas Sensor Using PSE-coated Interdigital Resonator on CPW Structure Warunee Krudpun (King Mongkut's University of Technology North Bangkok); Nattapong Duangrit (King Mongkut's University of Technology North Bangkok); Panida Lorwongtragool (Rajamangala University of Technology Suvarnabhumi); Somporn Seewattanapon (Rajamangala University of Technology Suvarnabhumi); Prayoot Akkaraekthalin (King Mongkut's University of Technology North Bangkok);

- 09:10 An X-band Waveguide Jig for Pre-screening Testing of Fully-integrated Elementary Phased-array Transceiver Antenna-in-package Li-Han Chang (National Chiao-Tung University); Chien Cheng Wang (National Chiao Tung University); Yue Ming Wu (National Tsing Hua University); Ta-Shun Chu (Univ So Calif); Yu-Jiu Wang (National Chiao-Tung University);
- 09:30 Fabrication and Analysis of Tantalum Pentoxide Optical Waveguide Resonator with High Thermal Stability
 A. K. Chu (National Sun Yat-sen University); Yu-Yan Lu (National Sun Yat-sen University); Yuan-Yao Lin (National Sun Yat-sen University);
- 09:50 High **Q** Dual Band Super High Frequency Notch Filter Based on Complementary Metamaterial Tanveer Ul Haq (Beihang University); Cun-Jun Ruan (Beihang University); Ruochen Wang (Beihang University); Tianyi Wu (Beihang University);
- 10:10 Design of Ku-band Circular Waveguide-to-coaxial Adapter
 Kihoon Park (Sogang University); Jinho Jeong (Sogang University);
- 10:40 Coffee Break

Session 3A6 SC1: Analytical and Numerical Treatment in Electromagnetics and Its Application

Friday AM, August 3, 2018

Room T6

Organized by Akira Matsushima, Masahiko Nishimoto

Chaired by Akira Matsushima, Masahiko Nishimoto

08:30 Derivation and Simulation of Orbital Angular Momentum Transfer from Laser to X-Gamma Rays in Inverse Compton Scattering

> Huan Wang (Université Paris-Saclay); Aurelien Martens (Universite Paris-Sud); Loic Amoudry (Université Paris-Saclay); Kevin Cassou (Universite Paris-Sud); Kevin Dupraz (Universite Paris-Sud); Daniele Nutarelli (Universite Paris-Sud); Wenhui Huang (Tsinghua University); Chuanxiang Tang (Tsinghua University); Lixin Yan (Tsinghua University); Fabian Zomer (Universite Paris 11);

- 08:50 Polarization Dependence of Electromagnetic Wave Scattering by a Conducting Cylinder Covered with Inhomogeneous Lossy Dielectric Masahiko Nishimoto (Kumamoto University);
- 09:10 Fundamental Properties of Sharply Bends Constructed by Two-dimensional MDM Plasmonic Waveguide Yoshihiro Naka (Khushu University of Helth and Welfare); Masahiko Nishimoto (Kumamoto University);
- 09:30 SSMR Preconditioned Linear Iterative Solvers for Electromagnetic Simulations Norimasa Nakashima (Fukuoka Institute of Technology); Seiji Fujino (Kyushu University);
- 09:50 Validity of the Impedance Boundary Conditions in the Scattering and Absorption of Light by Twodimensionally Corrugated Noble Metal Films Akira Matsushima (Kumamoto University); Yuki Sakuragi (Kumamoto University);

10:40 Coffee Break

Session 3A7 SC2: Advances in Metasurfaces 2

Friday AM, August 3, 2018 Room T7 Organized by Shulin Sun, Qiong He Chaired by Shulin Sun, Xiang Xiong 08:30 Electromagnetic Impurity-immunity Based on Parity-Invited time Symmetric Metasurfaces

Jie Luo (Soochow University); Jensen Li (University of Brimingham); Yun Lai (Soochow University);

 $08{:}50$ $\,$ Selective Propagation and Polarized Light Excitation $\,$

Invited by Focused Electron Beam Xiang Xiong (Nanjing University); Y. H. Hu (Nanjing University); Z. H. Wang (Nanjing University); Mu Wang (Nanjing University); Ru-Wen Peng (Nanjing University);

09:10 Optical Activity Enhancement of Free-standing Chiral

Invited Metasurface by a Transmitted Electron Beam Lithography

Bingrui Lu (Fudan University); Zongyao Yang (Fudan University); Jianan Deng (Fudan University); Sichao Zhang (Fudan University); Yifang Chen (Fudan University);

09:30 Inverse Method for Determining Novel Geometric Invited Topology of Photonic Nanostructure

> Yongbo Deng (Changchun Institute of Optics, Fine Mechanics and Physics (CIOMP), Chinese Academy of Sciences); Y. Wu (Changchun Institute of Optics, Fine Mechanics and Physics (CIOMP), Chinese Academy of Sciences (CAS));

09:50 Bifunctional Gap-plasmon Metasurfaces for Visible Invited Light

Fei Ding (University of Southern Denmark); Rucha Deshpande (University of Southern Denmark); Sergey I. Bozhevolnyi (University of Southern Denmark);

10:10 High-efficiency Generation of Bessel Beams with Transmissive Metasurfaces

> Zhuo Wang (Fudan University); Shaohua Dong (Fudan University); Weijie Luo (Fudann University); Min Jia (Fudan University); Zhongzhu Liang (Changchun); Qiong He (Fudan University); Shulin Sun (Fudan University); Lei Zhou (Fudan University);

10:40 Coffee Break

Session 3A8 SC2: Theory and Applications of Anisotropic and Bianisotropic Metamaterials 2

> Friday AM, August 3, 2018 Room T8

Organized by Liang Peng, Yuntian Chen Chaired by Liang Peng, Yuntian Chen 08:30 Actively Tunable Directional Excitation of Highly Squeezed Polaritons in Graphene-hBN Heterostructures

Yuyu Jiang (Zhejiang University); Xiao Lin (Nanyang Technological University); Tony Low (University of Minnesota); Baile Zhang (Nanyang Technological University); Hongsheng Chen (Zhejiang University);

08:50 Loss-free Broadband Wave Manipulation and Metadevice Designs with Infinitely Anisotropic Metamaterials

Su Xu (Jilin University); Jian-Bin Liu (Jilin University); Jia-Wei Li (Jilin University); Hong-Bo Sun (Jilin University);

09:10 Spin-dependent Absorption and Wavefront Control in Chiral Metamirrors Zuojia Wang (Shandong University); Liqiao Jing (Thaijang University): Hangahang Chan (Thaijang

(Zhejiang University); Hongsheng Chen (Zhejiang University);

09:30 Generalized Coupled Mode Formalism in Reciprocal Waveguides with Gain/Loss, Anisotropy or Bianisotropy

> Weijin Chen (Huazhong University of Science and Technology); Zhongfei Xiong (Huazhong University of Science and Technology); Jing Xu (Huazhong University of Science and Technology); Yuntian Chen (Huazhong University of Science and Technology);

09:50 Orbital Angular Momentum Generation Using a Bifunctional Pancharatnam-Berry Metasurface Jin Yang (Southeast University); Qiang Cheng (Southeast University);

10:40 Coffee Break

09:20 One-dimensional Surface Plasmon Polariton Invited Nanolasers and Arrays

Tien-Chang Lu (National Chiao Tung University);

09:40 Strong Exciton-Photon Coupling in Perovskite Micro-Invited cavities

Shuai Zhang (National Center for Nanoscience and Technology); Wenna Du (National Center for Nanoscience and Technology); Yang Mi (National Center for Nanoscience and Technology); Xinfeng Liu (National Center for Nanoscience and Technology);

10:00 Self-focused Plasmonic Lasing beyond the Anderson Invited Localization Regime

Yu-Jung Lu (National Tsing-Hua University); Chun-Yuan Wang (National Tsing-Hua University); Chih-Shan Tan (National Tsing-Hua University); Hung-Ying Chen (National Tsing-Hua University); Chang-Wei Cheng (National Tsing-Hua University); Lih-Juann Chen (National Tsing-Hua University); Shangjr Gwo (National Tsing-Hua University);

10:20 Subwavelength Scale Low Loss Semiconductor Invited Nanocavities near Metal

Ning Liu (University of Limerick); Christophe Silien (University of Limerick); Greg Sun (University of Massachusetts Boston); Brian Corbett (Tyndall National Institute);

10:40 Coffee Break

Session 3A10 FocusSession.SC3: Advanced Nano/Quantum Photonic Technologies 2

> Friday AM, August 3, 2018 Room A2 Organized by Jin Liu, Juntao Li Chaired by Jin Liu, Juntao Li

Session 3A9 FocusSession.SC2: Advances in Nanolasers 1

Friday AM, August 3, 2018

Room A1

Organized by Renmin Ma, Qing Zhang Chaired by Renmin Ma

08:30 Miniature Lasers: Spasers and Beyond Keynote

Mikhail A. Noginov (Norfolk State University); 09:00 Surface-plasmon Enhanced ZnO WGM Lasing Invited

> Chunxiang Xu (Southeast University); Qiuxiang Zhu (Southeast University); Feifei Qin (Southeast University); Yanjun Liu (Southeast University); Daotong You (Southeast University); Zengliang Shi (Southeast University);

08:30 Non-classical Light Emission of Deterministically Fab-Invited ricated Quantum Dot-Microlenses

> A. Thoma (Technische Universität Berlin); S. Fischbach (Technische Universität Berlin); P. Schnauber (Technische Universität Berlin); A. Kaganskiy (Technische Universität Berlin); M. Von Helversen (Technische Universität Berlin); M. Schmidt (Technische Universität Berlin); S. Burger (Zuse-Institut Berlin (ZIB)); F. Schmidt (Zuse-Institut Berlin (ZIB)); A. Strittmatter (Technische Universität Berlin); J. Beyer (Physikalisch Technische Bundesanstalt); S. Bounouar (Technische Universität Berlin); A. Carmele (Technische Universität Berlin); A. Carmele (Technische Universität Berlin); A. Knorr (Technische Universität Berlin); T. Heindel (Technische Universität Berlin); S. Rodt (Technische Universität Berlin); Stephan Reitzenstein (Technische Universitat Berlin);

08:50 Recent Progress on Semiconductor Entangled Photon Invited Sources

Fei Ding (Leibniz University Hannover);

09:10 Actively Spectral-multiplexed Heralded Single Pho-Invited tons Source

> Qiang Zhou (University of Electronic Science and Technology of China); M. G. Puigibert (University of Calgary); G. H. Aguilar (University of Calgary); M. D. Shaw (California Institute of Technology); V. Verma (National Institute of Standards and Technology); F. Marsili (California Institute of Technology); Sae Woo Nam (National Institute of Standards and Technology); D. Oblak (University of Calgary); Wolfgang Tittel (University of Calgary);

09:30 Selective Far-field Addressing of Quantum Dots in a Invited Plasmonic Nanocavity

Jianwei Tang (Zhejiang University); Juan Xia (Zhejiang University); Maodong Fang (South China Normal University); Fanglin Bao (Zhejiang University); Guanjun Cao (South China Normal University); Jian Qi Shen (Zhejiang University); Julian Evans (Zhejiang University); Sailing He (Zhejiang University);

09:50 Single Quantum Dot Emitters with Plasmon-tailored Excitation Spectra: From Enhancement to Suppression

> Juan Xia (Zhejiang University); Guanjun Cao (South China Normal University); Jianwei Tang (Zhejiang University);

10:10 Highly Brightness and Purity Single Photons Generated from Quantum Dot in Micropillar under Enhanced Up-conversion Excitation
Shunfa Liu (Sun Yat-sen University); Rongling Su (Sun Yat-sen University); Yuming Wei (Sun Yat-sen University); Jin Liu (Sun Yat-Sen University); Xue-Hua Wang (Sun Yat-Sen University); Siyuan Yu (Sun Yat-sen University);

10:40 Coffee Break

Session 3A11

New Advances in Light Scattering by Particles in the Micron and sub-Micron Regimes 1

Friday AM, August 3, 2018

Room A3

Organized by Jose Maria Saiz Vega, Matthew J. Berg Chaired by Jose Maria Saiz Vega, Matthew J. Berg

08:30 The Quest of Directional Light Scattering Invited

Braulio Garcia-Camara (Carlos III University of Madrid); R. Vergaz (Carlos III University of Madrid); J. F. Algorri (Carlos III University of Madrid); E. López-Fraguas (Carlos III University of Madrid); M. H. Elshorbagy (Carlos III University of Madrid); A. Cuadrado (University Complutense of Madrid); J. M. Sanchez-Pena (Carlos III University of Madrid);

- 08:50 Multi-functional Photonic crystals Jingxia Wang (Technical Institute of Physics and Chemistry, Chinese Academy of Sciences);
- 09:10 Does Orbital Angular Momentum Have Effect on Invited Laser's Scattering by Molecular Atmosphere?

Wenbo Sun (Science Systems and Applications, Inc.); Yongxiang Hu (NASA Langely Research Center); Carl Weimer (Ball Aerospace and Technologies Corp); Weilin Hou (United States Naval Research Laboratory, Stennis Space Center); Tsengdar Lee (NASA Headquarters); Gorden Videen (Army Research Laboratory); Rosemary R. Baize (NASA Langely Research Center);

09:30 Enhanced Thermal Emission by Spheres and Invited Temperature-dependent Effects

Khac Long Nguyen (Universite de Lyon, CNRS, INSA-Lyon, Universite Claude Bernard Lyon 1); Olivier Merchiers (Universite de Lyon, CNRS, INSA-Lyon, Universite Claude Bernard Lyon 1); Pierre-Olivier Chapuis (CNRS, National Institute of Applied Physics (INSA) Lyon); 09:50 Modelling the Adherence of a Cell to a Flat Substrate Invited through Polarimetric Methods Based on Mueller Matrix Formalism

> A. Fernandez (Universidad de Cantabria); Thomas Sang Hyuk Yoo (Université Paris-Saclay); J. L. Fernandez Luna (Unidad de Genética HUMV); F. Moreno (Universidad de Cantabria); Enric Garcia-Caurel (Université Paris-Saclay); Jose Maria Saiz Vega (Universidad de Cantabria);

10:10 Application of High Performance Computing in the

Invited Light Scattering by Particles Larger than the Wavelength

> Yevgen Grynko (Paderborn University); Jens Forstner (Paderborn University);

10:40 Coffee Break

Session 3A12 FocusSession.SC3: Photonic Nanostructures for Enhancing Light-matter Interaction 1

Friday AM, August 3, 2018

 $\mathbf{Room}\ \mathbf{A4}$

Organized by Chia Chen Hsu

Chaired by Chia Chen Hsu, Hung-Chih Kan

08:30 Aluminum-based Nanostructures for Sensors with Invited High Surface Sensitivity

Kuang-Li Lee (Academia Sinica); Po Cheng Tsai (National Taiwan Ocean University); Meng-Lin You (Academia Sinica); Ming-Yang Pan (Academia Sinica); Pei-Kuen Wei (Academia Sinica);

08:50 Large Enhancement of Effective Raman Susceptibil-

Invited ity of a Metasurface Made of Silicon Photonic Crystal Cavities

Qun Ren (University College London); Jian Wei You (University College London); Nicolae-Coriolan Panoiu (University College London);

09:10 Hybrid Dielectric Resonator + Nanoantenna Systems:

KeynotePrinciples, Detection Instruments, and Applications in Digital Resolution Biosensing

Jui-Nung Liu (University of Illinois at Urbana-Champaign); Qinglan Huang (University of Illinois at Urbana-Champaign); Brian T. Cunningham (University of Illinois at Urbana-Champaign);

09:40 Two Phase Detection Systems of Transmitted-type Guided-mode Resonance Sensors Wen-Kai Kuo (National Formosa University); Ning-Chi Huang (National Formosa University); Siang-He Syu (National Formosa University); 09:45 Manipulation of the Optical Properites of SiO₂ opal with Metallatic Nanostructures and Dieletric Materials to Enhacce the Light Mater Interaction for Sensing Applications

> Sheng-Hung Yang (National Chun Chen University); Chen-Hung Chu (National Chun Chen University); Ti-Li Lin (National Chun Chen University); Hung-Chih Kan (National Chung Cheng University);

10:00 Doping of Graphene for Optoelectronic Device Appli-Invited cations

Suk-Ho Choi (Kyung Hee University);

10:40 Coffee Break

Session 3A13 Emerging Techniques for Optical Communication and Sensing 1

Friday AM, August 3, 2018 Room A5

Organized by Guo-Wei Lu, Zhenzhou Cheng Chaired by Guo-Wei Lu, Tinghui Xiao

08:30 PPLN Based Frequency Mixer for Optical Signal Pro-Invited cessing and Sensing Application

> Masaki Asobe (Tokai University); M. Katoh (Tokai University); S. Punhavan (Tokai University); K. Uchiyama (Tokai University); D. Ishikawa (Tokai University);

08:50 Optical Angular Momentum Doubling of Optical Vor-Invited tices in Telecommunication Bands

Junichi Hamazaki (National Institute of Information and Communications Technology); Guo-Wei Lu (Tokai University); Keizo Inagaki (National Institute of Information and Communications Technology); Tadashi Kishimoto (National Institute of Information and Communications Technology); Yoh Ogawa (National Institute of Information and Communications Technology); Norihiko Sekine (National Institute of Information and Communications Technology); Akifumi Kasamatsu (National Institute of Information and Communications Technology); Naokatsu Yamamoto (National Institute of Information and Communications Technology); Shigeru Yamaguchi (Tokai University); Iwao Hosako (National Institute of Information and Communications Technology); 09:10 Space and Time Division Packet Super-channel Invited Switching System for Next Generation Data Center Networks

> Jose Manuel Delgado Mendinueta (National Institute of Information and Communications Technology (NICT)); Satoshi Shinada (National Institute of Information and Communications Technology (NICT)); Y. Hirota (National Institute of Information and Communications Technology (NICT)); R. S. Luis (National Institute of Information and Communications Technology (NICT)); H. Furukawa (National Institute of Information and Communications Technology (NICT)); Naoya Wada (National Institute of Information and Communications Technology (NICT));

09:30 Generation of Wide Frequency-spacing Optical Two-

- Invited tone Signal Utilizing Polarization and Optical Phase Shift Induced by RF Phase Akito Chiba (Gunma University); Y. Akamatsu (Gunma University); Kazumasa Takada (Gunma University);
- 09:50 Eavesdropping Detection Technique in Optical Communication Channels with Quantum Encryption Vladimir Nikulin (State University of New York at Binghamton);
- 10:10 Polarimetric Imaging through Turbid Media Invited

Haofeng Hu (Tianjin University); Lin Zhao (Tianjin University); Xiaobo Li (Tianjin University); Tiegen Liu (Tianjin University);

10:40 Coffee Break

Session 3A14 Advanced Photonic Technologies for Energy Harvesting 1

Friday AM, August 3, 2018 Room A6 Organized by Feng Yan, Gang Li

Chaired by Xu-Hui Zhu, Xuanhua Li

- 08:30 Two-dimensional Metal Chalcogenide Semiconductors: Design, Synthesis and Applications Jun He (National Center for Nanoscience and Technology);
- 08:50 Enhanced Performance of Perovskite Solar Cells with Electron Transport Layer of SnO₂ Quantum Dots Guojia Fang (Wuhan University); Gang Li (Hong Kong Polytechnic University);

09:10 High-performance Flexible Solar Cells: Device and Materials

Yaowen Li (Soochow University); Yongfang Li (Soochow University);

09:30 Interfacial Engineering for Efficient Perovskite Solar Cells

Xuanhua Li (Northwestern Polytechnical University); Shuangjie Wang (Northwestern Polytechnical University); Tengteng Tong (Northwestern Polytechnical University);

09:50 The Application of 2-D Materials in Organic or Hybrid Solar Cells

Feng Yan (The Hong Kong Polytechnic University);

10:40 Coffee Break

Session 3A15 Light Manipulation, Propagation and Application 1

Friday AM, August 3, 2018

Room A7

Organized by Yangjian Cai

Chaired by Yangjian Cai

08:30 Study on Mode Purity of Second-harmonic Waves from Twisted Nonlinear Photonic Crystals

Y. Chen (Nanjing University); Y. D. Wu (Nanjing University); C. Lin (Nanjing University); Xiao Peng Hu (Nanjing University); Shi-Ning Zhu (Nanjing University);

08:50 Information Encoding and Authentication Using an Optical Dielectric Metasurface

Xiaogang Wang (Zhejiang A&F University); Junlang Chen (Zhejiang A&F University); Yixiang Chen (Zhejiang University of Media and Communications);

09:10 Generation of a Large-scale Airy Beam at High Altitude by Adaptive Optics

Xiuxiang Chu (Zhejiang Agriculture and Forestry University); Quan Sun (National University of Defence Technology); Jing Wang (Institute of Software, Chinese Academy of Sciences); Pin Lv (Institute of Software, Chinese Academy of Sciences); Xiaojun Xu (National University of Defense Technology (NUDT));

09:30 Self-reconstruction of Partially Coherent Beam Yangjian Cai (Soochow University); Xianlong Liu (Soochow University);

09:50 Effect of the Correlation Function on the Focal Shift of a Partially Coherent Beam

Minghui Zhang (Soochow University); Lin Liu (Soochow University); Yangjian Cai (Soochow University); 10:10 Complex Degree of Coherence Measurement for Classical Statistical Fields
 Xianlong Liu (Soochow University); Fei Wang (Soochow University); Yangjian Cai (Soochow University);

10:40 Coffee Break

Session 3A16 SC2: Optical Metamaterials for Environment and Energy Application 1

Friday AM, August 3, 2018

Room A8

Organized by Junichi Takahara, Kotaro Kajikawa Chaired by Junichi Takahara, Kotaro Kajikawa

08:30 Harvesting Sunlight with Titanium Nitride Nanos-Invited tructures

- Satoshi Ishii (National Institute for Materials Science (NIMS)); Satish L. Shinde (National Institute for Materials Science (NIMS)); Ramu P. Sugavaneshwar (National Institute for Materials Science (NIMS)); Manpreet Kaur (Hokkaido University); Tadaaki Nagao (Hokkaido University);
- 08:50 Complex Evolutionary Photonic for Renewable En-Invited ergy Harvesting with Zero-carbon Emission

Y. Tian (Kaust University); M. Bonifazi (Kaust University); Andrea Fratalocchi (KAUST University);

09:10 Plasmonic Photo-thermoelectric Effect

Invited

Masaki Kondo (Tokyo University of Agriculture and Technology (TUAT)); Wakana Kubo (Tokyo University of Agriculture and Technology (TUAT));

09:30 Broadband Plasmonic Materials for Energy Applica-Invited tions

Venu Gopal Achanta (Tata Institute of Fundamental Research);

- 09:50 Three-dimensional Metamaterial Structures for Mid-Invited infrared Absorption Spectroscopy toward Gas Sensing
 - E. Shkondin (Technical University of Denmark);
 T. Repan (Technical University of Denmark);
 L. Vertchenko (Technical University of Denmark);
 Andrei V. Lavrinenko (Technical University of Denmark); Osamu Takayama (Technical University of Denmark);
- 10:10 Radiative Cooling Using Silica Particles Kotaro Kajikawa (Tokyo Institute of Technology);

10:40 Coffee Break

Session 3A17 SC3: Quantum Information Processing and Devices 1

Friday AM, August 3, 2018 Room A9

Organized by Hai-Zhi Song, Qiang Zhou Chaired by Wei Zhang, Yasutomo Ota

08:30 Chip-integrated Quantum-dot Single Photon Sources Invited Fabricated by Transfer Printing

Yasutomo Ota (The University of Tokyo); Ryota Katsumi (The University of Tokyo); Alto Osada (The University of Tokyo); Masahiro Kakuda (The University of Tokyo); Satoshi Iwamoto (The University of Tokyo); Yasuhiko Arakawa (The University of Tokyo);

08:50 Highly Brightness and Purity Single Photons Gener-Invited ated from Quantum Dot in a Micropillar

Ying Yu (Sun Yat-sen University); Shunfa Liu (Sun Yat-sen University); Rongling Su (Sun Yat-sen University); Jin Liu (Sun Yat-sen University); Siyuan Yu (Sun Yat-sen University);

09:10 Realizing Photon Subtraction with Single-photon Frequency Upconversion System

Yu Chen (East China Normal University); Xiuliang Chen (East China Normal University); Jianhui Ma (East China Normal University); Huiqin Hu (East China Normal University); Guangjian Xu (East China Normal University); Haifeng Pan (East China Normal University); E Wu (East China Normal University);

09:30 Efficient Quantum Entanglement Distillation in Invited Quantum-dot and Micro-resonator System

Chuan Wang (Beijing University of Posts and Telecommunications); T. J. Wang (Beijing University of Posts and Telecommunications);

09:50 Building Blocks for Quantum Networks Invited

Daniel Oblak (University of Calgary);

- $10{:}10$ Time-frequency Distributions of a Biphoton Wave Invited Packet
 - Ryosuke Shimizu (University of Electro-Communications);

10:40 Coffee Break
Session 3A18 Photonics, Nanophotonics and Quantum Electrodynamics Friday AM, August 3, 2018		Session 3A0 Poster Session 3	
			Friday AM, August 3, 2018
			Room Fover
	Room A10		
	Chaired by Dong-Wook Kim, Fangwei Ye	1	Electromagnetic Scattering from Strongly Inhomoge- neous Semi-infinite Dielectric Media
08:30	Hybrid Nanostructures of Metal/2D Materials for Plasmon-enhanced Applications Xuanhua Li (Northwestern Polytechnical University); Shaohui Guo (Northwestern Polytechnical Univer- sity); Bingqing Wei (Northwestern Polytechnical Uni-	2	Alexey A. Shcherbakov (Moscow Institute of Physics and Technology); D. F. Baydin (Moscow Institute of Physics and Technology); Numerical Study of the Enhancement of Magneto- optic Kerr Effect Using Silica Thin Film H. Mizuma (Takai University): Takahira Taghiraki
	versity);		(Tokai University):
08:50	Broadband Omnidirectional Absorption Enhancement of MoS_2 Monolayers on Sub-100 nm SiO_2/Si Wafers	3	 A Numerical Analysis of an Inverse Periodic Resonant Structure at THz Frequencies Tomas Kriz (Brno University of Technology); Petr Drexler (Brno University of Technology); Hardware Correlator Development at SHAO Zhijun Xu (Shanghai Astronomical Observatory, Chinese Academy of Science); Jiangying Gan (Shanghai Astronomical Observatory, Chinese Academy of Science); Shaoguang Guo (Shanghai Astronomical Observatory, Chinese Academy of Science); Renjie Zhu (Shanghai Astronomical Observatory); A Method of Path Sharing for Multiple VDIF Data Streams Transmission Renjie Zhu (Shanghai Astronomical Observatory, Chinese Academy of Science);
	Eunah Kim (Ewha Womans University); Jin-Woo Cho (Kyung Hee University); Trang Thi Thu Nguyen (Ewha Womans Univer- sity); Sun-Kyung Kim (Kyung Hee University); Seokhyun Yoon (Ewha Womans University); Dong- Wook Kim (Ewha Womans University);	4	
09:10	Filtering Multiple Colors from Submicron Pixels Us- ing Resonant Scattering Reduction June Sang Lee (Ewha Womans University); Ji Yeon Park (Ewha Womans University); Yong Hwan Kim (KOS, Inc.); Seokwoo Jeon (KAIST); Dong Ha Kim (Ewha Womans University);	5	
09:30	Bloch Oscillations in Arrays of Helical Waveguides	6	Research of the Chinese Array for Pulsars Zhijun Xu (Shanghai Astronomical Observatory, Chi-
	Wei Feng Zhang (Shanghai Jiao Tong Univer- sity); Xiao Zhang (Shanghai Jiao Tong Univer- sity); Yaroslav V. Kartashov (ICFO); Xianfeng Chen (Shanghai Jiao Tong University); Fangwei Ye (Shang- hai Jiao Tong University);	7	A Design of the Reflective Array Antenna Based on Plasma Metematerial with the Dielectric Matching Layer Technique Wenyu Li (Nanjing University of Aeronautics and
09:50	Cryptanalysis on an Optical Cryptosystem Based on Phase Truncated Fourier Transforms and a Random Amplitude Mask Yi Xiong (National University of Singapore); C. Quan (National University of Singapore):		Astronautics); Hai Feng Zhang (Nanjing University of Aeronautics and Astronautics); Ting Liu (Nanjing University of Aeronautics and Astronautics); Yu Ma (Nanjing University of Posts and Telecommunica- tions);
10:40	Coffee Break	8	LP-RLSA Antenna with Funnel Probe Adapter and Metallic Canceling Slats Omid Beheshti Zavareh (Shaheed Beheshti St.); Hanieh Arbah Soleimany (Shaheed Beheshti St.);
		9	Design of a Transceiver Antenna for Wideband Chip- less RFID Tags Yong Kang Kuang (Tongji University); Guo Chun Wan (Tongji University); Mei Song Tong (Tongji University);

10 Multi-beam Radiation from Two-dimensional Luneburg Lens Excited in PCB Substrate at Millimeter Wave Frequencies for 5G Applications Hsi-Tseng Chou (National Taiwan University); Zhi-Da Yan (National Taiwan University);

11 A Numerical Study of Influence of a Matching Medium on Transmission Coefficients between Antennas Used in Microwave Imaging System Jan Tesarik (Czech Technical University in Prague); Ondrej Fiser (Czech Technical University in Prague); David Vrba (Czech Technical University in Prague); Jan Vrba, Jr. (Czech Technical University in Prague);

12 Development of UWB Microwave Mammography with Multi-polarization Kansei Terashima (Kansai University); Soichiro Yamaguchi (Nihon University); Yoshio Nagayama (Nihon University); Tomoya Hanashima (Nihon University); Toshifumi Moriyama (Nagasaki University); Toshifumi Moriyama (Nagasaki University); Toshiyuki Tanaka (Nagasaki University); Hayato Tsuchiya (Nihon University);

13 Treatment with High-voltage 50 Hz Electric Field Does Not Alter Electroencephalogram Basic Rhythms and Heart Rate Variability in Healthy Subjects: Lack of Acute Effect on Arousal Level Takaki Nedachi (Hakuju Institute for Health Science); Toshikazu Shinba (Shizuoka Saiseikai General Hospital); Shinji Harakawa (Obihiro University of Agricultural and Veterinary Medicine);

- Analysis and Synthesis of Large Scale Conformal Antenna Based on Hybrid Layout
 Bao Jun Niu (Nanjing Research Institute of Electronic Technology); Dong Xia (Beihang University);
 Yun Xing (Beihang University); Xiuzhu Ye (Beihang University); Ming Bai (Beihang University);
- 15 A Low-profile Antenna Design for LTE/WWAN Smartphone Application Cheng-Chi Yu (Feng-Chia University); Chien-Yu Huang (Feng-Chia University); Jiin-Hwa Yang (Feng-Chia University); Cheng-Hsing Hsu (National United University); Ja-Hao Chen (Feng-Chia University);
- 16 High Gain Microstrip Antenna Based on Zero-index Metamaterials
 Yu Zhang (Anhui University); Minquan Li (Anhui University); Xu Pan (Anhui University); Xiaopan Xia (Anhui University); Yanyang Liu (Anhui University); Yingbo Wu (Anhui University);

- 17 Proximity Coupled Patch Array Antenna with Switchable Polarization for WLAN Application Mohammad Ridwan Effendi (Institut Teknologi Bandung); Sitia Lestari (Institut Teknologi Bandung); Farohaji Kurniawan (Chiba University); Achmad Munir (Institut Teknologi Bandung);
- 18 Miniaturized Branch-line Coupler with Harmonic Suppression Kana Tokugawa (Sophia University); Shunya Kuwana (Sophia University); Hitoshi Hayashi (Sophia University);
- 19 Thin EM Wave Absorber Metasurface Based on Artificial Magnetic Conductor Ilham Fikry (Telkom University); Levy Olivia Nur (Telkom University); Bambang Setia Nugroho (Universitas Indonesia); Achmad Munir (Institut Teknologi Bandung);
- 20 On the Formation of Higher Harmonic Components in Power Spectrum of the Output Radiation of Microwave Generator with Turbulent Electron Beam Andrei Victorovich Starodubov (Saratov State University); Yurii Alexandrovich Kalinin (Saratov State University);

21 Compact SIW Power Divider with CSRRs for WLAN Application Eki Ahmad Zaki Hamidi (UIN Sunan Gunung Djati Bandung); Ulfa Sri Utami (UIN Sunan Gunung Djati Bandung); Nanang Ismail (UIN Sunan Gunung Djati Bandung); Achmad Munir (Institut Teknologi Bandung);

- 22 Design of GaAs pHEMT Negative Resistant Oscillator Using a Novel Parallel Coupled Dielectric Resonator Seyi Stephen Olokede (University of Johannesburg); Chuckwuemeka Joshua Okonkwo (National Open University of Nigeria); Syazana Basyirah Binti Mohammad Zaki (Kyushu Institute of Technology); Adeseko A. Ayeni (University of Ilorin);
- 23 Dispersion Properties of Two-dimensional Fractal Superconductor Photonic Crystals with Thue-Morse Sequence

Hai Feng Zhang (Nanjing University of Posts and Telecommunications); Hao Zhang (Nanjing University of Posts and Telecommunications); Wen-Yu Wang (Nanjing University of Posts and Telecommunications); Yong-Diao Wen (Nanjing University of Aeronautics and Astronautics);

- 24 Pulsed Microwave Discharge in the Processes of Obtaining Semiconductor Polycrystalline Silicon for Solar Energy Vladislav Igumnov (National Research Tomsk Polytechnic University); Vladimir Karelin (National Research Tomsk Polytechnic University); Andrei Vladimirovich Mostovshchikov (National Research Tomsk Polytechnic University);
- 25 Analytic Calculation of Specific Polarizations that Not Generate Second Harmonic in Silicon Surface Adalberto Alejo-Molina (Instituto de Investigacion en Ciencias Basicas y Aplicadas (IICBA), UAEM); Carola Emminger (New Mexico State University); Kurt Hingerl (Johannes Kepler University);
- 26 Research of Failure Models for a 700 V VDMOSFET Xiaopei Chen (Southwest Jiaotong University); Quanyuan Feng (Southwest Jiaotong University); Tao Jin (Xipu Campus of Southwest Jiaotong University);
- 27 The Impaction of Epitaxy Growth Method on Performance of Low-voltage UMOS Min Gong (Southwest Jiaotong University); Quanyuan Feng (Southwest Jiaotong University); Tao Jin (Southwest Jiaotong University);
- 28 Low-loss and Low-firable Dielectrics Using CaNd₂(MoO₄)₄ Ceramics for Microwave Applications Jin-Yu Yang (National Cheng Kung University (NCKU)); Meng-Hung Tsai (National Cheng Kung University (NCKU)); Cheng-Liang Huang (National Cheng Kung University (NCKU));
- 29Optimization of Current Collector Design for **Operando** X-band-EPR Investigations of Lithium-Ion Batteries Using Numerical Simulations Ivan Flammia (Central Institute for Engineering, Electronics and Analytics - Electronic Systems (ZEA-2), Forschungszentrum Jülich GmbH); Achim Mester (Central Institute for Engineering, Electronics and Analytics — Electronic Systems (ZEA-2), Forschungszentrum Jülich GmbH); Arvid Niemöller (Institute of Energy and Climate Research — Fundamental Electrochemistry (IEK-9), Forschungszentrum Jülich GmbH); Josef Granwehr (Institute of Energy and Climate Research - Fundamental Electrochemistry (IEK-9), Forschungszentrum Jülich GmbH; RWTH Aachen University); Stefan Van Waasen (Central Institute for Engineering, Electronics and Analytics — Electronic Systems (ZEA-2), Forschungszentrum Jülich GmbH; University of Duisburg-Essen);

30 Wideband Substrate-integrated-waveguide BPF Incorporated with Complimentary-split-ring-resonators Nanang Ismail (UIN Sunan Gunung Djati Bandung); Rusdi Affandi Siregar (UIN Sunan Gunung Djati Bandung); Hardi Nusantara (Institut Teknologi Bandung); Achmad Munir (Institut Teknologi Bandung);

31 Microstrip Filtering Power Dividers with Novel Isolating Method for Good In-band Isolation Performance Ting-Yi Huang (Feng Chia University); Cheng-Hsien Wu (Feng Chia University); Chih-Heng Lin (Feng Chia University);

- Modified Transformation Optics Based FDTD for Local Mesh Refinement Ruonan Chen (East China Normal University); Lei Kuang (East China Normal University); Pengcheng Ren (East China Normal University); Qing Huo Liu (Duke University);
- Fractional Bessel Vortex Beam: From Theory to Experiment Chengliang Zhao (Soochow University); Yuanjie Yang (University of Electronic Science and Technology of

(University of Electronic Science and Technology of China); Fei Wang (Soochow University); Yangjian Cai (Soochow University);

34 The Laser Scattering and Statistical Characteristics of Haze Particles Which Have Rarefied Random Distribution

> Ming-Jun Wang (Xi'an University of technology); Ji-Hua Yu (Xi'an University of Technology); Xi-Zheng Ke (Xi'an University of Technology); Ting Wu (Xi'an University of Technology);

35 Analysis of Electrostatic Discharge Immunity on the Fingerprint Recognition Module Used in Mobile Phone

> Soon-Mi Hwang (Korea Electronics Technology Institute (KETI)); Chul-Hee Kim (Korea Electronics Technology Institute (KETI)); Kwan-Hun Lee (Korea Electronics Technology Institute (KETI));

36 Study on Shielding Effectiveness of Multilayer Electromagnetic Shield Fabric with Wave-absorbing Fiber Yayun Li (Zhongyuan University of Technology); Zhe Liu (Zhongyuan University of Technology); Xiuchen Wang (Zhongyuan University of Technology);

32

33

- 37 Reducing Reflection Noise of Signal Trace through Metal Planes with a Via Stub in a Thick Multilayered PCB Using High-impedance Arc Traces Chun-Chieh Chuang (Chung Yuan Christian University); Ming-Yuan Chuang (Chung Yuan Christian University); Mei-Yi Huang (Chung Yuan Christian University); Ming-Wei Chang (Chung Yuan Christian University); Chia-Hao Li (Chung Yuan Christian University); Yu-Hsiang Cheng (Chung Yuan Christian University); Kuang-Yi Wu (Chung Yuan Christian University); Jay Lin (Allied Circuit Co., Ltd. (ACCL)); Cloud Lai (Allied Circuit Co., Ltd. (ACCL)); Guang-Hwa Shiue (Chung Yuan Christian University);
- 38 A 0.94 ~ 1.50 GHz Constant Absolute Bandwidth Tunable Bandpass Filter with Electric Coupling Dengyao Tian (Southwest Jiaotong University); Quanyuan Feng (Southwest Jiaotong University); Qianyin Xiang (Southwest Jiaotong University);
- 39 Effect of Variation of Rainfall in Indonesia on Satellite Communication Link Marzuki (Andalas University); Hiroyuki Hashiguchi (Kyoto University); Mutya Vonnisa (Andalas University); Harmadi (Andalas University); Muzirwan (National Institute of Aeronautics and Space);
- 40 Object Reconstruction via Radar Detection behind Walls

Matthew Charnley (Rutgers University); Aihua W. Wood (Air Force Institute of Technology); 41 Efficient Control of Output Parameters of the Medium Power Gyrotrons

Alexander I. Tsvetkov (Federal State Budgetary Scientific Institution "Federal Research Center The Institute of Applied Physics of the Russian Academy of Sciences"); Andrey P. Fokin (Federal State Budgetary Scientific Institution "Federal Research Center The Institute of Applied Physics of the Russian Academy of Sciences"); Anton S. Sedov (Federal State Budgetary Scientific Institution "Federal Research Center The Institute of Applied Physics of the Russian Academy of Sciences"); Mikhail Yu. Glyavin (Federal State Budgetary Scientific Institution "Federal Research Center The Institute of Applied Physics of the Russian Academy of Sciences"); Toshitaka Idehara (University of Fukui); Teruo Saito (University of Fukui (FIR FU)); R. M. Rozental (Institute of Applied Physics of the Russian Academy of Sciences (IAP RAS)); A. E. Fedotov (Institute of Applied Physics of the Russian Academy of Sciences (IAP RAS)); B. Z. Movshevitch (Institute of Applied Physics of the Russian Academy of Sciences (IAP RAS)); Gregory G. Denisov (Federal State Budgetary Scientific Institution "Federal Research Center The Institute of Applied Physics of the Russian Academy of Sciences");

42 Optical Broadband Angular Selectivity for Normal Incidence

> Jian Chen (Soochow University); Shanshan Li (Soochow University); Jie Luo (Soochow University); Weixin Lu (Soochow University); Bo Hou (Soochow University); Yun Lai (Soochow University);

- A Numerical Analysis of Capacitors for On-chip Energy Storage
 Tomas Kriz (Brno University of Technology); Dusan Nespor (Brno University of Technology);
- 44 Feasibility Assessment of a Phoswich Detector for Simultaneous Measurement of a Mixture of Beta- and Gamma-emitters

Han Young Joo (Dongguk University); Jae Wook Kim (Dongguk University); Joo-Hyun Moon (Dongguk University);

45 Polarization Crosstalk Generated in a Bent Si-wire Waveguide with Sidewall Roughness
T. Aso (Hosei University); Toshiki Tsuchiya (Hosei University); Yota Sasaki (Hosei University); Junji Yamauchi (Hosei University); H. Nakano (Hosei University);

- 46 Ultraviolet to Near Infrared Photodetector and Gas Sensor Based on Oxide Semiconductors Film and Quantum Dots Chiu-Hsien Wu (National Chung Hsing University); Kuen-Lin Chen (National Chung Hsing University); Yu-Ling Li (National Chung Hsing University); Zu-
- 47 Electromagnetically Spinning Viscometer for Observing Dynamics of Langmuir Films Maiko Hosoda (Tokyo Denki University); Keiji Sakai (The University of Tokyo);

Yin Deng (National Chung Hsing University);

- 48 Generation of Bipartite Squeezed Vacuum States Chien-Ming Wu (National Tsing Hua University); Hsun-Chung Wu (National Tsing Hua University); Ray-Kuang Lee (National Tsing-Hua University);
- 49 Investigation of Kalman Filter-KF-Application on a Quasi-Newtonian — QN — Algorithm for Photovoltaic Maximum Power Point Detection — MPPT J. L. de Carvalho (University of Campinas); Luiz Carlos Kretly (University of Campinas);
- 50All-dielectric Active Metasurface Based on Liquid Crystals Jose Francisco Algorri (Carlos III University); Garcia-Camara (Carlos III University BraulioDimitris Zografopoulosof Madrid); (Istituto per la Microelettronica e Microsistemi (CNR-*IMM*); Virginia Urruchi (Carlos III University); Jose Manuel Sanchez-Pena (Carlos III University); Romeo Beccherelli (Istituto per la Microelettronica e Microsistemi (CNR-IMM));
- 51 Plasmonic Topological Insulators for Topological Nanophotonics Wei Feng Zhang (Shanghai Jiao Tong University); Xianfeng Chen (Shanghai Jiao Tong University); Fangwei Ye (Shanghai Jiao Tong University);
- 52 Performances Enhancement of a-Si:H Thin Film Photovoltaic (PV) Cells by Incorporating Silver Nanoparticles (Ag NPs)

Pauline Sylvia Pokam Kuisseu (CEMHTI-CNRS); Peiqing Yu (Université d'Orléans); Timothee Pingault (CEMHTI-CNRS); Jean Philippe Blondeau (University of Orleans); Esidor Ntsoenzok (CEMHTI-CNRS); Annie Beya (Université de Yaounde); Caroline Andreazza (ICMN-CNRS); Julien Roussel (Université dOrléans); Elyaakoubi Mustapha (SOLEMS); Jacques Meot (SOLEMS); Alexandre Jaffre (Centrale SUPELEC-CNRS); Christophe Longeaud (Centrale SUPELEC-CNRS);

53 A Novel Honeycomb Plasma Metamaterial Absorber Hao Zhang (Nanjing University of Posts and Telecommunications); Hai Feng Zhang (Nanjing University of Posts and Telecommunications); Jing Yang (Nanjing University of Posts and Telecommunications); Jia-Xuan Liu (Nanjing University of Posts and Telecommunications);

An Easy-to-Attach Modified SMA Connector Hao Hui Chen (National Kaohsiung First University of Science and Technology); Jin-Wei Song (National Kaohsiung First University of Science and Technology, First Campus); Jyun-Dian Tasi (National Kaohsiung First University of Science and Technology, First Campus); Yao-Wen Hsu (National Kaohsiung First University of Science and Technology, First Campus);

55 A Ultra-wideband Monocone Antenna with Dielectric Loading

Ankang Liu (Nanyang Technological University); Yi-Long Lu (Nanyang Technological University);

00 Design of TM₀₁ Mode Launcher for SYMPLE Experiments at 3 GHz by Using Circular Pagoda-shaped Geometry

> Jitendra Kumar (Institute for Plasma Research); Bhushan Patil (Parul University); Raj Singh (Institute for Plasma Research); V. P. Anitha (Institute for Plasma Research);

00 Energy Threshold for Defining Halo in Mismatched Charged Particle Beams

Roger Pizzzato Nunes (Universidade Federal do Rio Grande do Sul);

00 Performance Evaluation of an Improved ITU-R Rain Attenuation Prediction Model over Malaysia Equatorial Region

> Folasade Abiola Semire (Universiti Sains Malaysia); Rosmiwati Mohd-Mokhtar (Universiti Sains Malaysia); Isaac Akinwale Akanbi (Federal Ministry of Communications Technology);

Cavity Enhanced Absorption Spectroscopy for Atmospheric Trace Gas Reaction Monitoring Anoop Pakkattil (National Institute of Technology Calicut); Arun Ramachandran (National Institute of Technology Calicut); Aiswarya Saseendran (National

Institute of Technology Calicut); M. K. Ravi Varma (National Institute of Technology Calicut);

00 Design of Waveguide Circulator for Industrial Dualband Magnetrons with Bandwidth Broadening Kaviya Aranganadin (Hanyang University); Ling Li (Hanyang University); Hua-Yi Hsu (National Taipei University of Technology); Ming-Chieh Lin (Hanyang University);

00

54

- 00 A Novel Two Degree of Freedom-fuzzy PID Hybrid Controller in AGC with Non-linearities Dillip Kumar Mishra (IIIT); Tapas K. Panigrahi (IIIT); Asit Mohanty (CET); Prakash Kumar Ray (In-
- ternational Institute of Information Technology);
 Efficient Surface-plasmon Controllers for Highly Integrated On-chip Plasmonic Circuits
 Hong-Son Chu (A*STAR Institute of High Performance Computing); Thanh Xuan Hoang (A*STAR Institute of High Performance Computing); Andreea Radulescu (National University of Singapore);
 Ksenia S. Makarenko (National University of Singapore); Thorin Jake Duffin (National University of Singapore); Singapore);

Session 3P1a FocusSession.SC5: Microwave Remote Sensing of Ocean

Friday PM, August 3, 2018

Room T1

Organized by Xiaofeng Li, Simon H. Yueh Chaired by Xiaofeng Li, Simon H. Yueh

13:20 Overview of Long-term Ocean Observations by the Advanced Microwave Scanning Radiometer (AMSR) Series

> Naoto Ebuchi (Hokkaido University); Misako Kachi (Japan Aerospace Exploration Agency); Takashi Maeda (Japan Aerospace Exploration Agency); Nodoka Ono (Japan Aerospace Exploration Agency); Marehito Kasahara (Japan Aerospace Exploration Agency); Taikan Oki (Japan Aerospace Exploration Agency); Haruhisa Shimoda (Tokai University);

- 13:40 Assimilation of SAR-derived Sea Surface Winds into Typhoon Forecast Model Xiao Feng Yang (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Yi Yu (National University of Defense Technology); Boheng Duan (National University of Defense Technology); Weimin Zhang (National University of Defense Technology);
- 14:00 Tropical Cyclone Wind Direction Retrieval from Cband Dual-polarization Synthetic Aperture Radar Shengren Fan (Nanjing University of Information Science and Technology); Biao Zhang (Nanjing University of Information Science and Technology); Alexis Mouche (Laboratoire d'Oceanographie Physique Spatiale);

14:20 Characterization of the Tropical Cyclones Wind Radii in the North Western Pacific Basin Using the ASCAT Winds Data Products Seubson Soisuvarn (King Mongkut's Institute of Technology Ladkrabang); Suntana Oudomying (King

Technology Ladkrabang); Suntana Oudomying (King Mongkut's Institute of Technology Ladkrabang);

- 14:40 SAR Observations and WRF Modeling of Marine Atmospheric Phenomena
 Xiaofeng Li (National Oceanic and Atmospheric Administration (NOAA)); W. Zheng (National Oceanic and Atmospheric Administration (NOAA)/National Centers for Environmental Prediction (NCEP)/Environmental Modeling Center (EMC)); D. Shen (Shanghai Ocean University);
- 15:00 A C-band Geophysical Model Function for Determining Coastal Wind Speed Using Synthetic Aperture Radar

Yiru Lu (Nanjing University of Information Science and Technology); Biao Zhang (Nanjing University of Information Science and Technology); William Perrie (Bedford Institute of Oceanography); Alexis Mouche (Laboratoire d'Oceanographie Physique Spatiale); Xiaofeng Li (GST at National Oceanic and Atmospheric Administration (NOAA)/NESDIS); He Wang (National Ocean Technology Center, State Oceanic Administration);

15:20 Dependency of Backscattering Signal from Ocean Surface on Oceanwinds Measured By X-band Airborne SAR

> Akitsugu Nadai (National Institute of Information and Communications Technology (NICT)); Toshihiko Umehara (National Institute of Information and Communications Technology); Shoichiro Kojima (National Institute of Information and Communications Technology); Jyunpei Uemoto (National Institute of Information and Communications Technology (NICT)); Takeshi Matsuoka (National Institute of Information and Communications Technology (NICT)); Tatsuharu Kobayashi (National Institute of Information and Communications Technology);

15:40 Coffee Break

- 16:00 Upper Ocean Response of Yongxing Island Area to Typhoon 'Kujira' in the South China Sea from Multiple-satellite and Fixed-point Observation Jie Guo (Yantai Institute of Coastal Zone Research, Chinese Academy of Sciences (CAS), Key Laboratory of Coastal Environmental Processes and Ecological Remediat); Tianlong Zhang (Yantai Institute of Coastal Zone Research, Chinese Academy of Sciences (CAS), Key Laboratory of Coastal Environmental Processes and Ecological Remediat); Biao Zhang (Nanjing University of Information Science and Technology); Yankai Mu (Yantai Institute of Coastal Zone Research, Chinese Academy of Sciences (CAS), Key Laboratory of Sciences and Technology); Yankai Mu (Yantai Institute of Coastal Zone Research, Chinese Academy of Sciences (CAS), Key Laboratory of Coastal Environmental Processes and Ecological Remediat); Eioo Zhang (Nanjing University of Information Science and Technology); Yankai Mu (Yantai Institute of Coastal Zone Research, Chinese Academy of Sciences (CAS), Key Laboratory of Coastal Environmental Processes and Ecological Remediat);
- 16:20 Ocean Applications for Wideband Ku-band Signals of Opportunity

Rashmi Shah (California Institute of Technology); Zhijin Li (California Institute of Technology); Yuhe Tony Song (California Institute of Technology); James L. Garrison (Purdue University); Soon Chye Ho (Purdue University);

- 16:40 Validating SMAP SSS with in Situ Data and Process Oriented Analysis
 Wenqing Tang (California Institute of Technology); Simon H. Yueh (California Institute of Technology); Alexander G. Fore (California Institute of Technology); Akiko Hayashi (California Institute of Technology);
- 17:00 Accurate Surface Fields and Emissivities in Ocean Scattering and Emission Using Neighborhood Impedance Boundary Condition (NIBC) with Dense Grid in Surface Integral Equations

Yanlei Du (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Tai Qiao (University of Michigan); Leung Tsang (University of Michigan); Xiao Feng Yang (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences);

Session 3P1b SC5: Inverse Scattering 1

Friday PM, August 3, 2018

Room T1

Organized by Motoyuki Sato, Toshifumi Moriyama Chaired by Motoyuki Sato, Toshifumi Moriyama

- 17:20 Adaptive Array Radar Imaging of Moving Human Body for Measurement of Vital Signs Takuya Sakamoto (University of Hyogo); Kentaro Konishi (University of Hyogo); Masashi Muragaki (Kyoto University); Shigeaki Okumura (Kyoto University); Toru Sato (Kyoto University);
- 17:40 Accuracy Enhanced Distorted Born Iterative Method with Envelope Based Boundary Extraction for Microwave Mammography Shouhei Kidera (The University of Electro-Communications); Kazuki Noritake (The University of Electro-Communications);
- 18:00 Development of Microwave CT Mammography Device Yoshio Nagayama (Nihon University); Tomoya Hanashima (Nihon University); Tomohiko Asai (Nihon University); Soichiro Yamaguchi (Nihon University); Toshifumi Moriyama (Nagasaki University); Toshifumi Tanaka (Nagasaki University); Hayato Tsuchiya (Nihon University);

Session 3P2a FocusSession.SC5: SAR Imaging and Applications

Friday PM, August 3, 2018 Room T2

Organized by Kun-Shan Chen, Toshifumi Moriyama Chaired by Kun-Shan Chen, Toshifumi Moriyama

13:00 Compound Scattering Matrix by Dipoles in the Range Invited Direction

Yoshio Yamaguchi (Niigata University); Yoshihiro Yamazaki (Niigata University); Hiroyoshi Yamada (Niigata University);

- 13:20 An Experimental Assessment of Polarimetric L-band Backscattering Using GB-SAR Data Sevket Demirci (Mersin University); Betul Yilmaz (Mersin University); Serhat Gokkan (Mersin University); Hakan Isiker (Mersin University); Caner Ozdemir (Mersin University);
- 13:40 RCS Characteristics Analysis of Trihedral Corner Reflector for Bistatic SAR Tandem Mode Radiometric Calibration

Qiaona Zheng (Institute of Electronics, Chinese Academy of Sciences); Jun Hong (Institute of Electronics, Chinese Academy of Science); Yu Wang (Institute of Electronics, Chinese Academy of Sciences); 14:00 Research on the Sparse Aperture Remote Imaging System Based on the Freeform Quanying Wu (Suzhou University of Science and Technology); Junliu Fan (Suzhou University of Sci-

ence and Technology); Baohua Chen (Suzhou University of Science and Technology);

14:20 Airborne Single Pass X-band FMCW INSAR Instru-

Invited ment for the Accurate DEM Generation — Principle and Validation

> Masanobu Shimada (Tokyo Denki University); Akira Nohmi (Alouette Technology); Hitoshi Nohmi (Alouette Technology); Mayumi Noguchi (The Geospatial Information Authority of Japan); Sho Takahashi (The Geospatial Information Authority of Japan);

14:40 Integration of Heterogeneous InSAR Measurements

Invited for Mapping Complete and Accurate Threedimensional Surface Displacements: A Case Study of 2016 Mw 7.8 Kaiköura Earthquake, New Zealand Jun Hu (Central South University); J. H. Liu (Central South University); Lixin Wu (Northeastern University); Zhi-Wei Li (Central South University); Q. Sun (Hunan Normal University);

15:00 Near Real-time Image Focusing of Drone SAR Using Invited Parallelized Back-projection Algorithm

Cheng-Yen Chiang (Xuchang University); Chih-Yuan Chu (Xuchang University); Kun-Shan Chen (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Chiung-Shen Ku (Institute of Remote Sensing and Digital Earth, CAS); Chia-Tang Chen (Xuchang University);

15:20 Hinotori-C: A Full Polarimetric C Band Airborne Circularly Polarized Synthetic Aperture Radar for Disaster Monitoring

> Josaphat Tetuko Sri Sumantyo (Chiba University); Ming Yam Chua (Multimedia University);Cahya Edi Santosa (Chiba University);(ChibaGood FriedPanggabean University); Kengo Tsushima (Chiba University); Tomoro Watanabe (Chiba University); Karna Sasmita (Dislitbanqau; Aqus Mardiyanto (Dislitbangau); Franciscus Dwikoco Sri Sumantyo (Universitas Bhayangkara Jakarta Raya); Eko Tjipto Rahardjo (University of Indonesia); Gunawan Wibisono (University of Edi Supartono (Akademi Angkatan Indonesia); Udara): Steven Gao (University of Kent); Peberlin Parulian Sitompul (Chiba University); Mohammad Nasucha (Chiba University); Farohaji Kurniawan (Chiba University); Asif Awaludin (Chiba University); Babag Purbantoro (Chiba University); Ya Qi Ji (Chiba University); Nobuyoshi Imura (Chiba University);

15:40 Coffee Break

16:00 An Autofocus Algorithm Based on Topography Searching for Airborne SAR
Yan-Lei Li (Institute of Electronics, Chinese Academy of Sciences); Xingdong Liang (Institute of Electronics, Chinese Academy of Sciences); Ming Qiao (Institute of Electronics, Chinese Academy of Sciences); Long-Yong Chen (Institute of Electronics, Chinese Academy of Sciences);

16:20 Effects of Lunar Revolution on Moon-based Synthetic Aperture Radar Imaging Zhen Xu (Institute of Remote Sensing and Digital Earth, Chinese Academy of Science); Kun-Shan Chen (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences);

16:40 A SAR Target Recognition Method Based on Sparse Learning Dictionary Yong-Sheng Zhou (Academy of Opto-Electronics, Chinese Academy of Sciences); Weili Xiang (The 28th Research Institute of China Electronics Technology Group Corporation); Qi Wang (Academy of Opto-Electronics, Chinese Academy of Sciences); Xiaohui Li (Academy of Opto-Electronics, Chinese Academy of Sciences); Chuanrong Li (Academy of Opto-Electronics, Chinese Academy of Sciences);

Session 3P2b Light Scattering and Radiative Transfer: Basic Research and Applications 2

Friday PM, August 3, 2018 Room T2 Organized by Ping Yang, Michael I. Mishchenko Chaired by Lei Bi, Bingqi Yi

- 17:00 Formation of the Backscattering Halos in Media with Highly Elongated Phase Scattering Functions Yaroslaw A. Ilyushin (Moscow State University);
- 17:20 Influences of Minor Structures on Optical Properties of BC Aggregates
 Shiwen Teng (Nanjing University of Information Science & Technology); Chao Liu (Nanjing University of Information Science & Technology);
- 17:40 A New Approach to Efficiently Modeling the Extinction Efficiencies of Nonspherical Particles Wushao Lin (Zhejiang University); Lei Bi (Zhejiang University);

18:00 Optical Properties and Radiative Forcing of Aged BC Due to Hygroscopic Growth

Chen Zeng (Nanjing University of Information Science & Technology); Chao Liu (Nanjing University of Information Science and Technology); Jiangnan Li (University of Victoria); Bin Zhu (Nanjing University of Information Science and Technology); Yan Yin (Nanjing University of Information Science and Technology);

18:20 Does Day/Night Band Radiative Transfer Simulation under Cloudy Conditions Vary with Period Changes in Lunar Spectral Irradiances?

> Min Min (National Satellite Meteorological Center, China Meteorological Administration (NSMC/CMA));

Session 3P3a Advanced Mathematical and Computational Methods in Electromagnetic Theory and Their Applications 2

Friday PM, August 3, 2018

Room T3

Organized by Georgi Nikolov Georgiev, Mariana Nikolova Georgieva-Grosse

Chaired by Mariana Nikolova Georgieva-Grosse

13:00 Suppression of Distant Aperture Sidelobes in Linear and Planar Phased Arrays Vladlen Ilych Gusevsky (National Research University "Moscow Power Engineering Institute"): Olag Niko-

"Moscow Power Engineering Institute"); Olga Nikolaevna Tsvetkova (NRU MPEI);

13:20 Magnetic Levitation, Flux Pinning, and Analytical Models of Thermally Activated Flux Motion in High-T_c Superconductors and Its Applications in the Medical Field

Miryala Santosh (University of Toronto); Masato Murakami (Shibaura Institute of Technology);

- 13:40 Theorem for Existence and for the Number of Some Real Numbers Mariana Nikolova Georgieva-Grosse (Consulting and Researcher in Physics and Computer Sciences); Georgi Nikolov Georgiev (University of Veliko Tirnovo "St. St. Cyril and Methodius");
- 14:00 Theorem for the Identity of the $G_1(c, n)$ and $L_1(c, n)$ Numbers and Its Application to the Theory of Waveguides

Georgi Nikolov Georgiev (University of Veliko Tirnovo "St. St. Cyril and Methodius"); Mariana Nikolova Georgieva-Grosse (Consulting and Researcher in Physics and Computer Sciences); 14:20 FDTD Analysis of Meta-surfaces Utilizing Surface Impedance Boundary Conditions Takuji Arima (Tokyo University of Agriculture and Technology); Toru Uno (Tokyo University of Agriculture and Technology);

Session 3P3b SC1: Advanced Numerical Techniques for Solving Electromagnetic Problems

Friday PM, August 3, 2018

Room T3

Organized by Mei Song Tong, Shinichiro Ohnuki Chaired by Mei Song Tong, Shinichiro Ohnuki

- 14:40 An Efficient Numerical Method for Solving Multiscale Electromagnetic Scattering Problems Yibei Hou (Shanghai Jiao Tong University); Gaobiao Xiao (Shanghai Jiao Tong University);
- 15:00 Mixed Discretization of CFIE in the Framework of MLFMA Sadri Guler (Middle East Technical University); Abdulkadir C. Yucel (Middle East Technical University); Hakan Bagci (King Abdullah University of Science and Technology (KAUST)); Ozgur Ergul (Middle East Technical University);
- 15:20 New Fine Features Modelling Techniques in Large Scale Massively Parallel Program JEMS-FDTD Xuesong Meng (Institute of Applied Physics and Computational Mathematics); Xianfeng Bao (Institute of Applied Physics and Computational Mathematics); Haijing Zhou (Institute of Applied Physical and Computational Mathematics);

15:40 Coffee Break

16:00 A Scattering Analysis Algorithm for Inhomogeneous Tensor Impedance Surfaces Using Fourier Transform Method

Bo O. Zhu (Nanjing University);

16:20 Performance Comparison between Different Schemes of the Frequency Dispersive FDTD under the GPU Implementation

Toshihito Onai (Tokyo Metropolitan University); A. Kik (Tokyo Metropolitan University); Jerdvisanop Chakarothai (National Institute of Information and Communication Technology); Y. Suzuki (Tokyo Metropolitan University); Jun Shibayama (Hosei University); 16:40 Accurate Solution of Volume-surface Integral Equations at Very Low Frequencies
 Qing Xu (Tongji University); Mei Song Tong (Tongji University);

17:00 Surface-volume-surface EFIE in Electromagnetic Analysis for Signal Integrity, Remote Sensing, Bioelectromagnetics, and Power Systems Vladimir Okhmatovski (University of Manitoba); S. Zheng (University of Manitoba); R. Gholami (University of Manitoba); J. Mojolagbe (University of Manitoba); Z. Cheng (University of Manitoba); A. Aljammal (University of Manitoba);

- 17:20 Electromagnetic Scattering of an Object Using a Modified High Order FDTD
 Pengcheng Ren (East China Normal University); Lei Kuang (East China Normal University); Ruonan Chen (East China Normal University); Qing Huo Liu (Duke University);
- 17:40 Development of the Hybrid Simulation Method Combining the FDTD Method with the Finite Difference Beam Propagation Method for Millimeter-wave Analysis Takehiro Iwata (Tokyo Metropolitan University);

A. Kik (Tokyo Metropolitan University); A. Kik (Tokyo Metropolitan University); Jerdvisanop Chakarothai (National Institute of Information and Communication Technology); Y. Suzuki (Tokyo Metropolitan University); Jun Shibayama (Hosei University);

- 18:00 Scattering of a Small Object Based on TO-FDTD Ruonan Chen (East China Normal University); Lei Kuang (East China Normal University); Pengcheng Ren (East China Normal University); Qing Huo Liu (Duke University);
- 18:20 EM Analysis of Electromagnetic Devices Using Finitedifference Complex-frequency-domain Method Di Wu (Nihon University); Takashi Yamaguchi (Tokyo Metropolitan Industrial Technology Research Institute); Shinichiro Ohnuki (Nihon University);

Session 3P4a SC3: Modeling, Numerical Simulation and Theory in Optics and Photonics 2

Friday PM, August 3, 2018

Room T4

Organized by Yasuhide Tsuji, Jun Shibayama Chaired by Yasuhide Tsuji, Jun Shibayama

- 13:00 Mode Field Evolution of a Single-mode Multi-core Fiber Based on the Coupled Mode Theory Yi-Ling Li (National Sun Yat-Sen University); Sin-Yuan Mu (National Sun Yat-Sen University); Hung-Wen Chang (National Sun Yat-Sen University);
- 13:20 Design of Tapered Directional Coupler Type Polarization Splitter Using 3-D FE-BPM Based on Coordinate Transformation
 Shingo Kawamura (Muroran Institute of Technology); Yasuhide Tsuji (Muroran Institute of Technology);
- 13:40 Analysis of Directivity for SOI Photodiode with Gold Line-and-space Grating Hiroaki Satoh (Shizuoka University); Hiroshi Inokawa (Shizuoka University);
- 14:00 Modeling of On-chip Asymmetric Colliding Pulse Mode-locked Lasers for Sub-terahertz Wave Generation Carlos Diego Gordon Gallegos (Universidad Tecnica de Ambato); Myriam Cumbajin (Universidad Tecnológica Indoamérica); Guillermo Carpintero del Barrio (Universidad Carlos III de Madrid); Julien Javaloyes (Universitat de les Illes Baleares);
- 14:20 A Terahertz Polarization Splitter Using a Hybrid Plasmonic Waveguide with InSb Jun Shibayama (Hosei University); Arata Yamamoto (Hosei University); Junji Yamauchi (Hosei University); H. Nakano (Hosei University);
- 14:40 Mode Conversion of Surface Plasmon Polaritons Using an Insulator-metal-insulator Waveguide with an Air Gap Jun Shibayama (Hosei University); Takahiro Suzuki (Hosei University); Junji Yamauchi (Hosei Univer-

sity); H. Nakano (Hosei University);

- 15:00 A Simulation System to Hide Dynamic Objects Selectively at Visible Wavelengths Qiluan Cheng (Huazhong Agricultural University); Shu Zhang (Huazhong Agricultural University); Chizhu Ding (Huazhong Agricultural University); Zuojun Tan (Huazhong Agricultural University); Guo Ping Wang (Shenzhen University);
- 15:20 Dispersion Characteristic of Elliptical Waveguide under New Boundary Condition Shamini Pillay Narayanasamy Pillay (Multimedia University); Deepak Kumar (Multimedia University);
- 15:40 Coffee Break

Session 3P4b SC1: Computational Techniques in Electromagnetics and Applications

Friday PM, August 3, 2018

Room T4

Organized by Yoichi Okuno, Tsuneki Yamasaki

Chaired by Yoichi Okuno, Tsuneki Yamasaki

- 16:00 Numerical Analysis of a Leapfrog ADI-FDTD Method for Metamaterial Maxwell's Equations Meng Chen (Xiangtan University); Yunqing Huang (Xiangtan University); Jichun Li (University of Nevada, Las Vegas);
- 16:20 A Grating-based Plasmon Index Sensor: Possibility of Workspaces with Tractable Minimal TM Efficiencies Xun Xu (Kyushu Sangyo University); Miaoning Zheng (South China Normal University); Yoichi Okuno (South China Normal University);
- 16:40 Analysis of Inter-Bundle Crosstalk in High Speed MIMO Signalling in Powerline Communication Channels

Modisa Mosalaosi (University of KwaZulu-Natal); Thomas Joachim Odhiambo Afullo (University of KwaZulu-Natal (UKZN));

- 17:00 Numerical Analysis of Pulse Reflection Response from Conducting Strips in Dispersion Media with Air Layer Ryosuke Ozaki (Nihon University); Tsuneki Yamasaki (Nihon University);
- 17:20 Scattering of Electromagnetic Wave by a Rectangular Cylinder Consist of Conducting Strips Tsuneki Yamasaki (Nihon University); Toshiki Shibayama (Nihon University); Ryousuke Ozaki (Nihon University);

Session 3P5 SC4: Advanced Antenna and RF Circuits Design

Friday PM, August 3, 2018

Room T5

Organized by Malay Ranjan Tripathy, Yongchae Jeong

Chaired by Malay Ranjan Tripathy, Yongchae Jeong

13:00 Effect of Mutual Coupling within Elements of Arrayunits Beyond Full Wavelength Element Spacing for Linear Arrays Jacob Adopley (Ghana Technology University Col-

Jacob Adopley (Ghana Technology University College);

13:20 Design of a Size-reduced Microwave Amplifiers Using an Asymmetrical Spiral-DGS

> Jongsik Lim (Soonchunhyang University); Phanam Pech (Chonbuk National University); Choi(Chonbuk Heeyoun National University); Yongchae Jeong (Chonbuk National University); Sang-Min Han (Soonchunhyang University); Dal Ahn (Soonchunhyang University);

13:40 $\lambda/2$ Impedance Stepped Resonator Parallel/Antiparallel Coupled-line Bandpass Filter with a Wide Stopband Characteristic Phirun Kim (Chonbuk National University); Phanam Pech(Chonbuk National University); Girdhari Chaudhary (Chonbuk National Univer-Jongsik Lim (Soonchunhyang University); situ): Malay Ranjan Tripathy (Amity University Uttar Pradesh); Yongchae Jeong (Chonbuk National University);

- 14:00 Flexible Printed Active Antenna for Digital Television Reception Teerapong Pratumsiri (Chulalongkorn University); Panuwat Janpugdee (Chulalongkorn University);
- 14:20 Reliability Ranking of Nodes: A Case of Revolution Priya Ranjan (Amity University Uttar Pradesh); Harshit Pandey (Amity University Uttar Pradesh); Malay Ranjan Tripathy (Amity University Uttar Pradesh); Cher-Ming Tan (Chang Gung University); Saumay Pushp (KAIST);
- 14:40 A Compact Slotted 4 Element Large Wideband MIMO Antenna for Wireless Application Bishal Mishra (Amity University Uttar Pradesh); Rehan Ahmed Siddiqui (Amity University Uttar Pradesh); Malay Ranjan Tripathy (Amity University Uttar Pradesh); Daniel Ronnow (University of Gavle);
- 15:00 An X-band 16-element Switched-beam Antenna Array with Butler Matrix Network Chao-Hsiung Chang (National Taiwan University of Science and Technology); Jheng-Yuan Huang (National Taiwan University of Science and Technology); Chun-Hao Tseng (National Taiwan University of Science and Technology);
- 15:20 Wideband Flat Group Delay Circuit for Selfinterference Cancellation in Full Duplex Girdhari Chaudhary (Chonbuk National University); Qi Wang (Chonbuk National University); Malay Ranjan Tripathy (Amity University Uttar Pradesh); Yongchae Jeong (Chonbuk National University);
- 15:40 Coffee Break

- 16:00 Slot-coupled Circularly Polarized SIW Antenna Array for 5G Apllication
 Rehan Ahmed Siddiqui (Amity University Uttar Pradesh); Bishal Mishra (Amity University Uttar Pradesh); Malay Ranjan Tripathy (Amity University Uttar Pradesh); M. S. Prasad (Amity University Uttar Pradesh);
- 16:20 A Novel 1–6 GHz Chaotic Signal Oscillator for Broadband Communication Systems
 Shanwen Hu (Nanjing University of Posts and Telecommunications); Shu Yu (Nanjing University of Posts and Telecommunications); Yunqing Hu (Nanjing University of Posts and Telecommunications); Zixuan Wang (Nanjing University of Posts and Telecommunications); Bo Zhou (Nanjing University of Posts and Telecommunications);
- 16:40 A Novel UWB Quadrifilar Plannar Spiral Antenna Hesham M. Elkady (Higher Institute of Engineering and Technology in New Damietta); Haythem Hussein Abdullah (Electronics Research Institute (ERI)); Saad M. Darwish (Alexandria University);
- 17:00 Design of a Ring Oscillator with Temperature and Process Compensation Adopting a Novel Method Jian-Chang Du (Southeast University); Zhigong Wang (Southeast University); Xi Chen (Southeast University); Jian Xu (Southeast University); Bing-Bing Ma (Southeast University);
- 17:20 Miniaturized Wilkinson Power Divider with DC Isolation
 Sichen Xie (Sophia University); Hitoshi Hayashi (Sophia University);
 17:40 A. Wildebard Circularly, Polarized Dipole Aptenna
- 17:40 A Wideband Circularly Polarized Dipole Antenna with Crossed Configuration Min-Cheol Hong (Hoseo University); Ju-Heun Lee (Hoseo University); Jeong-Taek Oh (Hoseo University); Sang-Min Han (Soonchunhyang University); Won-Sang Yoon (Hoseo University);
- 18:00 T-shaped Slot Loaded Rectangular Patch Antenna with Enhanced Bandwidth Using Defected Ground Structure Nagendra Prasad Yadav (Nanjing University of Science and Technology); Malay Ranjan Tripathy (Amity University Uttar Pradesh); Yongchae Jeong (Chonbuk
- National University);
 18:20 Vertical Polarized 1-D Series-fed 1 × 2 Linear Array for X-band Synthetic Aperture Radar Applications Venkata Kishore Kothapudi (Koneru Lakshmaiah Education Foundation); Balveer Painam (Koneru lakshmaiah Education Foundation); Lakshman Pappula (KLEF); Vijay Kumar (Vellore Institute of Technology (VIT));

Session 3P6a SC1: Radar Cross Section and Inverse Problems in Electromagnetics

Friday PM, August 3, 2018

Room T6

Organized by Yury Vladimirovich Yukhanov, Yury V. Shestopalov

Chaired by Yury Vladimirovich Yukhanov, Yury V. Shestopalov

- 13:00 Optimization Method in 2D DC Cloaking Problems Gennady V. Alekseev (Institute of Applied Mathematics FEB RAS); Dmitry A. Tereshko (Institute of Applied Mathematics FEB RAS); Elizaveta O. Paklina (Far Eastern Federal University);
- 13:20 Broadband RCS Reduction Using Digital Impedance Metasurfaces with 2-bit Coding of Axes of Anisotropy and Eigen Reactances Andrey I. Semenikhin (Southern Federal University); Diana V. Semenikhina (Southern Federal University); Yury Vladimirovich Yukhanov (Southern Federal University); P. V. Blagovisnyy (Southern Federal University);
- 13:40 Synthesis of a Two-focal Impedance Reflector of Arbitrary Shape

Yury Vladimirovich Yukhanov (Southern Federal University); Tatyana Yurievna Privalova (Southern Federal University); Timur O. Amirokov (Southern Federal University); E. E. Privalov (Southern Federal University);

- 14:00 Scattering Characteristics of the Van-Atta Waveguide Array on the Surface of a Cylinder Yury Vladimirovich Yukhanov (Southern Federal University); Tatyana Yurievna Privalova (Southern Federal University); Elena Vladimirovna Kryuk (Southern Federal University); Ilya Vladimirovich Merglodov (Southern Federal University);
- 14:20 Numerical Analysis of Inverse Problems for Electric Field Measurements
 Dmitry A. Tereshko (Institute of Applied Mathematics FEB RAS);
- 14:40 Theoretical and Numerical Analysis of the Magnetic Cloaking Problem
 Yuliya E. Spivak (Far Eastern Federal University); Aleksey V. Lobanov (Institute of Applied Mathematics FEB RAS); Dmitry A. Tereshko (Institute of Applied

Mathematics FEB RAS);

15:00 The Radiation Characteristics of the Four-element Vivaldi Antenna Arrays, Which Located on the Cylindrical Surface
A. V. Gevorkyan (Southern Federal University);

A. V. Gevorkyan (Southern Federal University); Yury Vladimirovich Yukhanov (Southern Federal University); Tatyana Yurievna Privalova (Southern Federal University);

15:20 Radiation Characteristics of the Low Profile Dipole Antenna
A. V. Gevorkyan (Southern Federal University); Tatyana Yurievna Privalova (Southern Federal University); Yury Vladimirovich Yukhanov (Southern

Federal University);

- 15:40 Coffee Break
- 16:00 Fusion of Three Different Feature Vectors-waveform Structure, EP-based CLEAN and Prony Method Seung-Jae Lee (Hannam University); In-Sik Choi (Hannam University);

Session 3P6b SC4: Terahertz Devices, Components, and Systems for Practical Applications

Friday PM, August 3, 2018

Room T6

Organized by Safumi Suzuki

Chaired by Safumi Suzuki, Koichi Maezawa

- 16:20 Mm-wave/THz Multi-Gigabit Wireless Links Edward Wasige (University of Glasgow); Abdullah Al-Khalidi (University of Glasgow); Jue Wang (University of Glasgow);
- 16:40 Operating Mechanism and Voltage Swing Enhancement of the Hard-type Oscillators Based on Series-connected RTDs
 Koichi Maezawa (University of Toyama); Motoyuki Yoshida (University of Toyama); Masayuki Mori (University of Toyama);
- 17:00 On the Sensitivity of Triple-barrier Resonanttunneling (Sub-) mm-wave Detectors
 K. Arzi (University of Duisburg-Essen); S. Suzuki (Tokyo Institute of Technology); Andreas Rennings (University of Duisburg-Essen); Daniel Erni (University of Duisburg-Essen, Campus Duisburg); N. Weimann (University of Duisburg-Essen); M. Asada (Tokyo Institute of Technology); Werner Prost (University of Duisburg-Essen);

17:20 Proposal of a Resonant-tunneling-diode Terahertz Oscillator Integrated with Rectangular Cavity Resonator for High Output Power
Safumi Suzuki (Tokyo Institute of Technology);
M. Asada (Tokyo Institute of Technology); Y. Aoyama

(Tokyo Institute of Technology);

- 17:40 Development of Terahertz Folded Waveguide Traveling Wave Amplifier
 Wenxin Liu (Institute of Electronics, Chinese Academy of Sciences); Chao Zhao (Institute of Electronics, Chinese Academy of Sciences); Xin Guo (Institute of Electronics, Chinese Academy of Sciences); Huaping Zhou (Affiliated Cancer Hospital & Institute of Guangzhou Medical University);
- 18:00 Simulation and Analysis of Photoconductive Vacuum Diode Arrays in Terahertz Band Jun Dai (Beihang University); Cun-Jun Ruan (Beihang University); Xing-Yun Zhang (Beihang University);
- 18:20 Design of Narrow Band Terahertz Waveguide Filters Including Power Handling Analysis Ayesha Kosar Fahad (Beihang University); Cun-Jun Ruan (Beihang University); Tanveer Ul Haq (Beihang University); Shahid Ullah (Beihang University);

Session 3P7

Novel Materials, Designs and Applications for Absorption of Electromagnetic Wave

Friday PM, August 3, 2018

Room T7

Organized by Bo Hou, Fumiaki Miyamaru Chaired by Bo Hou, Fumiaki Miyamaru

13:20 Hybridization-induced Broadband Terahertz Invited Graphene Meta-absorber

> Nanli Mou (Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Science); Hongxing Dong (Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Science); Shaohua Dong (Fudan University); Qiong He (Fudan University); Lei Zhou (Fudan University); Long Zhang (Fudan University); Shulin Sun (Fudan University);

13:40 Waveform-selective Absorbing Metasurfaces Invited

Hiroki Wakatsuchi (Nagoya Institute of Technology);D. F. Sievenpiper (University of California);

- 14:00 Metamaterial Absorbers: Broadband and Multifunc-Invited tional Design
 - Wenjie Chen (Zhejiang University); Wei Jiang (Zhejiang University); Shuomin Zhong (Zhejiang University); Yungui Ma (Zhejiang University);
- 14:20 An Optically Transparent Broadband Resistive Frequency Selective Surface Absorber Utilizing Indium Tin Oxide (ITO) Film Xianyou Xie (Nanjing University); Ping Chen (Nanjing University);
- 14:40 Novel Electromagnetic Absorption Characteristics of Invited Metallic Checkerboard-Like Metasurfaces
 - Yoshiro Urade (Center for Emergent Matter Science, RIKEN); Yosuke Nakata (The University of Tokyo); Toshihiro Nakanishi (Kyoto University); Masao Kitano (Kyoto University);
- 15:00 Broadband Terahertz Wave Absorption in Self-
- Invited complementary and Non-self-complementary Patterns Keisuke Takano(Shinshu University); Kenichiro Hanai (OsakaUniversity); Masashi Yoshimura (Osaka University); Makoto Nakajima (Osaka University); Fumiaki Miyamaru (Shinshu University);
- 15:20 Narrowband Thermal Emitter by HfN-based Plas-Invited monic Resonators

Junichi Takahara (Osaka University); Hirofumi Toyoda (Osaka University);

15:40 Coffee Break

 $16{:}00~$ Changing Macromolecular Structure by THz Radia-Invited tion

Hiromichi Hoshina (Terahertz Sensing and Imaging Research Team, RIKEN);

- 16:20 THz-induced Spallation in the Solids
- Invited

Masaya Nagai (Osaka University); Eiichi Matsubara (Osaka University); Masaaki Ashida (Osaka University); Masanori Fuyuki (Kio University); Keigo Kawase (Osaka University); Akinori Irizawa (Osaka University); Goro Isoyama (Osaka University); Jun Aoki (Osaka University); Michisato Toyoda (Osaka University);

- 16:40 Photoinduced Charge Transfer Dynamics in Organic
- Invited MoS_2 Mixed-dimensional van der Waals Heterojunctions

Christopher E. Petoukhoff (Okinawa Institute of Science and Technology); Sofiia Kosar (Okinawa Institute of Science and Technology); Manami Goto (Okinawa Institute of Science and Technology); Ibrahim Bozkurt (Rutgers University); Manish Chhowalla (Rutgers University); Keshav M. Dani (Okinawa Institute of Science and Technology Graduate University);

17:00 Microwave Absorption by Logarithmic Spiral Meta-Invited surface

Shubo Wang (City University of Hong Kong); C. T. Chan (The Hong Kong University of Science and Technology);

- 17:20 Activated Carbons Based on Natural Materials for Electromagnetic Wave Absorber Yohandri Azwir (Universitas Negeri Padang); Debi Rianto (Universitas Negeri Padang); Nova Satria (Universitas Negeri Padang); Zulpadrianto (Universitas Negeri Padang); Ananda Putra (Universitas Negeri Padang); Josaphat Tetuko Sri Sumantyo (Chiba University);
- 17:40 Terahertz Spectroscopy of Lossy Photonic Crystals Wenya Zhang (Soochow University); Weixin Lu (Soochow University); Bo Hou (Soochow University);

Session 3P8 SC2: Recent Advances of Metamaterials for Novel Electromagnetic and Photonic Devices

> Friday PM, August 3, 2018 Room T8 Organized by Yungui Ma, Sailing He Chaired by Yungui Ma, Sailing He

13:20 Exploring Novel Ways to Control Magnetic Fields Invited with Negative Permeability

Rosa Mach-Batlle (Universitat Autonoma de Barcelona); Sergi Laut (Universitat Autonoma de Barcelona); Nuria Del-Valle (Universitat Autonoma de Barcelona); Carles Navau (Universitat Autonoma de Barcelona); Alvaro Sanchez (Universitat Autonoma de Barcelona);

13:40 Ultrafast Tunable Metamaterial-induced Trans-Invited parency

Xiaoyong Hu (Peking University);

- 14:00 High-efficiency Optical Meta-coupler of Wire Waveg-Invited uides for Different Angular Momentums
 - Yi Chao Xu (Soochow University); Hongchen Chu (Soochow University); Yun Lai (Soochow University);
- 14:20 Intuitive Model Based on Azimuthally Propagating
- Invited Modes for the Nanoparticle Sensing with Whispering Gallery Microcavities Haitao Liu (Nankai University); Junda Zhu (Nankai University); Ying Zhong (Tianjin University);

14:40 Compact Toroidal Localized Surface Plasmons Invited

- Pengfei Qin (Zhejiang University); Yi Hao Yang (Zhejiang University); Bin Zheng (Zhejiang University); Er Ping Li (Zhejiang University — UIUC Institute); Hongsheng Chen (Zhejiang University);
- 15:00 Definite Light Deflection by Cosmic Topological De-Invited fects Mimicked by Rotational Metasurfaces
- Chong Sheng (Nanjing University); Hui Liu (Nanjing University); Ying Chen (Xiamen University); Zhiwei Yan (Nanjing University); Lin Xu (Xiamen University); Xiangyang Wang (Nanjing University); Qing Huo Liu (Duke University); Huanyang Chen (Xiamen University); Shining Zhu (Nanjing University);
- 15:20 Unidirectional Propagation and the Optical Dirac Invited Equation

Simon A. R. Horsley (University of Exeter);

15:40 Coffee Break

16:00 Effect of Anisotropic Metasurface Linings on Circular Invited Waveguide

> Zhangjie Luo (Southest University); Changjiang Xue (Institute of Electronic Engineering, China Academy of Engineering Physics); Tie Jun Cui (Southeast University);

16:20 Photonic Crystals of Spoof Surface Plasmons Invited

> Zhen Gao (Nanyang Technological University); Baile Zhang (Nanyang Technological University);

16:40 Influence of Excitation States on Optical Simulations Invited in Waveguide Arrays

Tao Li (Nanjing University); B. B. Xu (Nanjing University); Qingqing Cheng (University of Shanghai for Science and Technology); Shi-Ning Zhu (Nanjing University);

- 17:00 Side Scattering Shadow and Energy Concentration Ef-Invited fects of Epsilon-near-zero Media
 - Jia Wen Song (Soochow University); Jie Luo (Soochow University); Yun Lai (Soochow University);

17:20 All-dielectric Anapolic Metasurface Based on Cubic Nanoparticles

Jose Francisco Algorri (Carlos III University); Braulio Garcia-Camara (Carlos III University) of Madrid); Dimitris Zografopoulos (Istituto per la Microelettronica e Microsistemi (CNR-IMM)); Ricardo Vergaz (Carlos III University); Jose Manuel Sanchez-Pena (Carlos III University); Romeo Beccherelli (Istituto per la Microelettronica e Microsistemi (CNR-IMM));

- 17:40 Response of Waveform-selective Metasurfaces to Wi-Fi Signals
 Daiju Ushikoshi (Nagoya Institute of Technology); K. Asano (Nagoya Institute of Technology); Mizuki Tanikawa (Nagoya Institute of Technology); K. Sanji (SOKEN, INC.); M. Ikeda (SOKEN, INC.); Daisuke Anzai (Nagoya Institute of Technology); Hiroki Wakatsuchi (Nagoya Institute of Technology);
- 18:00 Application of Waveform-selective Metasurfaces to Electromagnetic Interference Issues Kosei Asano (Nagoya Institute of Technology); Hiroki Wakatsuchi (Nagoya Institute of Technology);

Session 3P9 FocusSession.SC2: Advances in Nanolasers 2

Friday PM, August 3, 2018

Room A1

Organized by Renmin Ma, Qing Zhang Chaired by Renmin Ma

00:00 Surface Plasmon Amplifiers and Lasers Keynote

Pierre Berini (University of Ottawa);

13:30 Plasmonics: Friend or Foe for Laser Miniaturization? Invited

Renmin Ma (Peking University);

13:50 Spatio-temporal Dynamics of Stopped-light Nanolas-Invited ing

Ortwin Hess (Imperial College London);

- $14{:}10~$ Surface Plasmon Polariton Lasers and Electrically
- Invited Pumped Fabry-Perot Resonators Based on Open Metallic Cavities

Henri J. Lezec (National Institute of Standards and Technology); Wenqi Zhu (National Institute of Standards and Technology); Cheng Zhang (National Institute of Standards and Technology); Ting Xu (Nanjing University); Christian A. Nijhuis (National University of Singapore); Ksenia Makarenko (National University of Singapore); Thorin Jake Duffin (National University of Singapore); Andreea Vasile (National University of Singapore); Hong-Son Chu (A*STAR Institute of High Performance Computing); Thanh Xuan Hoang (A*STAR Institute of High Performance Computing); Dongyang Wan (National University of Singapore); Saurav Prakash (National University of Singapore); Cao Yu (National University of Singapore); Thirumalai Venkatesan (National University of Singapore); Amit K. Agrawal (National Institute of Standards and Technology);

14:30 Performance Features of a Plasmon-assisted Solid-Invited state Laser

D. Hernandez-Pinilla (Universidad Autonoma de Madrid); P. Molina (Universidad Autonoma de Madrid); J. Cuerda (Universidad Autonoma de Madrid); M. O. Ramirez (Universidad Autonoma de Madrid); Luisa E. Bausa (Universidad Autonoma de Madrid);

14:50 Challenges for Electrically Pumped Subwavelength Invited Plasmon Mode Lasers

Martin T. Hill (The University of Western Australia);

15:10 Parity-time Symmetric Laser and Absorber Invited

Zi Jing Wong (Texas A&M University);

- 15:30 Complex Cavity Photonic Crystal Surface Emitting Invited Laser
 - Wanhua Zheng (Institute of Semiconductors, CAS); Yufei Wang (Institute of Semiconductors, CAS);

15:40 Coffee Break

Session 3P10 SC1: High-frequency Methods

Friday PM, August 3, 2018

Room A2 Organized by Keiji Goto, Ryoichi Sato Chaired by Keiji Goto, Ryoichi Sato

- 13:20 Reflection and Transmission Features of Scattered Field from Multi-layered Window Glass in High Frequency Band Ryoichi Sato (Niigata University); Hiroshi Shirai (Chuo University);
- 13:40 E-polarized Diffraction by a Lossy Dielectric Wedge Se-Yun Kim (Korea Institute of Science and Technology);
- 14:00 EM Transmission through an Aperture in a Thin Conducting Screen Separating Two Half Spaces of Different Properties *Hirohide Serizawa (Numazu National College of Technology)*;
- 14:20 Radio Propagation Estimation at ETC Gate Using Point Cloud Obtained from Mobile Mapping System Takahiro Hashimoto (Mitsubishi Electric Corp. Info. Tech. R&D Center); T. Nakanishi (Mitsubishi Electric Corp. Info. Tech. R&D Center); M. Takikawa (Mitsubishi Electric Corp. Info. Tech. R&D Center); N. Yoneda (Mitsubishi Electric Corp. Info. Tech. R&D Center); M. Miura (Mitsubishi Electric Corp. Info. Tech. R&D Center); Y. Tsuda (Mitsubishi Electric Corp. Kamakura Works);
- 14:40 Study on the Microcellular Radio Wave Propagation at Universitas Indonesia Environment Utilizing Ray Tracing
 Fariz Azhar Abdillah (Universitas Indonesia); Eko Tjipto Rahardjo (University of Indonesia);
- 15:00Asymptotic Analysis for Transient Scattered Magnetic Field from a Coated Conducting Cylinder by Using Saddle Point Technique Keiji Goto(National Defense Academy); ToruKawano(National Defense Academy); Kitahara(National Hisaki Defense Academy); Yuri Fukumura (National Defense Academy); Manami Inoue (National Defense Academy);
- 15:40 Coffee Break

Session 3P11

New Advances in Light Scattering by Particles in the Micron and Sub-Micron Regimes 2

Friday PM, August 3, 2018

Room A3

Organized by Jose Maria Saiz Vega, Matthew J. Berg Chaired by Jose Maria Saiz Vega, Matthew J. Berg

- 13:20 Multiple Scattering in Discrete Random Media of Invited Micron-scale Particle Using Incoherent Interactions
- Karri Muinonen (University of Helsinki); Johannes Markkanen (University of Helsinki); Timo Vaisanen (University of Helsinki); Antti Penttila (University of Helsinki); Gorden Videen (Army Research Laboratory);
- 13:40 Estimating Particle Non-sphericity from the Fourier Invited Spectrum of Its Light-scattering Pattern
 - Andrey V. Romanov (Voevodsky Institute of Chemical Kinetics and Combustion SB RAS); Valeri P. Maltsev (Novosibirsk State University); Maxim A. Yurkin (Voevodsky Institute of Chemical Kinetics and Combustion SB RAS);
- 14:00 Photopolarimetric Remote Sensing from Irregularly Invited Shaped Particles

Gorden Videen (Army Research Laboratory); Evgenij Zubko (Far Eastern Federal University);

14:20 Water Cloud Optical Properties Derived from Com-Invited bined Active and Passive Remote Sensing

Yongxiang Hu (NASA Langely Research Center);

- 14:40 Aerosol Particle Characterization with Digital Holog-
- Invited raphy: Simultaneous Scattering and Image Measurements
 - Matthew J. Berg (Kansas State University); Y. W. Heinson (Washington University in Saint Louis); O. Kemppinen (Kansas State University); Stephen Holler (Fordham University);
- 15:40 Coffee Break

Session 3P12a FocusSession.SC3: Photonic Nanostructures for Enhancing Light-matter Interaction 2

Friday PM, August 3, 2018 Room A4 Organized by Chia Chen Hsu Chaired by Chia Chen Hsu

- 13:00 Study of Ultrafast Dynamics and Nonlinear Optics in Invited Metamaterial/Plasmonic Nanostructures
- Kam Sing Wong (Hong Kong University of Science and Technology);
- 13:20 Small Divergence Photonic Crystal Surface Emitting Invited Lasers with ITO Top Cladding Layers
 - Shen-Che Huang (National Chiao Tung University); Kuo-Bin Hong (National Chiao Tung University); Tien-Chang Lu (National Chiao Tung University);

- 13:40 Enhancing Luminescence Efficiency of Transition Invited Metal Dichalcogenide Monolayers
 - Jeongyong Kim (Sungkyunkwan University);
- 14:00 Narrow-linewidth Surface Mode on Polymer Struc-Invited tures for Strongly Enhanced Fluorescence

Xianyu Ao (South China Normal University);

- 14:20 Strong Upconversion Luminescence Enhancement of
- Invited Nd³⁺-doped Multilayered Nanoparticles in Aqueous Solution by Low Refractive Index Resonant Waveguide Grating

Duc Tu Vu (National Chung Cheng University); I-Chang Tsa (National Chung Cheng University); Quoc Minh Le (Institute of Materials Science); Shiao-Wei Kuo (National Sun Yat Sen University); Lai-Kwan Chau (National Chung Cheng University); Chu-Chi Ting (National Chung Cheng University); Hung-Chih Kan (National Chung Cheng University); Chia Chen Hsu (National Chung Cheng University);

- 14:40 Interactions of Plasmonic Nano-vortex Fields with Invited Nanoparticles and Molecules
 - Keiji Sasaki (Hokkaido University);
- 15:00 Hybrid Nanostructures Assembled by Laser Trapping and Deposition of Nanoparticles in the Nano-gap of a Plasmonic Antenna

Christophe Pin (Hokkaido University); Shutaro Ishida (Hokkaido University); Genta Takahashi (Hokkaido University); Kota Sudo (Hokkaido University); Tuyoshi Fukaminato (Kumamoto University); Keiji Sasaki (Hokkaido University);

15:20 Interaction of Infrared Light to Bulk Propagating

- Invited Waves in Hyperbolic Metamaterial Optical Waveguide Junichi Takahara (Osaka University); Mai Higuchi (Osaka University); Jun Sagara (Osaka University);
- 15:40 Coffee Break
- 16:00 Curvature-induced Forces between Nano-corrugated Invited Plasmonic Surfaces

Kun Ding (The Hong Kong University of Science and Technology); Han Hu (National Chung Cheng University); Tsan-Chuen Leung (National Chung Cheng University); Che Ting Chan (The Hong Kong University of Science and Technology);

16:20 Hot Carrier Extraction with Plasmonic Broadband Invited Absorbers

Charlene Ng (IPF); Ann Roberts (The University of Melbourne); Timothy J. Davis (The University of Melbourne); Daniel E. Gomez (RMIT University);

16:40 Lasing Enhanced Surface Plasmon Resonance Sensing Invited

Renmin Ma (Peking University);

Session 3P12b Emerging Techniques for Optical Communication and Sensing 2

Friday PM, August 3, 2018

Room A4 Organized by Guo-Wei Lu, Zhenzhou Cheng Chaired by Guo-Wei Lu, Tinghui Xiao

17:00 The Applications of Interferometric Fiber-optic Sen-Invited sors in Oilfield

> Fei Liu (Peking University); Xiangge He (Peking University); Le Yu (Beijing Perception Technology Co. Ltd); Yong Pan (Petro China Xinjiang Oilfield Company); Bing Xie (Petro China Xinjiang Oilfield Company); Duo Yi (Peking University); Lijuan Gu (Peking University); Min Zhang (Peking University);

17:20 Mid-infrared Germanium Photonic Integrated Platform

> Tinghui Xiao (The University of Tokyo); Ziqiang Zhao (The University of Tokyo); Wen Zhou (The Chinese University of Hong Kong); Mitsuru Takenaka (The University of Tokyo); Hon Ki Tsang (The Chinese University of Hong Kong); Zhenzhou Cheng (The University of Tokyo); Keisuke Goda (University of California);

17:40 Recent Developments in Ghost Imaging Invited

> Piotr Ryczkowski (Tampere University of Technology); Caroline Amiot (Tampere University of Technology); John M. Dudley (Universite de Franche-Comte); Ari T. Friberg (University of Eastern Finland); Goery Genty (Tampere University of Technology);

Session 3P13 SC3: Optical Wireless Technologies for Mobile Communications and Internet of Things

Friday PM, August 3, 2018

Room A5

Organized by Pham Tien Dat, Hoa Le Minh Chaired by Pham Tien Dat

13:20 Trend of High-speed Optical Wireless System Invited

Mitsuji Matsumoto (Waseda University);

13:40 Image Sensor Communications for Automotive Invited

Takaya Yamazato (Nagoya University);

14:00 Asynchronous Symbol Discrimination for Optical Invited Camera Communication Using Smartphone with Rolling Shutter Camera

> T. Naramoto (Meijo University); K. Yamaguchi (Meijo University); T. Zinda (Meijo University); Wataru Chujo (Meijo University);

14:20 Infrared Indoor Optical Wireless Communications Invited with Silicon Photonics Integration

Ke Wang (Royal Melbourne Institute of Technology (RMIT University)); Zeshi Yuan (Royal Melbourne Institute of Technology (RMIT University)); Tingting Song (The University of Melbourne); Yang Wang (The University of Melbourne); Shitao Gao (The University of Melbourne); Tian Liang (The University of Melbourne); Ampalavanapillai Nirmalathas (The University of Melbourne); Christina Lim (The University of Melbourne); Kamal E. Alameh (Edith Cowan University); Hong Tao Li (Nanjing University of Science and Technology); Efstratios Skafidas (The University of Melbourne);

14:40 Optical Wireless Communication Back-haul Link in Invited Dense Wireless Networks

Sepehr Daghbandan (The University of Edinburgh); Wasiu O. Popoola (The University of Edinburgh); Harald Haas (The University of Edinburgh);

15:00 Quantum Key Distribution over FSO: Current Devel-Invited opment and Future Perspectives

Phuc V. Trinh (National Institute of Information and Communication Technology); Anh T. Pham (The University of Aizu); Alberto Carrasco-Casado (National Institute of Information and Communication Technology); Morio Toyoshima (National Institute of Information and Communication Technology); 15:20 Satellite Laser Communication Activities in NICT Invited

> Dimitar Radkov Kolev (National Institute of Information and Communication Technology); Alberto Carrasco-Casado (National Institute of Information and Communication Technology); Hideki Takenaka (National Institute of Information and Communication Technology); Yasushi Munemasa (National Institute of Information and Communication Technology); Phuc V. Trinh (National Institute of Information and Communication Technology); Yoshihiko Saito (National Institute of Information and Communication Technology); Hiroo Kunimori (National Institute of Information and Communication Technology); Yoshisada Koyama (National Institute of Information and Communication Technology); Kenji Suzuki (National Institute of Information and Communication Technology); Toshihiro Kubooka (National Institute of Information and Communication Technology); Morio Toyoshima (National Institute of Information and Communication Technology):

15:40 Coffee Break

- 16:00 Relay-assisted VLC Networks Using Code Division Multiple Access and Analog Network Coding Ngoc T. Dang (Posts and Telecommunications Institute of Technology);
- 16:20 Filter Bank Multi-carrier and Non Orthogonal Multiple Access in MIMO OLED VLC System Pham Quang Thai (Ho Chi Minh City University of Technology);
- 16:40 Design and Implementation of Communication System Based on CSK
 Ziyan Jia (Jiangsu University of Technology);
 Zhi Yang (Jiangsu University of Technology); Zhiwen Qian (Jiangsu University of Technology); Youlian Zhu (Jiangsu University of Technology); Yiqi Zhu (Jiangsu University of Technology); Zhengquan Li (Southeast University); Lianfeng Shen (Southeast University);

17:00 Comparison of Indoor Positioning System Techniques Using Visible Light Communication Ukrit Mankong (Chiang Mai University); Sangdaun Potha (Chiang Mai University); Pornthep Srisang (Chiang Mai University);

- 17:20 A Direct Pre-disortion Method Based on Gaussian LED Nonlinear Behavior Model for Visible Light Communication
 Rongzhao Wu (North China Electric Power University); Xin Chen (North China Electric Power University); Yarong Guo (North China Electric Power University); Jiang Liu (Waseda University); Peng Liu (North China Electric Power University);
- 17:40 Design of a Rear-end Anti-collision System Based on Visible Light Communication
 Ziyan Jia (Jiangsu University of Technology); Dan Wei (Jiangsu University of Technology); Zhiwen Qian (Jiangsu University of Technology); Youlian Zhu (Jiangsu University of Technology); Yiqi Zhu (Jiangsu University of Technology); Yang Yu (Jiangsu University of Technology); Weige Tao (Jiangsu University of Technology); Lianfeng Shen (Southeast University);

Session 3P14a Advanced Photonic Technologies for Energy Harvesting 2

Friday PM, August 3, 2018

Room A6

Organized by Feng Yan, Gang Li Chaired by Paddy Kwok Leung Chan, Annie Ng

13:00 Systematic Bandgap Engineering of Graphene Quantum Dots and Applications for Photocatalytic Water Splitting and $\rm CO_2$ Reduction

Yibo Yan (Nanyang Technological University); Jie Chen (Nanyang Technological University); Nan Li (Nanyang Technological University); Jingqi Tian (Nanyang Technological University); Kaixin Li (Nanyang Technological University); Jizhou Jiang (Nanyang Technological University); Jiyang Liu (Zhejiang Sci-Tech University); Qinghua Tian (Zhejiang Sci-Tech University); Peng Chen (Nanyang Technological University);

- 13:20 Investigation of Growth Approaches for High Quality Organometallic Halide Perovskites Based Solar Cells Annie Ng (Nazarbayev University); Zhiwei Ren (The Hong Kong Polytechnic University); Gang Li (Hong Kong Polytechnic University); Charles Surya (Nazarbayev University);
- 13:40 Solution-processed Large Area Organic Single Crystal Paddy Kwok Leung Chan (The University of Hong Kong);

- 14:00 Incorporation of π-conjugated Organic Semiconductors in Hybrid Perovskite Solar Cells for Enhancing Device Stability and Efficiency
 Gang Li (Hong Kong Polytechnic University); Ping-Li Qin (Wuhan Institute of Technology); Guang Yang
- 14:20 Alternative Plasmonic Materials in Photovoltaics: Photocurrent Gain with Conductive Nitride Nanopillars

(Hong Kong Polytechnic University);

Christin David (Madrid Institute for Advanced Studies in Nanoscience (IMDEA Nanoscience));

Session 3P14b SC3: Sensing Technique Enabled by Convergence of Radio and Optical Technologies

Friday PM, August 3, 2018

Room A6

Organized by Tetsuya Kawanishi, Akihiko Hirata Chaired by Akihiko Hirata, Atsushi Kanno

14:40 Demonstration of 95 GHz Single RAU Linear Cell Radar over Fiber and Radar Propagation Study in Malaysia

> Sevia Mahdaliza Idrus (Universiti Teknologi Malaysia); F. Iqbal (Universiti Teknologi Malaysia); Atsushi Kanno (National Institute of Information and Communications Technology); Key Akama (Waseda University); Tetsuya Kawanishi (National of Information and Communications Institute Technology); Nadiatulhuda Zulkifli (Universiti Teknologi Malaysia); Arnidza Ramli (Universiti M. R. Salim Teknologi Malaysia); (Universiti Teknologi Malaysia); Azura Hamzah (Malaysia-Japan International Institute of Technology (MJIIT)); Nor Hisham Haji Khamis (Universiti Teknologi Malaysia); W. Sawada (Hitachi Kokusai Electric Inc.); Nobuhiko Shibaqaki (Hitachi Kokusai Electric Inc.); Kennich Kashima (Hitachi Kokusai Electric Inc.); N. S. M. I. Cheong (Malaysia Airport (Sepan) Sdn Bhd); A. W. M. Yusof (Malaysia Airport (Sepan) Sdn Bhd;

15:00 Interference Induced by Reflection on Aircraft Surfaces in Linear Cell Radar Systems Consisting of Remote Antenna Units Connected through Optical Fibers

> Tetsuya Kawanishi (National Institute of Information and Communications Technology); Key Akama (Waseda University); Atsushi Kanno (National Institute of Information and Communications Technology); Naokatsu Yamamoto (National Institute of Information and Communications Technology);

15:20 Mitigation Techniques of Power Fading for Millimeterwave Signal Transmission in Radio Over Fiber (RoF) Link

> Norliza Mohamed (UTM Razak School of Engineering and Advanced Technology); Sevia Mahdaliza Idrus (Universiti Teknologi Malaysia); Azura Hamzah (Malaysia-Japan International Institute of Technology (MJIIT)); Suriani Mohd Sam (Universiti Teknologi Malaysia);

15:40 Coffee Break

16:00 Link Budget Analysis for Dual Sideband Optical Carrier Suppression RoF System

Syamsuri Yaakob (UPM); Sevia Mahdaliza Idrus (Universiti Teknologi Malaysia); Muhammad Zamzuri Abdul Kadir (International Islamic University Malaysia); Mohd. Shahril Salleh (Next Generation Access Network Lab); Romli Mohamad (Next Generation Access Network Lab); Mohd Rashidi Che Beson (Universiti Malaysia Perlis); Zuraidah Zan (Universiti Putra Malaysia (UPM)); Mohd Adzir Mahdi (Universiti Putra Malaysia (UPM));

16:20 Investigation on 20-bit Consecutive Codes in High Performance Optical Burst Mode Receiver Configuration

Azura Hamzah (Malaysia-Japan International Institute of Technology (MJIIT)); Adibah Mazwar (Malaysia-Japan International Institute of Technology (MJIIT)); Sevia Mahdaliza Idrus (Universiti Teknologi Malaysia); Norliza Mohamed (UTM Razak School of Engineering and Advanced Technology); Nadiatulhuda Zulkifli (Universiti Teknologi Malaysia);

16:40 Asynchronous Electric Field Vector Measurement Using EO Sensor in Millimeter Wave Band
J. Kamada (Gifu University); H. Uchida (Arkray Inc.); M. Tojyo (Think-Lands Co., Ltd.); Y. Oikawa (Think-Lands Co., Ltd.); K. Miyaji (Think-Lands Co., Ltd.); Shintaro Hisatake (Gifu University);

Technology);

- 17:00 Performance Evaluation of Optical Electric-field Sensor for Field Uniformity Testing of Radiated Immunity Test Systems
 Michitaka Ameya (National Institute of Advanced Industrial Science and Technology); Satoru Kurokawa (National Institute of Advanced Industrial Science and
- 17:20 Non-destructive Inspection of Concrete Cracks Covered with Waterproof Coating by Millimeter-wave Imaging

Akihiko Hirata (Chiba Institute of Technology);

17:40 Silicon Photonic Resonator for Label-free Bio-sensing and Bio-coating Techniques on Silicon Suruk Udomsom(Chiang MaiUniversity); UkritMankong (Chiang MaiUniversity); Nipon Theera-Umpon (Chiang Mai University); Nattapol Ittipratheep (Chiang Mai University); Toshimasa Umezawa (National Institute of Information and Communications Technology); Atsushi Matsumoto (National Institute of Information and Communications Technology); Naokatsu Yamamoto (National Institute of Information and Communications Technology);

Session 3P15a FocusSession.SC2: Plasmonics and Photonic Nanostructure Surfaces for Manipulation of Light

Friday PM, August 3, 2018

Room A7 Organized by Rongjun Zhang, Junpeng Guo

Chaired by Junpeng Guo

13:00 Frontier of Grating Couplers: Resonator Integration Invited and Functionality

Shogo Ura (Kyoto Institute of Technology); Kenji Kintaka (National Institute of Advanced Industrial Science and Technology); Junichi Inoue (Kyoto Institute of Technology);

- Ozdal Boyraz (University of California-Irvine); Qiancheng Zhao (University of California-Irvine); Mohammad Wahiduzzaman (University of California-Irvine);
- 13:40 Metasurface Spectroscopic Analyzers Masanobu Iwanaga (National Institute for Materials Science);

- 14:00 Disordered Array of Plasmonic Metal Nanoparticles for Strong Light UpconversionS. Joon Kwon (Korea Institute of Science and Technology);
- 14:20 Unidirectional Coupling of Surface Plasmonic Waves on Silver Surfaces with Asymmetric Nanogroove Fabricated with Glancing Angle Deposition Technique *Chong-Cin Hou (National Chun Chen University)*; *Ti-Li Lin (National Chun Chen University)*; *Hung-Chih Kan (National Chung Cheng University)*;
- 14:40 A Radiative Cooling Method with High Emissivity in Atmospheric Window Based on Periodically-structured UV-curing Adhesive Meng-Yu Gao (Fudan University); Xue-Fei Han (Donghua University); Yu-Xiang Zheng (Fudan University); Qing-Hong Zhang (Donghua University); Liao Yang (Fudan University); Shang-Dong Yang (Fudan University); Wenjie Zhou (Fudan University); Pian Liu (Fudan University); Rongjun Zhang (Fudan University); Songyou Wang (Fudan University); Liangyao Chen (Fudan University);
- 15:00 Low-cost, Large Area Broadband Plasmonic Absorber for Infrared Atmospheric Transparency Window Weiwei Yu (Shanghai Institute of Technical Physics, Chinese Academy of Science); Hao Xu (Shanghai Institute of Technical Physics, Chinese Academy of Science); Xin Chen (Shanghai Institute of Technical Physics, Chinese Academy of Science); Yan Sun (Shanghai Institute of Technical Physics, Chinese Academy of Science); Jiaming Hao (Shanghai Institute of Technical Physics, CAS); Ning Dai (Shanghai Institute of Technical Physics, CAS);
- 15:20 Gap-plasmon Resonance Perfect Light Absorber Wonkyu Kim (University of Alabama in Huntsville); Hong Guo (University of Alabama in Huntsville); Joshua R. Hendrickson (Air Force Research Laboratory); Junpeng Guo (University of Alabama in Huntsville);
- 15:40 Coffee Break

Session 3P15b Light Manipulation, Propagation and Application 2

> Friday PM, August 3, 2018 Room A7 Organized by Yangjian Cai Chaired by Yangjian Cai

- 16:00 Tight Focusing and Particle Trapping Properties of Radially Polarized Beam with Laguerre-Gaussian Correlation Function Lina Guo (Guangdong Polytechnic Normal University); Li Chen (Guangdong Polytechnic Normal University); Yongzhu Chen (Guangdong Polytechnic Normal University); Lin Liu (Soochow University); Yangjian Cai (Soochow University);
- 16:20 Generating and Measuring of Orbital Angular Momentum of Vortex Beams Yuanjie Yang (University of Electronic Science and Technology of China); Qi Zhao (University of Electronic Science and Technology of China); Miao Dong (University of Electronic Science and Technology of China);
- 16:40 Thermal Blooming Effect of Truncated High-power Laser Beams Propagating through the Atmosphere Xiaoqing Li (Sichuan Normal University); Xiaoling Ji (Sichuan Normal University);
- 17:00 Efficient Tensor Approach for Simulating Paraxial Propagation of Arbitrary Partially Coherent Beams Xiaofeng Peng (Soochow University); Fei Wang (Soochow University); Yangjian Cai (Soochow University);
- 17:20 Overcoming the Classic Rayleigh Limit by Engineering the Correlation Functions of Illumination Fields Fei Wang (Soochow University); Chunhao Liang (Soochow University); Xiaofeng Peng (Soochow University); Yangjian Cai (Soochow University);
- 17:40 Trapping Particles Using Tightly Focused Radially Polarized Beam with Laguerre-Gaussian Correlation Function

Lina Guo (Guangdong Polytechnic Normal University); Li Chen (Guangdong Polytechnic Normal University); Yongzhu Chen (Guangdong Polytechnic Normal University); Lin Liu (Soochow University); Yangjian Cai (Soochow University);

Session 3P16a SC2: Optical Metamaterials for Environment and Energy Application 2

Friday PM, August 3, 2018

Room A8

Organized by Junichi Takahara, Kotaro Kajikawa Chaired by Junichi Takahara, Kotaro Kajikawa

13:00 Wavelength-selective Metasurface Absorber and Invited Emitter for Energy Applications Atsushi Sakurai (Niigata University); 13:20 Integrated Absorber/Emitter Based on Microcavity

Invited Resonance for Solar Thermophotovoltaic Power Generation

Kentaro Iwami (Tokyo University of Agriculture and Technology); Nashun (Tokyo University of Agriculture and Technology); J. Obunai (Tokyo University of Agriculture and Technology);

13:40 Solar Selective Absorbers Using Submicron Structures Invited Formed by Spinodal Decomposition

Makoto Shimizu (Université de Lyon, CNRS, INSA-Lyon, Universite Claude Bernard Lyon 1); Fumitada Iguchi (Tohoku University); Hiroo Yugami (Tohoku University);

14:00 Three-octave-bandwidth Ultra-broadband Light Ab-Invited sorber Consisting of a Bumpy Metal-insulator-metal

> Structure Takayuki Okamoto (RIKEN Nanophotonics Laboratory); Kentaro Takatori (RIKEN); Koji Ishibashi (RIKEN);

Session 3P16b

SC2: Recent Advances on Photonic Metamaterials and Plasmonic Structures

Friday PM, August 3, 2018

Room A8

Organized by Atsushi Sanada, Tetsuya Ueda

Chaired by Atsushi Sanada, Tetsuya Ueda

14:20 Interplay between Magnetism and Chirality in Photonic Metamaterials Satoshi Tomita (Nara Institute of Science and Tech-

nology (NAIST));

14:40 A New Waveguide Technology with a Ridge and Surrounding Metal Rods of $\lambda/4$ in Height and Its Applications

Hideki Kirino (WGR Co. Ltd.);

15:00 Broadband Light Absorber of Gold-covered Cicada Wing Surface

Kotaro Kajikawa (Tokyo Institute of Technology);

15:20 Recent Advances on Time-domain Nite Element Methods for Simulation of Invisibility Cloaks Yunqing Huang (Xiangtan University); Jichun Li (University of Nevada, Las Vegas);

15:40 Coffee Break

16:00 Negative Refraction Phenomena in Metal-dielectric Stacks and Fishnet Metamaterials Michel Lequime (Aix-Marseille Universite, CNRS); Claude Amra (Universite Paul Cezanne);

- 16:20 Electromagnetically Induced Transparency Using Nonlinear Metamaterials for Storage of Electromagnetic Waves Toshihiro Nakanishi (Kyoto University); Masao Kitano (Kyoto University);
- 16:40 Deeply Profiled Titanium Nitride Plasmonic Grating Structures for Refractive Index Sensing
 E. Shkondin (Technical University of Denmark);
 T. Repan (Technical University of Denmark); Andrei V. Lavrinenko (Technical University of Denmark); Osamu Takayama (Technical University of Denmark);
- 17:00 Subwavelength Focusing by Evanescent Wave Generation with a Tri-layer Metasurface Atsushi Sanada (Yamaguchi University); K. Ishii (Osaka University); Y. Katou (Osaka University);

Session 3P17 SC3: Quantum Information Processing and Devices 2

Friday PM, August 3, 2018

Room A9

Organized by Hai-Zhi Song, Qiang Zhou

Chaired by Tongcang Li, Daniel Oblak

13:00 Preservation of Entangled States in Quantum Optical

Invited Circuits Designed for Multi-access Quantum Communication Systems Vladimir Nikulin (State University of New York at Binghamton); Rushui Fang (State University of New

York at Binghamton);

- 13:20 Rigorous Characterization Method for Photon-
- Invited number Statistics with Hanbury-Brown-Twiss Setup Masato Koashi (The University of Tokyo);
- $13{:}40$ Hybrid Quantum Systems with Quantum Dots and

Invited Microwave/Nano-electromechanical Resonators Guangwei Deng (University of Electronic Science and Technology of China);

14:00 Measurement-device-independent Quantum Secure Direct Communication Penghao Niu (Tsinghua University); Liuguo Yin (Tsinghua University); Gui Lu Long (Tsinghua University);

14:20 High-order Sideband Transitions in an Ultrastrongly-Invited coupled cQED System

Tiefu Li (Tsinghua University);

14:40 Synchrotron X-ray Characterization of Mg Doped NiO Epitaxial Thin Films

Yanna Chen (National Institute for Materials Science (NIMS)); Osami Sakata (National Institute for Materials Science (NIMS)); Ryosuke Yamauchi (Tokyo Institute of Technology); Anli Yang (National Institute for Materials Science (NIMS)); Loku Singgappulige Rosantha Kumara (National Institute for Materials Science (NIMS)); Chulho Song (National Institute for Materials Science (NIMS)); Munetaka Taquchi (Nara Institute of Science and Technology (NAIST)); Toshiaki Ina (Nara Institute of Science and Technology (NAIST)); Yoshio Katsuya (National Institute for Materials Science (NIMS)); Hiroshi Daimon (Nara Institute of Science and Technology (NAIST)); Akifumi Matsuda (Tokyo Institute of Technology); Mamoru Yoshimoto (Tokyo Institute of Technology);

15:00 Optomechanically-induced Transparency and Entan-Invited glement Generation Enhanced by Dissipation *Yong-Chun Liu (Tsinghua University)*;

15:20 Applications of Spontaneous Four Wave Mixing on Invited Quantum Communications

Wei Zhang (Tsinghua University);

15:40 Coffee Break

16:00 Spin Optomechanics and Quantum Computing with Invited Closely-spaced Spins

Tongcang Li (Purdue University);

16:20 Enhancing Quantum Control by Bootstrapping a Invited Quantum Processor of 12 Qubits

Dawei Lu (Southern University of Science and Technology); Keren Li (Tsinghua University); Jun Li (University of Waterloo); Hemant Katiyar (University of Waterloo); Annie Jihyun Park (University of Waterloo); Guanru Feng (University of Waterloo); Tao Xin (University of Waterloo); Hang Li (University of Waterloo); Gui Lu Long (Tsinghua University); Aharon Brodutch (University of Waterloo); Jonathan Baugh (University of Waterloo); Bei Zeng (University of Guelph); Raymond Laflamme (University of Waterloo);

16:40 A AlGaAs-on-insulator Platform for Integrated Quantum Photonic Circuits with Quantum Dots
Rongbin Su (Sun Yat-sen University); Beimeng Yao (Sun Yat-sen University); Juntao Li (Sun Yat-Sen University); Jin Liu (Sun Yat-Sen University); Xue-Hua Wang (Sun Yat-Sen University);

- 17:00 Probing Multipartite Entanglement Structure with Invited Two Witnesses
 - *He* Lu (University of Science and Technology of China);
- $17{:}20~$ The Simulation of Boson Sampling with Qubit Sys-Invited tems

Xiaoqi Zhou (University of Science and Technology of China); He Lu (University of Science and Technology of China); Xu-Fei Yin (University of Science and Technology of China); Luo-Kan Chen (University of Science and Technology of China); Yu-Ao Chen (University of Science and Technology of China); Jian-Wei Pan (University of Science and Technology of China);

- 17:40 All-optical Quantum Signal Demultiplexer Yin-Hai Li (USTC); Wen-Tan Fang (University of Science and Technology of China); Zhi-Yuan Zhou (University of Science and Technology of China); Lixin Xu (University of Science and Technology of China); Guangcan Guo (University of Science and Technology of China); Baosen Shi (University of Science and Technology of China);
- 18:00 Manipulating Optical Schrödinger Cat State with an Invited Optical Parametric Amplifier

Xiaolong Su (Shanxi University); Meihong Wang (Shanxi University); Zhongzhong Qin (Shanxi University); Miao Zhang (Shanxi University); Li Zeng (Shanxi University); Changde Xie (Shanxi University); Kunchi Peng (Shanxi University);

18:20 Silicon Isotope Engineering for Quantum Information Invited Processing

Satoru Miyamoto (Keio University); Kohei M. Itoh (Keio University);

Session 3P18 EMC Problems with Antennas & Wave Propagation

Friday PM, August 3, 2018 Room A10

Organized by Rafal Przesmycki

Chaired by Marek Bugaj, Marian Tadeusz Wnuk

13:00 The Method for Determining Distinctive Features PC Hardware Interfaces Based on the Way They Turn Rafal Przesmycki (Military University of Technology); Marian Tadeusz Wnuk (Military University of Technology);

- 13:20 The Configuration of Laboratory Stands for Testing Compromising Emanations from It Equipment Leszek Nowosielski (Military University of Technology); Dariusz Laskowski (Military University of Technology); Michal Nowosielski (Medical University of Warsaw);
- 13:40 The Measurement Method of Radiated Emission for Power Generators Rafal Przesmycki (Military University of Technology);
- 14:00 Measuring the Frequency Band of Transmiter for VSAT Satellite Terminals Marek Bugaj (Military University of Technology);
- 14:20 The Meausrement of Signal Level for VSAT Satellite Terminals Rafal Przesmycki (Military University of Technology);
- 14:40 Veryfication of Multi-access Techniques for VSAT Satellite Terminals Marek Bugaj (Military University of Technology);
- 15:00 Microstrip Antenna with Phase Scanning Rafal Przesmycki (Military University of Technology); Marian Tadeusz Wnuk (Military University of Technology); Marek Bugaj (Military University of Technology);
- 15:20 Linear Antenna Array on Multilayer Dielectric Substrate Marian Tadeusz Wnuk (Military University of Technology); Marek Bugaj (Military University of Technol-

nology); Marek Bugaj (Military University of Technology); Rafal Przesmycki (Military University of Technology);

15:40 Coffee Break

- 16:00 Applications of IT Equipment Protective Solutions against Electromagnetic Compromising Emanations Leszek Nowosielski (Military University of Technology); Jaroslaw Michalak (Military University of Technology); Michal Nowosielski (Medical University of Warsaw);
- 16:20 Analysis of Scenarios for It Equipment Location from the Point of View of Electromagnetic Security Leszek Nowosielski (Military University of Technology); Marian Tadeusz Wnuk (Military University of Technology); Joanna Kuzba (Military University of Technology);
- 16:40 Analysis of Disturbance of the Propagation of Electromagnetic Wave at the Edge of Terrain Obstacle Marian Tadeusz Wnuk (Military University of Technology);

17:00 Simulations of SAR Values for Selected Telecommunications Devices

Marek Bugaj (Military University of Technology); Marian Tadeusz Wnuk (Military University of Technology); Lukasz Blaszkiewicz (Military University of Technology);

4

5

6

7

8

9

17:20 Effect of Interference Source with Directional Antenna on Radio Link in Non-line-of-sight Conditions Cezary Ziolkowski (Military University of Technology); Jan M. Kelner (Military University of Technology); Leszek Nowosielski (Military University of Technology);

17:40 Degradation of Radio Link Capacity with Directional Antennas

> Jan M. Kelner (Military University of Technology); Cezary Ziolkowski (Military University of Technology); Leszek Nowosielski (Military University of Technology);

18:00 Direction of Arrival Error for Localization Procedure of Sources with Directional Antenna Jan M. Kelner (Military University of Technology); Cezary Ziolkowski (Military University of Technology); Leszek Nowosielski (Military University of Technology);

Session 3P0 Poster Session 4

Friday PM, August 3, 2018 14:00 PM - 17:00 PM Room Foyer

1 A Wide-band Dual Circular Polarization UHF RFID Reader Antenna Based on Miniaturized Branch Line Coupler Xiuhui Yang (Southwest Jiaotong University);

Quanyuan Feng (Southwest Jiaotong University); Dengyao Tian (Southwest Jiaotong University); Zongliang Zheng (Southwest Jiaotong University);

- 2 A Novel Chipless RFID Tag Based on Backscattering Principle Guo Chun Wan (Tongji University); Yong Kang Kuang (Tongji University); Qing Xu (Tongji University); Mei Song Tong (Tongji Univer-
- sity); 3 A Broadband Circularly Polarized Slot Antenna with Ferrite Substrate for CNSS Application Zhuang Xiong (Southwest Jiaotong University); Quanyuan Feng (Southwest Jiaotong University); Zongliang Zheng (Southwest Jiaotong University); Dengyao Tian (Southwest Jiaotong University);

Haze Removal with Automatic Recovery of the Atmospheric Light

Ruxi Xiang (Changzhou Institute of Technology); Xifang Zhu (Changzhou Institute of Technology); Dongdong Hou (Changzhou Institute of Technology); Feng Wu (Changzhou Institute of Technology); Chao Xiong (Changzhou Institute of Technology); Qingquan Xu (Changzhou Institute of Technology);

Drainage of Remaining Heavy Oil Reservoir by Implementing Electromagnetic Microwave with Nano-ferro Fluid Injection

Erdila Indriani (Institute Teknologi Bandung); Rizky Martareza Noor (Oil and Gas Production Engineering, Energy & Mineral Polytechnic Akamigas); Sudjati Rachmat (Institute Teknologi Bandung); Ahmad Munir (Institut Bandung of Technologi); Purnomosidi (University of Aberdeen);

The Development of VLBI Digital Backend in SHAO Renjie Zhu (Shanghai Astronomical Observatory, Chinese Academy of Science); Yajun Wu (Shanghai Astronomical Observatory, Chinese Academy of Science); Jiyun Li (Shanghai Astronomical Observatory, Chinese Academy of Science); Shaoguang Guo (Shanghai Astronomical Observatory, Chinese Academy of Science); Jiangying Gan (Shanghai Astronomical Observatory, Chinese Academy of Science); Zhijun Xu (Shanghai Astronomical Observatory, Chinese Academy of Science);

Electromagnetic Design of a Magnetic Suspended Motor Considering Temperature Influence

Xiaojun Ren (University of Science and Technology Beijing); Xu Liu (Beijing Sumavision Technology Limited Company);

Permittivity Retrieve of Glucose Concentration in Mimicking Blood Solutions
Wei Lin (University of Texas Rio Grande Valley);
Yong Zhou (University of Texas Rio Grande Valley);

Open-Ended Coaxial Line Probe for Local Exposure at $26.5\,\mathrm{GHz}$

Yasutaka Murakami (Tokyo University of Agriculture and Technology); Toru Uno (Tokyo University of Agriculture and Technology); Takuji Arima (Tokyo University of Agriculture and Technology); 10 Treatment with High-voltage Alternating Electric Field Normalizes the Autonomic Dysfunction in Depression: A Pilot Study Using Heart-rate Variability Analysis

Toshikazu Shinba (Shizuoka Saiseikai General Hospital); Takaki Nedachi (Hakuju Institute for Health Science); Shinji Harakawa (Obihiro University of Agricultural and Veterinary Medicine);

- 11 Development of Antenna for Local Anterior Exposure of Small Animal in 26.5 GHz Band Sousuke Higashibata (Tokyo University of Agriculuture and Technology); Toru Uno (Tokyo University of Agriculture and Technology); Takuji Arima (Tokyo University of Agriculture and Technology); Yasutaka Murakami (Tokyo University of Agriculture and Technology);
- 12 Design of a Novel Compact LTE/WWAN Antenna for Mobile Phone Applications Ming Yang (Anhui University); Yufa Sun (Anhui University); Zuming Li (Anhui University);
- 13 A New High Gain Antenna Based on MIM Composite Extraordinary Optical Transmission Structure Xuhui Zhang (Anhui University); Minquan Li (Anhui University); Xu Pan (Anhui University);
- A Compact Directional Antenna for ADS-B Operation
 Wen-Chung Liu (National Formosa University); Tzu-Yi Tang (National Formosa University); Wen-Chi Lu (National Formosa University);
- 15 Compact Chipless RFID Tag Based on Fractal Antennas and Multiple Microstrip Open Stub Resonators Marwa E. Mousa (Higher Institute of Engineering and Technology in New Damietta); Haythem Hussein Abdullah (Electronics Research Institute (ERI)); M. El din Abo El-Soud (Mansoura University);
- 16 Differentially Fed Ring-shaped Planar Printed Antenna with Higher Order Mode Suppression Chairunnisa (Institut Teknologi Bandung); Rheyuniarto Sahlendar Asthan (Institut Teknologi Bandung); Agus Hendra Wahyudi (Chiba University); Achmad Munir (Institut Teknologi Bandung);
- 17 Improved Scalable Deembedding Methodology for SiGe HBT Characterization Chie-In Lee (National Sun Yat-Sen University); Wei-Cheng Lin (National Sun Yat-Sen University); Yan-Ting Lin (National Sun Yat-Sen University);

18 G-band Diplexer Based on *E*-plane Waveguide Structures

> Xiong Chen (University of Electronic Science and Technology of China); Jiang Hu (University of Electronic Science and Technology of China); Xiang Le (University of Electronic Science and Technology of China);

Design of 6 MW Pulse Transformer for a 2.5 MW C-band Magnetron
Dong Hyeok Jeong (Dongnam Institute of Radiological & Medical Sciences); Heuijin Lim (Dongnam Institute of Radiological & Medical Sciences); Kyoung Won Jang (Konkuk University); Sang Jin Lee (Dongnam Institute of Radiological & Medical Sciences); Manwoo Lee (Dongnam Institute of Radiological & Medical Sciences);

20 Designs of High Power Ratio Dividers Using Lefthanded Transmission Line Transformers Shi-Ang Xu (National University of Kaohsiung); Pu-Hua Deng (National University of Kaohsiung);

21 Investigation of U-shaped Base Element for Storage Resonator of a Compact Resonant Microwave Pulse Compression System

Seqey Artemenko (National Research Tomsk Polytechnic University);Vladimir Avgustinovich (National Research Tomsk Polytech*nic* University); V ladislavIgumnov (National Research Tomsk Polytechnic University); Andrei Vladimirovich Mostovshchikov (Tomsk Polytechnic University);

22 A Novel Wideband Rectifier Design with Two-stage Matching Network for Ambient Wireless Energy Harvesting Yingbo Wu (Anhui University); Jun Wang (Bei-

jing Electro-mechanical Engineering Institute); Yanyang Liu (Anhui University); Minquan Li (Anhui University);

23 Comparative Analysis of Gyrotrons Driven by External Signals

Yi Sheng Yeh (Southern Taiwan University of Science and Technology); C. L. Hung (National Penghu University of Science and Technology); Tsun-Hun Chang (National Tsing Hua University); C. Y. Zheng (Southern Taiwan University of Science and Technology); W. J. Kao (Southern Taiwan University of Science and Technology); P. Y. Chiang (Southern Taiwan University of Science and Technology); Y. C. Chen (Southern Taiwan University of Science and Technology);

19

- 24 A 3rd-order Tunable Filter with Constant Bandwidth *Qianyin Xiang (Southwest Jiaotong University)*; *Quanyuan Feng (Southwest Jiaotong University)*;
- 25 The Extraction of Digital Surface Model over Deciduous Forest by Chinese GF-3 C-band SAR Haoyang Yu (Beijing Normal University); Zhongjun Zhang (Beijing Normal University); Wenjian Ni (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences);
- 26 Effect of Relativistic Positron Beam as a Progenitor to Study the Nonlinear Behaviour of Fully Relativistic Electron-positron-ion Plasma Ridip Sarma (University of Science and Technology); Nirab. C. Adhikary (Institute of Advanced Study in Science and Technology);
- 27 Design of Fingerprint Identification Module with Automatic Power Saving for Smart Lock Based on DSP Guo Chun Wan (Tongji University); He Xu (Tongji University); Tao Wang (Tongji University); Mei Song Tong (Tongji University);
- 28 A Novel Intelligent Door-lock and Management System Based on STM32 Microcontroller Guo Chun Wan (Tongji University); Chao Wang (Tongji University); Jian Zhou (Tongji University); Mei Song Tong (Tongji University);
- 29 Radio Science Experiment on the Mission Venera-D: A Concept of the RF Subsystem and Radio Occultation Measurements

A. Gavrik (Kotel'nikov Institute of Radio Engineering and Electronics); S. Kolomiets (Kotel'nikov Institute of Radio Engineering and Electronics); Yu. Gavrik (Kotel'nikov Institute of Radio Engineering and Electronics); T. Kopnina (Kotel'nikov Institute of Radio Engineering and Electronics); L. Lukanina (Kotel'nikov Institute of Radio Engineering and Electronics); Yaroslaw A. Ilyushin (Moscow State University);

30 Detection of Small and Large Hidden Metallic Objects via Passive Millimeter Wave Imaging System with an Auto-segmentation Routine

Hakan Isiker (Mersin University); Sevket Demirci (Mersin University); Betul Yilmaz (Mersin University); Serhat Gokkan (Mersin University); Caner Ozdemir (Mersin University);

31 An Analysis of Relationship between Urban Heat Island in the Tropics in Extremely Hot Days with Land Use Using Landsat 8 Image — A Case Study in Hanoi Vietnam

> Nguyen Thanh Hoan (Institute of Geography, Vietnam Academy of Science and Technology); Tran Duy Phien (Institute of Geography, Vietnam Academy of Science and Technology); Dao Dinh Cham (Institute of Geography, Vietnam Academy of Science and Technology);

32 Automatic Sport Fields Detection from China GF-1 Satellite Image Data via Improved SSD Model Zhengchao Chen (Institute of Remote Sensing and Digital Earth, CAS); Kaixuan Lu (Institute of Remote Sensing and Digital Earth, CAS); Xuan Yang (Institute of Remote Sensing and Digital Earth, CAS); Baipeng Li (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Jianwei Gao (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Mufeng Yao (Institute of Remote Sensing and Digital Earth, CAS);

- 33 Impact of Usage of Multiple-satellite Sensors on Accuracy of Sea Surface Wind Data Ayumi Koizumi (Tokai University); Masahisa Kubota (Tokai University); Kunio Kutsuwada (Tokai University);
- 34 Double Weighted Fourier Transform (DWFT) in Statistical Problems

Sergei I. Knizhin (Irkutsk State University); Mikhail V. Tinin (Irkutsk State University);

35 Development of Antenna for the Microwave CT Mammography

> Tomoya Hanashima (Nihon University); Yoshio Nagayama (Nihon University); Tomohiko Asai (Nihon University); Yoshifumi Moriyama (Nihon University); Toshiyuki Tanaka (Nagasaki University); Soichiro Yamaguchi (Nihon University); Hayato Tsuchiya (Nihon University);

36 The Method of Adaptive Gaussian Decomposition Based Recognition and Extraction of Scattering Mechanisms

Xinyi He (Science and Technology on Electromagnetic Scattering Laboratory); Pengcheng Gao (Science and Technology on Electromagnetic Scattering Laboratory); Wei Gao (Science and Technology on Electromagnetic Scattering Laboratory); Xiao Lin Mi (Science and Technology on Electromagnetic Scattering Laboratory); Yuan Zhang (Science and Technology on Electromagnetic Scattering Laboratory);

- 37 Using Spectral Residual Method to Identification 44 Buried Objects from GPR B-Scan Image Yao Qin (Henan University of Technology); Jing Wan (Henan University of Technology); Jieyi Yang (Henan University of Technology); Li Hong Qiao (Henan University of Technology); Chunhua Zhu (Henan University of Technology); Qifu Wang (Henan Academy of Science, Applied Physics Institute Co., Ltd);
- 38 A Novel Encoding and Decoding Method for Packaging Goods Based on Grayscale-Information Matrix Guo Chun Wan (Tongji University); Wen Jing Liu (Tongji University); Jian Zhou (Tongji University); Mei Song Tong (Tongji University);
- 39 Development of Middle-power W-band Gyrotron in IAP RAS

Mikhail Yu. Glyavin (Federal State Budgetary Scientific Institution "Federal Research Center The Institute of Applied Physics of the Russian Academy of Sciences"); Mikhail D. Proyavin (Institute of Applied Physics of the Russian Academy of Sciences (IAP RAS)); Anton S. Sedov (Federal State Budgetary Scientific Institution "Federal Research Center The Institute of Applied Physics of the Russian Academy of Sciences"); Evgeni S. Semenov (Institute of Applied Physics of the Russian Academy of Sciences); Andrey S. Zuev (Federal Research Center "Institute of Applied Physics RAS"); Alexander I. Tsvetkov (Federal State Budgetary Scientific Institution "Federal Research Center The Institute of Applied Physics of the Russian Academy of Sciences");

- 40 Wavelength-dependent Terahertz Wave Modulation in Organic/Si Hybrid Structures Joong Wook Lee (Chonnam National University);
- 41 Topological Propoties and Edge State in Parity-time Symmetrical Waveguide Array *Qi Dong Fu (Shanghai Jiaotong University)*;
- 42 Tuxene-based Perovskite Solar Cells Sinil Choi (Hannam University); Jong Hun Hong (Hannam University); Gyeongju Kim (Hannam University); Prem Prabhakaran (Hannam University); Namchul Cho (Soon Chun Hyang University); Jae Woong Jung (Kyung Hee University); Kwang-Sup Lee (Hannam University);
- 43 Generating Surface Plasma Polariton Vortex Array with an Incident Donut Vector Beam and a Rectangular Four-slit Structure Shu-Chun Chu (National Cheng Kung University); Chun-Fu Kuo (National Cheng Kung University);

A Metamaterial-inspired Structure for UHF RFID Tag Antenna

Jhih Cheng Su (Tongji University); Xiao Jia Huang (Tongji University); Mei Song Tong (Tongji University);

- 45 Metal-enhanced Fluorescence by Using Silver Nanorod on Hyperbolic Metamaterial Substrate Chih-Hsien Lai (National Yunlin University of Science and Technology); Kai-Hong Tsai (National Taiwan Ocean University); Ya-Chih Wang (National Taiwan Ocean University); Yuan-Fong Chou Chau (Universiti Brunei Darussalam); Hai-Pang Chiang (National Taiwan Ocean University);
- 46 Based on Silicon-micro-ring-resonator and Triple-ring Cavity for Stable and Tunable Erbium Fiber Laser Yung Hsu (National Chiao Tung University); Yuan-Chia Chang (National Chiao Tung University); Chien-Hung Yeh (Feng Chia University); Chi-Wai Chow (National Chiao Tung University); Jing-Heng Chen (Feng Chia University);
- 47 Dispersion Accommodation Based on a Defect Layer in Hollow Single-mode Bragg Fiber Tongqing Liao (Anhui University); Jian Wu (Anhui University); Tiezhen Jiang (Anhui University); Pei-Jun Cai (Jianghuai College of Anhui University);
- 48 Removal of Stem Effect Generated in Fiber-optic Radiation Sensors Using an Optical Filter

Kyoung Won Jang (Konkuk University); Me Young Kim (Dongnam Institute of Radiological & Medical Sciences); Yeong-Rok Kang (Dongnam Institute of Radiological & Medical Sciences); Heuijin Lim (Dongnam Institute of Radiological & Medical Sciences); Manwoo Lee (Dongnam Institute of Radiological & Medical Sciences); Dong Hyeok Jeong (Dongnam Institute of Radiological & Medical Sciences);

49 Visible Light Communication System Based on SC-FDMA

> Ziyan Jia (Jiangsu University of Technology); Yang Yu (Jiangsu University of Technology); Zhiwen Qian (Jiangsu University of Technology); Youlian Zhu (Jiangsu University of Technology); Yiqi Zhu (Jiangsu University of Technology); Weige Tao (Jiangsu University of Technology); Lianfeng Shen (Southeast University);

50 Tunable Optical Delay Line Based on SOI Contradirectional Couplers with Sidewall-modulated Bragg Gratings

> Xu Wang (Huazhong University of Science and Technology); Jianji Dong (Huazhong University of Science and Technology);

- 51 Short Range Visible Light Communication for Data Transfer Using Simple Optoelectronic Circuits Yusuf Nur Wijayanto (National Institute of Information and Communication Technology (NICT)); E. J. Pristianto (Indonesian Institute of Sciences); Dadin Mahmudin (Indonesian Institute of Sciences (LIPI)); Pham Tien Dat (National Institute of Information and Communications Technology); P. Adhi (Indonesian Institute of Sciences);
- 52 Phase Stabilization in Onboard Microwave-band Fiber-optic Link Mikhail E. Belkin (Moscow Technological University MIREA); Alexander S. Sigov (Moscow Technological University MIREA);
- 53 Design of High-Q Coils on Flexible PCB for Resonant Magnetic Coupling Wireless Power Transfer Systems Hao-Chiao Hong (National Chiao-Tung University); Yi Chiu (National Chiao Tung University); Chien-Nan Kuo (National Chiao-Tung University);
- 54 Observation and Imaging of Meteors Using VHF Atmospheric Radar Jenn-Shyong Chen (China Medical University);
- 00 Design and Implementation of a Real-time Smart Home Automation System Based on Arduino Microcontroller Kit and LabVIEW Platform Abdulwadoud A. Maash (Taif University); Mohamed O. Elhabib (Taif University); Ahmad A. Alahmadi (Taif University); Mohamed S. Soliman (Taif University);
- 00 Broadband Fractal Absorbers for Visible Regime Ahsan Sarwar Rana (Information Technology University (ITU)); Muhammad Qasim Mehmood (Information Technology University (ITU)); Muhammad Zubair (Information Technology University of the Punjab);
- 00 Design and Development of a Microwave Plasma Enhanced Chemical Vapor Deposition System Based on Numerical Modeling Kaviya Aranganadin (Hanyang University); Yilang Jiang (Hanyang University); Chun-Yu Lin (National Taipei University of Technology); Hua-Yi Hsu (National Taipei University of Technology); Ming-Chieh Lin (Hanyang University);
- 00 On the Counterpropagating Waves Problem Roger Pizzzato Nunes (Universidade Federal do Rio Grande do Sul);

A Miniaturized High Gain Antenna for Biomedical Applications Rikikumar Hasmukhbhai Patel (Chandubhai S Patel Institute of Technology (CHARUSAT University)); Arpan Desai (Charotar University of Science and

Technology); Trushit K. Upadhyaya (Charotar Univer-

00

00 Paper Based Monopole Broadband Antenna Using Split Ring Resonator for Wireless Applications Kulandhaisamy Indhumathi (Central Institute of Tool Design, MSME); Subbu Neduncheliyan (Jaya College of Engineering and Technology);

sity of Science and Technology);

- 00 Design of a PCB Based Planar Coil Eddy Current Sensor for Enhanced Detection Sensitivity Kai Hui Ng (Singapore Institute of Technology); Neelakantam V. Venkatarayalu (Singapore Institute of Technology); Zaw Oo Zaw (Institute of High Performance Computing); Viet Phuong Bui (Institute of High Performance Computing);
- 00 Numerical Simulation on Thermal Response for Dynamic Non-destructive Detection of Weak Bonds in Carbon Fiber Reinforced Polymer Yew Li Hor (Institute of High Performance Computing); Hong-Son Chu (A*STAR Institute of High Performance Computing); Viet Phuong Bui (Institute of High Performance Computing);

Session 4A1 SC5: Inverse Scattering 2

Saturday AM, August 4, 2018

Room T1

Organized by Motoyuki Sato, Toshifumi Moriyama Chaired by Motoyuki Sato, Toshifumi Moriyama

- 08:30 An Inverse Scattering Method Using Time-reversed Fields with Edge-preserving Regularization Toshifumi Moriyama (Nagasaki University); Zhi Qi Meng (Fukuoka University); Takashi Takenaka (Nagasaki University);
- 08:50 A Method for Extracting Information on Incident Field from Measured Total Field Data Tomonori Tsuburaya (Fukuoka University); Zhi Qi Meng (Fukuoka University); Takashi Takenaka (Nagasaki University);
- 09:10 Reconstruction of a Dielectric Circular Cylinder Using Interval Analysis Kenichi Ishida (Kyushu Sangyo University);

- 09:30 Microwave Imaging in a Dielectric Half-space Medium Bounded by a Metal Surface Vladimir V. Razevig (Bauman Moscow State Technical University); Sergey I. Ivashov (Bauman Moscow State Technical University); Nikolai Simonov (Electronics and Telecommunications Research Institute); Andrey V. Zhuravlev (Bauman Moscow State Technical University); Margarita A. Chizh (Bauman Moscow State Technical University);
- 09:50 Iterative Reconstruction of Electrical Network's Graph Based on Their Time Domain Reflectogram Geoffrey Beck (CEA-LIST); Antoine Dupret (CEA-LIST);
- 10:10 A Universal Fast Back Projection Method for Nonuniform Sampling Based on Nonuniform FFT Yikun Zhao (Beijing Institute of Technology); Yin Xiang (Institute of Electronics, Chinese Academy of Sciences); Zegang Ding (Beijing Institute of Technology); Tao Zeng (Beijing Institute of Technology); Teng Long (Beijing Institute of Technology);

10:40 Coffee Break

Session 4A2 SC5: Subsurface Sensing and Imaging

Saturday AM, August 4, 2018

Room T2

Organized by Motoyuki Sato, Kangwook Kim Chaired by Lorenzo Capineri, Kangwook Kim

08:30 A Hologram Reconstruction Algorithm for Landmine Recognition and Classification Based on Microwave Holographic Radar Data

> G. Borgioli (Universita degli Studi di Firenze); Luca Bossi (University of Florence); Lorenzo Capineri (Universita di Firenze); P. Falorni (Universita degli Studi di Firenze); Timothy D. Bechtel (Franklin & Marshall College); F. Crawford (Franklin & Marshall College); Masaharu Inagaki (Walnut Ltd.); Gennadiy Pochanin (O. Ya. Usikov Institute for Radiophysics and Electronics of the NAS of Ukraine); V. Ruban (O. Ya. Usikov Institute for Radiophysics and Electronics of the NAS of Ukraine); L. Varyanitza-Roschupkina (Usikov Institute for Radiophisics and Electronics-National Academy of Sciences of Ukraine); T. Ogurtsova (O. Ya. Usikov Institute for Radiophysics and Electronics of the NAS of Ukraine);

- 08:50 Evaluation Test of Dual Sensor ALIS for Landmine Detection in Cambodia Motoyuki Sato (Tohoku University); Kazutaka Kikuta (Tohoku University);
- 09:10 Comparison of Generalized Multilayer Stolt Migration with Reverse-time Migration Haewon Jung (Gwangju Institute of Science and Technology); Kangwook Kim (Gwangju Institute of Science and Technology);
- 09:30 Object Identification from GPR Images by Deep Learning Using FDTD Simulation with GPU Cluster Jun Sonoda (National Institute of Technology, Sendai College); T. Kimoto (National Institute of Technology, Oita College);
- 09:50 Penetration of GPR Waves through Reinforced Concrete

Hantao Lu (Xiamen University); Hai Liu (Xiamen University); Bangan Xing (Xiamen University); Feng Han (Xiamen University); Qing Huo Liu (Duke University);

10:40 Coffee Break

Session 4A3 SC1: Novel Mathematical Methods in Electromagnetics 1

Saturday AM, August 4, 2018

Room T3

Organized by Kazuya Kobayashi, Yury V. Shestopalov

Chaired by Kazuya Kobayashi, Yury V. Shestopalov

08:30 Nonlinear Hybrid Waves in a Cylindrical Anisotropic Metal-dielectric Waveguide

EugeneSmolkin(PenzaStateUniversity);MaximSnegur(PenzaStateUniversity);YuryV. Shestopalov (University of Gavle);

- 08:50 Multi-contour Saddle Point Method on Dispersion Diagrams for Computing Transient Wave Field Components in Waveguides Andrey V. Shanin (Moscow State University); Andrey Igorevich Korolkov (Moscow State University); K. S. Knyazeva (Moscow State University);
- 09:10 The Method of Relocation of Boundary Condition for the Problem of Electromagnetic Wave Scattering by Perfectly Conducting Thin Objects Sergey Nikolaevich Fetisov (Institute of Numerical

Sergey Nikolaevich Felisov (Institute of Numerical Mathematics of the Russian Academy of Sciences); Aleksey Viktorovich Setukha (Lomonosov Moscow State University);

- 09:30 Reconstructing Permittivity and Permeability of Multi-sectional Anisotropic Diaphragms Ekaterina Dmitrievna Derevyanchuk (Penza State University); Yury G. Smirnov (Penza State University); Yury V. Shestopalov (University of Gavle);
- 09:50 Reconstruction of Electromagnetic Parameters of a Thin Anisotropic Dielectric Slab Ekaterina Dmitrievna Derevyanchuk (Penza State University); Yury V. Shestopalov (University of Gavle);
- 10:10 The Synthesis Problem of Multilayered Coating Using Metamaterials
 Ekaterina Dmitrievna Derevyanchuk (Penza State University); A. S. Shutkov (Penza State University); Yury G. Smirnov (Penza State University);

10:40 Coffee Break

Session 4A4

SC1: Electromagnetic Simulation and Modeling Methods for Metamaterials and Plasmonics

Saturday AM, August 4, 2018

Room T4

Organized by Li Jun Jiang, Xiaoyan Xiong Chaired by Xiaoyan Xiong

- 08:30 Rigorous Formulas for Tensor Metasurface Analysis Bo O. Zhu (Nanjing University);
- 08:50 The Multiphysics Solution to Maxwell-hydrodynamic Equations for Modeling Terahertz Generation from Plasmonic Metasurfaces
 Ming Fang (Anhui University); Zhi-Xiang Huang (Anhui University); Wei E. I. Sha (Zhejiang University);

09:10 Analysis of Left-handed Materials Using Associated Hermite FDTD Method Zheng-Yu Huang (Nanjing University of Aeronautics and Astronautics);

Xianliang Wu (Anhui University);

09:30 Orbital Angular Momentum Detection Using Invited Geometric-phase Based Metasurfaces

Menglin L. N. Chen (The University of Hong Kong); Li Jun Jiang (University of Hong Kong); Wei E. I. Sha (Zhejiang University);

10:40 Coffee Break

Session 4A5 MIMO Antenna and MIMO array

Saturday AM, August 4, 2018 Room T5

Chaired by Churng-Jou Tsai

08:30 Compacted 8 MIMO Antenna Design for Wi-Fi AP Zhi-Teng Wang (Kun Shan University); Churng-Jou Tsai (Kun Shan University);

08:50 Directivity Measurement of Circular Phased Array **4** × **4** MIMO Antenna *Taiki Fukushima* (*Toyama University*); *Kazuhiro Honda* (*Toyama University*); *Koichi Ogawa* (*Toyama University*);

09:10 Dual-circular $\mathbf{8}\times\mathbf{8}$ MIMO Array with Synchronized Beam Scan for Over-Gbps Inter-vehicle Communications

Kazuhiro Honda (Toyama University); Taiki Fukushima (Toyama University); Koichi Ogawa (Toyama University);

09:30 A Three-antenna Design Applicable for MIMO Operations on Wi-Fi Routers

Hao-De Tang (National Taiwan University of Science and Technology); Tsai-Yun Chuang (National Taiwan University of Science and Technology); Yi-Chung Li (National Taiwan University of Science and Technology); Wen-Jiao Liao (National Taiwan University of Science and Technology);

- 09:50 A Pattern-reconfigurable Two-patch Antenna Design for MIMO Operations Yi-Chung Li (National Taiwan University of Science and Technology); Tsai-Yun Chuang (National Taiwan University of Science and Technology); Hao-De Tang (National Taiwan University of Science and Technology); Wen-Jiao Liao (National Taiwan University of Science and Technology);
- 10:10 8-loop Antenna Array in the 5 Inches Size Smartphone for 5G Communication the 3.4 GHz-3.6 GHz Band MIMO Operation
 Li-Yan Rao (Kun Shan University); Churng-Jou Tsai (Kun Shan University);

10:40 Coffee Break

Session 4A6 Microwave Photonics, THz technology

Saturday AM, August 4, 2018

Room T6

Chaired by Akira Enokihara, Cun-Jun Ruan

- 08:30 Double Crossed Planar Bow-tie on a Lens Antenna at Terahertz Frequency for Imaging Application Arie Pangesti Aji (Universitas Indonesia); Catur Apriono (Universitas Indonesia); Fitri Yuli Zulkifli (University of Indonesia); Eko Tjipto Rahardjo (University of Indonesia);
- 08:50 Visualization of the Electrical Field in the Vicinity of a THz Pulse Exposed Cell with FDTD Simulation Aki Fujita (Science and Technology Research Inst. Co.);
- 09:10 Compensation of Third-order Inter Modulation Distortion by Using Frequency Chirp Modulation for Electro-optic Modulator Yuta Kashiwagi (University of Hyogo); Kosuke Takase (University of Hyogo); Tadashi Kawai (University of Hyogo); Akira Enokihara (University of Hyogo); Naokatsu Yamamoto (National Institute of Information and Communications Technology); Tetsuya Kawanishi (National Institute of Information and Communications Technology);
- 09:30 Design of the Terahertz Near Field Imaging Discreteer Based on Graphene Monolayer Strip Structure Shengyu Shan (Beihang University); Cun-Jun Ruan (Beihang University);
- 09:50 Terahertz Polariton Dispersion in Uniaxial Optical Crystals Seiji Kojima (University of Tsukuba);
- 10:10 Theoretical and Experimental Studies on THz Radi-Invited ation via Two-color Laser Scheme
 - Wei-Min Wang (Institute of Physics, CAS); Z.-M. Sheng (Shanghai Jiao Tong University); Y.-T. Li (Institute of Physics, CAS); L.-L. Zhang (Capital Normal University); Y. Zhang (Capital Normal University); C.-L. Zhang (Capital Normal University); X.-C. Zhang (Capital Normal University); J. Zhang (Shanghai Jiao Tong University);
- 10:40 Coffee Break

Session 4A7 SC2: Metasurfaces and Metamaterials for Antenna Applications 1

Saturday AM, August 4, 2018 Room T7 Organized by Toru Uno, Naobumi Michishita

Chaired by Toru Uno, Naobumi Michishita

- 08:30 Planar CRLH Leaky-wave Antenna with Asymmetric Unit Cells
 Yujiro Kushiyama (Tokyo University of Agriculture and Technology); Takuji Arima (Tokyo University of Agriculture and Technology); Toru Uno (Tokyo Uni-
- 08:50 Leaky-wave Antennas Using Composite Right/Lefthanded Cylindrical Waveguides Shigeyuki Nishimura (Doshisha University); Jungo Nakajima (Doshisha University); Hiroyuki Deguchi (Doshisha University); Mikio Tsuji (Doshisha University);

versity of Agriculture and Technology);

- 09:10 Miniaturized Coaxially Fed Antenna Using Composite Right/Left-handed Transmission Lines Takatsugu Fukushima (National Defense Academy); Naobumi Michishita (National Defense Academy of Japan); Hisashi Morishita (National Defense Academy); Naoya Fujimoto (Hitachi Kokusai Electric Inc.);
- 09:30 Dual-band Mushroom Antenna

Shuhei Terada (Kyoto Institute of Technology); Tetsuya Ueda (Kyoto Institute of Technology); Masakazu Ikeda (Kyoto Institute of Technology); Yuji Sugimoto (Kyoto Institute of Technology); Shiro Koide (Kyoto Institute of Technology);

- 09:50 Beam Direction Control Using Meta-surface Loaded with Diodes for IoT Tamami Maruyama (National Institute of Technology); K. Ozeki (National Institute of Technology); N. Ito (National Institute of Technology); S. Kameda (Tohoku University); Q. Chen (Tohoku University); N. Suematsu (Tohoku University);
- 10:10 Broadband Reflecting Metasurface Polarizer Warangkana Chaihongsa (King Mongkut's Institute of Technology Ladkrabang); Koichi Furuya (Kumamoto University); Takeshi Fukusako (Kumamoto University); Chuwong Phongcharoenpanich (King Mongkut's Institute of Technology);
- 10:40 Coffee Break

Session 4A8 FocusSession.SC3: Quantum Optics with Topological Materials 1

Saturday AM, August 4, 2018

Room T8

Organized by George W. Hanson, Mauro Antezza Chaired by George W. Hanson, Mauro Antezza

08:30 Quantum Photonics with Type II Weyl Semimetals Invited

Prineha Narang (Harvard University); Jennifer Coulter (Harvard University);

08:50 Spontaneous Lateral Atomic Recoil Force and Torque Invited Close to a Photonic Topological Material

S. A. H. Gangaraj (Cornell University); F. Monticone (Cornell University); Mario G. Silveirinha (University of Lisbon); George W. Hanson (University of Wisconsin-Milwaukee); Mauro Antezza (Universite de Montpellier);

09:10 Non-Abelian Berry Phases in Topological Photonics Invited

Thomas Christensen (Massachusetts Institute of Technology); Ling Lu (Institute of Physics, Chinese Academy of Sciences);

09:30 Bianisotropic Metamaterial for Achieving Spin-orbit Invited Coupling and Ideal Weyl Degeneracies

Shuang Zhang (University of Birmingham);

09:50 Quantum Physics with Plasmons in Graphene and KeynoteOther Atomic-scale Systems

F. Javier Garcia De Abajo (ICFO Institut de Ciencies Fotoniques, Mediterranean Technology Park);

10:40 Coffee Break

Session 4A9 FocusSession.SC2: Advances in Nanolasers 3

Saturday AM, August 4, 2018

Room A1 Organized by Renmin Ma, Qing Zhang Chaired by Renmin Ma

08:30 Interfacial Exciton Dynamics Invited

> Bo Peng (University of Electronic Science and Technology of China); Yue Li (University of Electronic Science and Technology of China); Jian Li (University of Electronic Science and Technology of China);

 $08{:}50 \hspace{0.1in} \text{Laser Cooling in Semiconductors}$

Invited

Jun Zhang (Institute of Semiconductors, Chinese Academy of Sciences, University of Chinese Academy of Science);

09:10 Hybrid Pervoskite Materials and the Related Plas-Invited monic Nanolasers

Zhijie Wang (Institute of Semiconductors, Chinese Academy of Sciences);

09:30 Continuous-wave Lasing from Chemical Vapor Depo-

- Invited sition Derived Monolayer MoS₂ Crystals Qing Zhang (Peking University);
- 09:50 PerovLight: Harness Strong Light-matter Coupling in
- Invited Perovskite Materials towards Coherent Excitonic and Polaritonic Lasers

Qihua Xiong (Nanyang Technological University);

10:10 Efficient Light Emission from Low-dimensional Metal-Invited halide Perovskites

Guichuan Xing (University of Macau);

10:40 Coffee Break

Session 4A10 SC2: Meta-X: Beyond Metamaterials 1

Saturday AM, August 4, 2018

Room A2

Organized by Osamu Sakai, Satoshi Tomita Chaired by Osamu Sakai, Satoshi Tomita

08:30 Phase Singularities in Moiré Type Metasurfaces Invited

Seigo Ohno (Tohoku University); Hiromichi Hoshina (Terahertz Sensing and Imaging Research Team, RIKEN); Hiroaki Minamide (RIKEN); Teruya Ishihara (Tohoku University);

08:50 Frequency Conversion by Using Temporal Boundary Invited in Terahertz Region

> Fumiaki Miyamaru (Shinshu University); Chihiro Mizuo (Shinshu University); Yuichi Honma (Shinshu University); Yosuke Nakata (The University of Tokyo); Toshihiro Nakanishi (Kyoto University); Keisuke Takano (Shinshu University); Julien Madeo (Okinawa Institute of Science and Technology Graduate University); Keshav M. Dani (Okinawa Institute of Science and Technology Graduate University);

09:10 All-dielectric Structured Materials for the Future of Invited Metamaterials

Willie J. Padilla (Duke University);

09:30 THz Tunable Metamaterial Based on Micro-Invited electromechanical Technologies

Yoshiaki Kanamori (Tohoku University);

- 09:50 Strong Enhancement of Local Electric Field and Mi-Invited croplasma Generation in an Electromagnetically In-
- duced Transparency Like Metasurface Yasuhiro Tamayama (Nagaoka University of Technology); Osamu Sakai (The University of Shiga Prefecture);

10:10 The Multidimensional Concept of Metamaterials Invited

Ari Sihvola (Aalto University);

10:40 Coffee Break

Session 4A11 FocusSession.SC3: Advanced Photonic Technologies for Spectroscopic Applications: Devoted to Prof. Frank K. Tittel 1

Saturday AM, August 4, 2018

Room A3

Organized by Wei Dong Chen, Vincenzo Spagnolo Chaired by Wei Dong Chen, Vincenzo Spagnolo

08:30 Mid-infrared Laser Based Trace Gas Sensor Technolo-Keynotegies: Recent Advances and Applications *Frank K. Tittel (Rice University)*;

09:00 Dual-gas Photoacoustic Sensor for SF6 Decomposi-Invited tion Detection

Lei Dong (Shanxi University); H. Wu (Shanxi University); X. Yin (Shanxi University); S. Jia (Shanxi University); Frank K. Tittel (Rice University);

09:20 Fiber-laser Intracavity Quartz-enhanced Photoacous-Invited tic Spectroscopy

> Wei Ren (The Chinese University of Hong Kong); Qiang Wang (The Chinese University of Hong Kong); Zhen Wang (The Chinese University of Hong Kong); Pietro Patimisco (Universita degli Studi di Bari and Politecnico di Bari); Angelo Sampaolo (Universita degli Studi di Bari and Politecnico di Bari); Vincenzo Spagnolo (Technical University of Bari);

09:40 Quartz Enhanced Photoacoustic Sensor for Hydrocar-

Invited bon Detection Employing a Single Interband Cascade Laser

Angelo Sampaolo (Technical University of Bari); Sebastian Csutak (Aramco Service Company); Pietro Patimisco (Universita degli Studi di Bari and Politecnico di Bari); Marilena Giglio (Politecnico and University of Bari); Giansergio Menduni (Politecnico and University of Bari); Arianna Elefante (Politecnico and University of Bari); Vittorio Passaro (Politecnico di Bari); Frank K. Tittel (Rice University); Max Deffenbaugh (Aramco Service Company); Vincenzo Spagnolo (Technical University of Bari);

10:00 Ethylene Trace Gas Detection Exploiting a Compact Quartz-enhanced Photoacoustic Spectroscopy-based Sensor

> Marilena Giglio (Technical University of Bari); Pietro Patimisco (Universita degli Studi di Bari and Politecnico di Bari); Angelo Sampaolo (Technical University of Bari); Arianna Elefante (Politecnico and University of Bari); Fabrizio Sgobba (Università degli Studi di Bari and Politecnico di Bari); Frank K. Tittel (Rice University); Vincenzo Spagnolo (Technical University of Bari);

00 Broadband Dual-cavity-cavity Enhanced Extinction Spectrometer for Monitoring Light Extinction by Atmospheric Particulate Matter

> Aiswarya Saseendran (National Institute of Technology Calicut); Claudio Mazzoleni (Michigan Technological University); M. K. Ravi Varma (National Institute of Technology Calicut);

10:40 Coffee Break

Session 4A12

FocusSession.SC3&SC4: Recent Advances in Devices and System Technologies for Terahertz Wireless Communications 1

Saturday AM, August 4, 2018

Room A4

Organized by Tadao Nagatsuma, Guillaume Ducournau

Chaired by Tadao Nagatsuma, Guillaume Ducournau

08:30 Resonant-tunneling-diode Terahertz Oscillators for Invited Wireless Communications

> Safumi Suzuki (Tokyo Institute of Technology); Masahiro Asada (Tokyo Institute of Technology);

08:50 300-GHz-band Communication Using Silicon CMOS KeynoteIntegrated Circuits

Minoru Fujishima (Hiroshima University);

09:20 THz Silicon Systems on Chip: A Moore-Maxwell Ap-Invited proach

Kaushik Sengupta (Princeton University);

09:40 Recent Progress on Silicon-based THz Circuits:

Invited Large-scale, High-density Arrays and Spectroscopy/Metrology Microsystems Ruonan Han (Massachusetts Institute of Technology);

10:00 Progress of 350 GHz-band Corporate-feed Plate-

Invited laminated Waveguide Slot Array Antennas Jiro Hirokawa (Tokyo Institute of Technology); Takashi Tomura (Tokyo Institute of Technology); Tadao Nagatsuma (Osaka University); Hiroyuki Seto (Kyoto University); Yoshiyuki Inoue (Kyoto University); Mikiko Saito (Waseda University);

10:20 Millimeter-wave CMOS Transceiver toward 1 Tbps Invited Wireless Communication

Kenichi Okada (Tokyo Institute of Technology);

10:40 Coffee Break

Session 4A13 SC3: Progresses in the Study of Topological Waves 1

Saturday AM, August 4, 2018

Room A5

Organized by Jian-Hua Jiang, Xiao Hu

Chaired by Xiao Hu, Jie Ren

08:30 PT-symmetric Interface States Based on Synthetic 4D Invited Topological Space

> Qiang Wang (Nanjing University); Kun Ding (The Hong Kong University of Science and Technology); C. T. Chan (The Hong Kong University of Science and Technology); Hui Liu (Nanjing University);

08:50 Topological Electromagnetics with Time-reversal KeynoteSymmetry

Xiao Hu (National Institute for Materials Science);

09:10 Non-Hermiticity-based Topological Insulating Phase Invited of Light

Kenta Takata (NTT Corporation); Masaya Notomi (NTT Corporation);

- 09:30 Robust Dark Solitons in Lieb Polariton Topological Insulators Fangwei Ye (Shanghai Jiao Tong University);
- 09:50 Waveguiding in Valley Photonic Crystals Invited

Baile Zhang (Nanyang Technological University);

10:10 Simulating Quantum Spin Hall Effect in Topological Invited Linear Circuit Networks

Jie Ren (Tongji University);

10:40 Coffee Break

Session 4A14 Emerging Electromagnetic Functionalization of Graphene and 2D Materials for Terahertz Device Applications 1

Saturday AM, August 4, 2018 Room A6 Organized by Taiichi Otsuji Chaired by Victor Ryzhii, Taiichi Otsuji

08:30 Auger Recombination in Graphene with Spectral Broadening and Renormalization by Electron-electron Interaction Abigs Setum (Tabalus University): Victor Barbij

Akira Satou (Tohoku University); Victor Ryzhii (Tohoku University); Vladimir Vyurkov (Institute of Physics and Technology, RAS); Georgy Alymov (Moscow Institute of Physics and Technology); Dmitry Svintsov (Moscow Institute of Physics and Technology);

08:50 Origins of Sub-terahertz Photoresponse in Graphene Transistors

> D. Bandurin (University of Manchester); I. Gayduchenko (Moscow State University of Education (MSPU)); M. Moskotin (Moscow State University of Education (MSPU)); G. Fedorov (Moscow Institute of Physics and Technology (State University)); Dmitry Svintsov (Moscow Institute of Physics and Technology);

09:10 Nano-carbon Flexible Photonics and Plasmonics for

Invited Terahertz Imaging and Spectroscopy Yukio Kawano (Tokyo Institute of Technology);

09:30 A Brief History of Growth of High Quality Graphene

Keynoteon 3C-SiC/Si via Thermal Decomposition Method Maki Suemitsu (Tohoku University);

- 10:00 Terahertz Detection with Asymmetric Dual Grating Invited Gate Bilayer Graphene Field-effect-transistor
- Juan Antonio Delgado Notario (Salamanca University); Vito Cleric (Salamanca University); Yahya Moubarak Meziani (Salamanca University); Enrique Diez (Salamanca University); Jesus Enrique Velazquez-Perez (Universidad de Salamanca); Takashi Taniguchi (National Institute for Materials Science); Kenji Watanabe (National Institute for Materials Science); Deepika Yadav (Tohoku University); Taiichi Otsuji (Tohoku University);

10:40 Coffee Break

Session 4A15 FocusSession.SC2&SC3: Light Manipulation and Micro-/Nano-structured Optoelectronic Devices 2

Saturday AM, August 4, 2018

Room A7 Organized by Liu Yang, Yoichi Okuno Chaired by Liu Yang, Yoichi Okuno

08:30 Growth of Large Area ${\rm MoS}_{\mathbf 2}$ Monolayers by Using Periodic Structures

Kai-Hsiang Ke (National Chung Cheng University); Yao-Ching Chiu (National Chung Cheng University); Ming-Yen Lu (National Tsing-Hua University); Vladimir E. Fedorov (Nikolaev Institute of Inorganic Chemistry, Siberian Branch of Russian Academy of Sciences); Hsiang-Chen Wang (National Chung Cheng University);

08:50 Nano-structure MoS_2/Cu_2O Biosensor

Rou-Yin Pan (National Chung Cheng University); Cheng-Wei Liu (National Chung Cheng University); Ming-Yen Lu (National Tsing-Hua University); Chie-Tong Kuo (National Sun Yat-Sen University); Shih-Wei Feng (National University of Kaohsiung); Vladimir E. Fedorov (Nikolaev Institute of Inorganic Chemistry, Siberian Branch of Russian Academy of Sciences); Hsiang-Chen Wang (National Chung Cheng University);

09:10 Analysis for the Electro-optic Modulation Dependences of $Batio_3$ Crystal Thin-film Waveguide on the System Architecture in Two-dimensional Spacefreedom

Mengxi Luo (Changchun University of Science & Technology); Yuan Hu (Institute of Microelectronics of the Chinese Academy of Sciences); Kaiping Zhang (Institute of Microelectronics of the Chinese Academy of Sciences); De Gui Sun (University of Ottawa/Changchun University of Science & Technology); 09:30 High-Q Supercavity States in High-index Subwavelength All-dielectric Resonators

Kirill L. Koshelev (ITMO University); A. A. Bogdanov (ITMO University); S. A. Gladyshev (ITMO University); Zarina F. Sadrieva (ITMO University); Polina V. Kapitanova (ITMO University); Mikhail V. Rybin (National Research University for Information Technology, Mechanics and Optics); K. B. Samusev (ITMO University); Mikhail F. Limonov (ITMO University); Yuri S. Kivshar (Australian National University);

09:50 Polarized Bound State in the Continuum and Resonances with Tunable ${\pmb Q}\text{-}{\rm factor}$ in an Anisotropic Photonic Crystal

Ivan V. Timofeev (Kirensky Institute of Physics, Federal Research Center KSC SB RAS); Dmitry N. Maksimov (MF Reshetnev Siberian State University of Science and Technology); Almas F. Sadreev (Siberian Federal University);

- 10:10 An Ultra-short Silicon Polarization Beam Splitter Based on Asymmetrical Directional Coupler Jing-Li Wang (Nanjing University of Posts and Telecommunications); Le Yu (Nanjing University of Posts and Telecommunications); Zi-Yu Chen (Nanjing University of Posts and Telecommunications); Heming Chen (Nanjing University of Posts and Telecommunications);
- 10:40 Coffee Break

Session 4A16 Metamaterials and Plasmonics 1

Saturday AM, August 4, 2018 Room A8

Chaired by Hiroyuki Deguchi, Mikio Tsuji

08:30 Hyperbolic Metamaterials Composed of Alminumdoped Zinc Oxide Nanotrenches for Mid-infrared Bio/Chemo Sensing

> E. Shkondin (Technical University of Denmark); T. Repan (Technical University of Denmark); Andrei V. Lavrinenko (Technical University of Denmark); Osamu Takayama (Technical University of Denmark);

08:50 Control of Left-handed Leakage Band on Composite Right/Left Handed Transmission Line and Its Application to Leaky-wave Antennas

> Yuya Ishii (Doshisha University); Takahiro Kawaguchi (Doshisha University); Hiroyuki Deguchi (Doshisha University); Mikio Tsuji (Doshisha University);
09:10 Reflectarray Cloaking Using $\Omega \text{-shaped}$ Resonant Elements

Yuki Fujimoto (Doshisha University); Shinichiro Wakashima (Doshisha University); Hiroyuki Deguchi (Doshisha University); Mikio Tsuji (Doshisha University);

- 09:30 Dynamic Tuning of Graphene Plasmonic Resonances by Ultraviolet Light Yunyun Dai (Fudan University); Yuyu Xia (Fudan University); Yiwen Zhang (Fudan University); Xiaohan Liu (Fudan University); Lei Shi (Fudan University); Jian Zi (Fudan University);
- 09:50 Transmission and Radiation Characteristics of a Waveguide Loading Planar Layered Left-handed Medium Masaki Ikeda (Doshisha University); Hiroyuki Deguchi (Doshisha University); Mikio Tsuji (Doshisha Univer-

sity);
10:10 Heat Conduction by Long-range Electromagnetic Surface Waves in Submicron Dielectric Films
Sergei Gluchko (Institute of Industrial Science, The University of Tokyo); R. Anufriev (Institute of Industrial Science, The University of Tokyo); R. Yanagisawa (Institute of Industrial Science, The University of Tokyo); S. Volz (Institute of Industrial Science, The University of Tokyo); M. Nomura (Institute of Industrial Science, The University of Tokyo);

10:40 Coffee Break

Session 4A17 SC3: Photonics-based Signal Source and Its Application 1

Saturday AM, August 4, 2018

Room A9

Organized by Fangzheng Zhang, Jianqiang Li Chaired by Fangzheng Zhang

- 08:30 Two Dimensional Materials Based Mode-locked Lasers and Related Photonic Applications Kan Wu (Shanghai Jiao Tong University);
- 08:50 Optical Frequency Comb Generation and Its Applications

Jianping Li (Jinan University);

09:10 Photonic Microwave Generation Based on Monolithically Integrated Multi-section Semiconductor Lasers Dan Lu (Institute of Semiconductors, Chinese Academy of Science); Lingjuan Zhao (Institute of Semiconductors, Chinese Academy of Science);

- 09:30 4-channels and 100 GHz-spacing Tunable Lasers for Fast Tuning Rulei Xiao (Nanjing University); Yuechun Shi (Nanjing University); Yong Zhao (Nanjing University); Xiangfei Chen (Nanjing University);
- 09:50 Low-power RF Signal Detection by a PS-FBG Based Tunable Optoelectronic Oscillator Xiuyou Han (Dalian University of Technology); Yuchen Shao (Dalian University of Technology); Mingshan Zhao (Dalian University of Technology);
- 10:10 Ultrafast Data Processing Using Support Vector Machine for Brillouin Optical Time Domain Analyzer Liang Wang (The Chinese University of Hong Kong); Huan Wu (The Chinese University of Hong Kong); Fangzheng Zhang (Nanjing University of Aeronautics and Astronautics);

10:40 Coffee Break

Session 4A18 RF and Wireless Communication, Multipath

Saturday AM, August 4, 2018 Room A10

Chaired by Heung-Gyoon Ryu, Yasushi Yamao

- 08:30 Contactless Monitoring of Heart and Respiration Rates Using Millimeter Wave Wideband Radio Minseok Kim (Tokyo Institute of Technology);
- 08:50 Evaluation of Received Signal Power in On-body Dynamic Channel Considering Human Walking Motion Yuki Futagi (Toyama University); Tomohiro Hori (Toyama University); Kazuhiro Honda (Toyama University); Koichi Ogawa (Toyama University);
- 09:10 Wireless Communication System Based on OFDM System Using Wavelet Transform Jun-Gu Lee (Chungbuk National University); Heung-Gyoon Ryu (Chungbuk National University);
- 09:30 Radio Propagation of 920 MHz RFID on Metallic Storage Shelf Sora Funayama (The University of Electro-Communications); Yasushi Yamao (The University of Electro-Communications);
- 09:50 Propagation Loss Characteristic of V2V Communication for Right-turn Accident Prevention Scenario Yosuke Kikuchi (The University of Electro-Communications); Yasushi Yamao (The University of Electro-Communications);

10:10 Steerable Beamforming UWB-IR Transmitter Array for Directional Indoor Positioning Applications *Md. Arif Hussain Ansari (Nanyang Technological University); Choi Look Law (Nanyang Technology University);*

10:40 Coffee Break

Session 4A0 Poster Session 5

Saturday AM, August 4, 2018 8:30 AM - 11:30 AM Room Foyer

- 1 Anti-water UHF RFID Tag Antenna with Multi-loop Structure for Impedance Matching Laijun Li (Zhejiang University); Wang He (Zhejiang University);
- 2 A Novel Design of Frequency-reconfigurable Antenna for Wireless Communication Feng Xie (Tongji University); Xiao Jia Huang (Tongji University); Mei Song Tong (Tongji University);
- 3 Meandered Inductor Shape of DGS for Coupling Suppression between Adjacent Elements of Array Antenna Mochamad Yunus (University of Pakuan); Prama Artha Nugraha (University of Pakuan); Waryani (University of Pakuan); Hardi Nusantara (Institut Teknologi Bandung); Achmad Munir
- 4 Design of a Novel Miniaturized RFID Tag Antenna for UHF Applications Ruo Xing Gao (Tongji University); Ling Yi Tang (Tongji University); Mei Song Tong (Tongji University);

(Institut Teknologi Bandung);

5 Design of 3-axis Hall Plate with High Sensitivity Jin-Sup Kim (Korea Electronics Technology Institute);

6 A Study of Optimization for Heat Spreader Sheet Based on Graphene Jin-Sup Kim (Korea Electronics Technology Institute); Jong-Kyu Kim (Korea Electronics Technology Institute); Investigation for the Birefringence and Stress Distributions of SiO_2 Films and Optical Waveguides in a Large Wafer

7

8

9

11

Qingyu Sun (Changchun University of Science and Technology); Xueping Wang (Changchun University of Science and Technology); Hongpeng Shang (Changchun University of Science and Technology); Liyuan Chang (Changchun University of Science and Technology); De Gui Sun (University of Ottawa);

High Stability Tracking with Sparse Location Information

Yangpu Cao (Zhejiang University); Yuan Chen (Zhejiang University); Yaoran Sun (Zhejiang University); Sailing He (Zhejiang University);

Biological Effect of ELF Electric Field in Blood Aggregability II — Realization of Realistic Field Exposure Using Transparent Electrodes —

Hisae O. Shimizu (Hokkaido University of Science); Miki Kanemaki (Hokkaido University of Science); S. Watanabe (Hokkaido University of Science); J. Arisawa (Hokkaido University of Science); K. Shimizu (Waseda University);

10 Evaluating the Experience Obtained from the Measurement of Light Air Ions in a Cave Zdenek Roubal (Brno University of Technology); Radim Kadlec (Brno University of Technology);

Zoltan Szabo (Brno University of Technology); Miloslav Steinbauer (Brno University of Technology); Karel Bartusek (Institute of Scientific Instruments of the ASCR);

A Novel Triangular Patch Antenna Deploying Koch Fractal Geometry for Biomedical Applications Ali Arif (Information Technology University of the Punjab (ITU)); Muhammad Qasim Mehmood (Information Technology University (ITU)); Mubasher Ali (The University of Lahore); Ahsan Sarwar Rana (Information Technology University (ITU)); Muhammad Zubair (Information Technology University of the Punjab);

12 A Directive Log Spiral Antenna Design for Broadband Receptions

Tsai-Yun Chuang (National Taiwan University of Science and Technology); Yi-Chung Li (National Taiwan University of Science and Technology); Hao-De Tang (National Taiwan University of Science and Technology); Wen-Jiao Liao (National Taiwan University of Science and Technology);

- 13 A Triple-band Monopole Antenna with Dualpolarization Characteristics
 Ting Wu (Xi'an University of Technology); Ming-Jun Wang (Xi'an University of Technology);
 Xi-Zheng Ke (Xi'an University of Technology);
 Jiao Wang (Xi'an University of Technology);
- 14 Slot and DGS Incorporation for Bandwidth Enhancement of Substrate Integrated Waveguide Antenna Mia Maria Ulfah (Institut Teknologi Bandung); Chairunnisa (Institut Teknologi Bandung); Agus Hendra Wahyudi (Chiba University); Achmad Munir (Institut Teknologi Bandung);
- 15 Design of Mixed C- and F-shaped Monopole Antenna for Multi-band Systems Application Cheng-Hsing Hsu (National United University); Shang-Hung Tsai (National United University); Ja-Hao Chen (Feng-Chia University); Cheng-Chi Yu (Feng-Chia University); Ching-Fang Tseng (National United University);
- 16 Phase-only Excited Random Antenna Arrays Giovanni Buonanno (Seconda Universita di Napoli); Raffaele Solimene (Seconda Universit di Napoli);
- Design of a Multi-band Antenna for WLAN Application
 Xiao Jia Huang (Tongji University); Feng Xie (Tongji University); Mei Song Tong (Tongji University);
- 18 Dual Band Folded Microstrip Patch Antenna for Omnidirectional Radiation Wei Shi (Nanjing Telecommunication Technology Research Institute); Shiyun Yu (Nanjing Telecommunication Technology Research Institute); Bin Liu (Nanjing Telecommunication Technology Research Institute); Xinbo Qu (Nanjing Telecommunication Technology Research Institute);
- 19 A Low-voltage Gyrotron Backward-wave Oscillator at 200 GHz Chien-Lun Hung (National Penghu University of Science and Technology); Yi Sheng Yeh (Southern Taiwan University of Science and Technology); Tsun-
- 20 A 5-GHz Chirp Frequency Synthesizer with a Low 1/f Noise LC Oscillator Tai-Cheng Lee (National Taiwan University); Dai-En Jhou (National Taiwan University);

Hun Chang (National Tsing Hua University);

Flexible Artificial Magnetic Conductor Reflector for Wearable Antenna Application Muh. Aprizal A. (Telkom University); Levy Olivia Nur (Telkom University); Bambang Setia Nugroho (Universitas Indonesia); Achmad Munir (Institut Teknologi Bandung);

- 22 A W-band Solid-state Source with 2 Watts Continuous Wave Output Power Zhen-Hua Chen (Nanjing University of Information Science and Technology); Xiang Chen (Xi'an Institute of Space Radio Technology);
- 23 An Approach for Parameter Estimation of Ground Moving Target Laihe Wang (National University of Defense Technology); Dao Xiang An (National University of Defense Technology); Wu Wang (National University of Defense Technology); Yueli Li (National University of Defense Technology);
- 24 Notes on the Paper 'Speed of Light in Vacuum Revisited'

Namik Yener (Kocaeli University);

25

27

- A Novel Control Method for Pneumatic Generating System Based on Heavy Haul Train Lan Chen (Shanghai Institute of Technology); Jun Zhang (Shanghai Institute of Technology); Ying Jie Ma (Shanghai Institute of Technology); Zhi Ding Ying (Tongji University); Guo Chun Wan (Tongji University); Mei Song Tong (Tongji University);
- 26 DC and AC Electric Field Measurements near the Sq Current System by S-310-44 Sounding Rocket Ryuichiro Nakamura (Toyama Prefectural University); Keigo Ishisaka (Toyama Prefectural University); Takumi Abe (JAXA/ISAS); Atsushi Kumamoto (Tohoku University); Makoto Tanaka (Tokai University); Akimasa Yoshikawa (Kyushu University); Hiroki Matsushita (Kyushu University);

A Novel Superpixel Generation Method Based on Edge Intensity for SAR Image Yuan Chen (National University of Defense Technology); Lingjun Zhao (National University of Defense Technology); Tao Tang (National University of Defense Technology); Gangyao Kuang (National University of Defense Technology);

28 A Novel Miniaturized Quasi-lumped Element Antenna Based on Interdigital Capacitor Seyi Stephen Olokede (University of Johannesburg); Chuckwuemeka Joshua Okonkwo (National Open University of Nigeria); Adebayo Taiwo Akinyemi (ECAS Telecoms & Systems Nigeria); Babu Sena Paul (University of Johannesburg); 29 Modular Microwave Applicator Design for Homogeneous Heating of Tubular Chemical Reactors at Industrial Scale

> Vasileios Ramopoulos (Institute for Pulsed Power and Microwave Technology, Karlsruhe Institute of Technology); G. Link (Institute for Pulsed Power and Microwave Technology, Karlsruhe Institute of Technology); S. Soldatov (Institute for Pulsed Power and Microwave Technology, Karlsruhe Institute of Technology); T. Seitz (Institute for Pulsed Power and Microwave Technology, Karlsruhe Institute of Technology); V. Nuss (Institute for Pulsed Power and Microwave Technology, Karlsruhe Institute of Technology); J. Jelonnek (Institute for Pulsed Power and Microwave Technology, Karlsruhe Institute of Technology); J. Jelonnek (Institute for Pulsed Power and Microwave Technology, Karlsruhe Institute of Technology);

- Design of Recognition System for Chipless RFID Tags
 Based on Spectral Characteristics
 Zi Wei Xia (Tongji University); Ling Yi Tang (Tongji
 University); Guo Chun Wan (Tongji University);
 Mei Song Tong (Tongji University);
- Broadband Microwave Imaging for Foam Insulation Diagnostics
 Margarita A. Chizh (Bauman Moscow State Technical University); Andrey V. Zhuravlev (Bauman Moscow State Technical University); Vladimir V. Razevig (Bauman Moscow State Technical University); Sergey I. Ivashov (Bauman Moscow State Technical University);
- 33 Polarization-resolved Momentum-space Imaging Spectroscopy
 Yiwen Zhang (Fudan University); Wenzhe Liu (Fudan University); Haiwei Yin (Ideaoptics Inc.); Lei Shi (Fudan University); Jian Zi (Fudan University);
- 34 Wall Ringing Multipath Exploitation for Throughthe-wall Imaging Radar Lei Qiu (Space Engineering University); Tian Jin (National University of Defense Technology); Yongpeng Dai (National University of Defense Technology); Jun Yang (Space Engineering University); Yuntao Li (Space Engineering University); Yakun Lv (Space Engineering University);
- 36 Design of the RF-DC Conversion Circuit by GA Adopting Mutation Based on Fourier Coefficients on Unit Structures Kento Nakagawa (Okayama University); Kazuhiro Fujimori (Okayama University);

37 Graphene-on-silicon Hybrid Waveguide Devices and Applications Zhenzhou Cheng (The University of Tokyo);

Tinghui Xiao (The University of Tokyo); Keisuke Goda (University of California);

- Besign of a Miniaturized RFID Tag Antenna Based on Textile Substrates
 Feng Xie (Tongji University); Xiao Jia Huang (Tongji University); Mei Song Tong (Tongji University);
- 39 Laser Beam Quality Measurement by a Single Shot of the Near- and Far-field Images Surin Rodtim (King Mongkut's Institute of Technology); Suripon Somkuarnpanit (King Mongkut's Institute of Technology);
- 40 Basic Study of a Terahertz Absorber Composed of Metal and Polyimide Layers
 J. Shibayama (Hosei University); Jun Nakano (Hosei University); J. Yamauchi (Hosei University); H. Nakano (Hosei University);
- 41 Chip Scale Broadband Frequency Conversion in Periodically Poled Lithium Niobate Thin Film Licheng Ge (Shanghai Jiao Tong University); Yuping Chen (Shanghai Jiao Tong University); Guangzhen Li (Shanghai Jiao Tong University); Haowei Jiang (Shanghai Jiao Tong University); Bing Zhu (Shanghai Jiao Tong University); Xianfeng Chen (Shanghai Jiao Tong University);
- 42 Large Area UV Band Pass Filter for Display Applications
 Hoekyung Kim (Korea Electronics Technology Institute); Byung-Doo Kwak (Prime Optics Co., Ltd.);
- 43 3D Printed Lattices for Terahertz Photonic Crystals Wenya Zhang (Soochow University); Shanshan Li (Soochow University); Weixin Lu (Soochow University); Bo Hou (Soochow University);
 - Ground-based Monitoring of GHGs in the Atmospheric Column Using Mid-infrared Laser Heterodyne Radiometry (LHR)
 Fengjiao Shen (Universite du Littoral Cote d'Opale); Pascal Jeseck (Universite Pierre et Marie-Curie (Paris 6)); Yao-Veng Te (Universite Pierre et Marie-Curie (Paris 6)); Tu Tan (Anhui Institute of Optics & Fine Mechanics, Chinese Academy of Sciences); Xiaoming Gao (Anhui Institute of Optics and Fine Mechanics, Chinese Academy of Sciences); Eric Fertein (University of the Littoral Opal Coast); Wei Dong Chen (Universite du Littoral Cote d'Opale);

- 45 Guide Star Optimal Selection Algorithm for All-time Star Sensors Based on Star Constellations Feng Wu (Changzhou Institute of Technology); Xifang Zhu (Changzhou Institute of Technology); Dongdong Hou (Changzhou Institute of Technology); Ruxi Xiang (Changzhou Institute of Technology);
- 46 Capacitive-Discharge-Pumped Copper Bromide Vapor Laser with Output Power up to 15 W Fedor Alexandrovich Gubarev (National Research Tomsk Polytechnic University); Dmitriy Valerievich Shiyanov (National Research Tomsk Polytechnic University); Victor Borisovich Sukhanov (V.E. Zuev Institute of atmospheric Optics SB RAS);
- 47 Experimental Investigation of the Exceptional Points in High-dimension Non-Hermitian System Yaqiong Ding (Tongji University); Yong Sun (Tongji University); Hong Chen (Tongji University);
- 48 Design a Compact Metal-dielectric Multilayer as a Bandpass Filter and Metamaterial with Admittance Tracing Method *Yi-Jun Jen (National Taipei University of Technology)*;
- 49 Polarization-sensitive Tunable Perfect Absorber in VIS-NIR Regimes Dasol Lee (Pohang University of Science and Tech-

Dasol Lee (Pohang University of Science and Technology (POSTECH)); Sanghun Bang (Pohang University of Science and Technology (POSTECH)); Jeonghyun Kim (Pohang University of Science and Technology (POSTECH)); Duc Minh Nguyen (Pohang University of Science and Technology (POSTECH)); Junsuk Rho (Pohang University of Science and Technology (POSTECH));

50 A Broadband Polarization-insensitive Absorber Based on the Plasma Metameterial with Angle Independence Hao Zhang (Nanjing University of Posts and Telecommunications); Hai Feng Zhang (Nanjing University of Posts and Telecommunications); Jing Yang (Nanjing University of Posts and Telecommunications); Jia-Xuan Liu (Nanjing University of Posts and Telecommunications);

51 Dynamic Modulation of Surface Plasmon Nanolasers by Elastic Waves *Tzy-Rong Lin (National Taiwan Ocean University)*; *Zhen-Ting Huang (National Taiwan Ocean Univer-*

Zhen-Ting Huang (National Taiwan Ocean University); Jin-Chen Hsu (National Yunlin University of Science and Technology);

Magnetic Plasmon Propagation in a Chain of Connected of Deep-subwavelength Plasmonic Metamaterial Resonators

52

Zhen Liao (Southeast University); Guo-Qing Luo (Hangzhou Dianzi University); Tie Jun Cui (Southeast University);

53 Infrared Single-photon Detection and Imaging via Frequency Upconversion Yu Chen (East China Normal University); Jianhui Ma

(East China Normal University); Jianhai Ma (East China Normal University); Huiqin Hu (East China Normal University); Haifeng Pan (East China Normal University); E. Wu (East China Normal University);

54 Polarization Measurements and Analyses for Field Quantum Key Distribution

Hua Chen (System Engineering Institute of Sichuan Areospace); Qiang Zhou (University of Electronic Science and Technology of China); Baozhuo Zhou (System Engineering Institute of Sichuan Areospace); Hai-Zhi Song (Southwest Institute of Technical Physics); Shili Wang (System Engineering Institute of Sichuan Areospace); Tianwen Yao (System Engineering Institute of Sichuan Areospace); Xiaoxu He (System Engineering Institute of Sichuan Areospace); Ben Zhang (System Engineering Institute of Sichuan Areospace); Shuang Wang (University of Science and Technology of China); Yuyang Ding (University of Science and Technology of China);

- 55 Compact Over-mode Waveguide for Power Combining in Sub-millimeter Wave
 C. Yi (Korea University); H. Lee (Korea University); Moonil Kim (Korea University);
- 54 The Signal Processing for the Backend of Very Long Baseline Interferometer (VLBI): Design and Implementation

Yajun Wu (Shanghai Astronomical Observatory, Chinese Academy of Science); Renjie Zhu (Shanghai Astronomical Observatory, Chinese Academy of Science);

55 Enhanced Photon Tunneling by Multiple Surface Plasmon Coupling in a Graphene/Vacuum Multilayer System

> Yong Zhang (Harbin Institute of Technology); Hongliang Yi (Harbin Institute of Technology); He-Ping Tan (Harbin Institute of Technology);

Examination of Surface Roughness Effect on Radar Backscattering from Vegetated Fields Using the Radiative Transfer Model

Sinmyong Park (Hongik University); Taekyeong Jin (Hongik University); Yisok Oh (Hongik University);

- 57 In-Constructing Structured Light Beams in Optical vited Fiber via Mode Reconfiguration Ting Mai (Northwestern Balatashniad University)
- Ting Mei (Northwestern Polytechnical University);
 W. Zhang (Northwestern Polytechnical University);
 F. Lu (Northwestern Polytechnical University);
 M. Liu (Northwestern Polytechnical University);
- 58 Mass Selection in a Nonlinear Effective Potential Semyon S. Rudiy (ITMO University); Ivan A. Vasilev (ITMO University); Olga M. Kushchenko (ITMO University); Y. V. Rozhdestvensky (ITMO University);
- 00 On the Equilibrium Quantities of a Mismatched and Inhomogeneous Charged Particle Beam Roger Pizzzato Nunes (Universidade Federal do Rio Grande do Sul);
- 00 Multipolar Interference in the Systems of Optically Resonant Dielectric Nanostructures T. X. Hoang (A*STAR Institute of High Performance Computing); W. K. Phua (A*STAR Institute of High Performance Computing); C. E. Png (A*STAR Institute of High Performance Computing); H. S. Chu (A*STAR Institute of High Performance Computing);
- Modeling and Simulation of On-chip Probe for Portable NMR Applications
 Manish Gupta (Jawaharlal Nehru University);
 C. P. Safvan (Inter-University Accelerator Centre); Kundan Singh (Jawaharlal Nehru University);
 D. K. Lobiyal (Jawaharlal Nehru University);
- 00 Adaptive Wi-Fi Based Fingerprint Solution for Tracking of Indoor Mobility Viet Phuong Bui (Institute of High Performance Computing); Zaw Oo Zaw (Institute of High Performance Computing); Ching-Eng Png (Institute of High Performance Computing (IHPC));

Session 4P1a Active and Passive Remote Sensing, SAR & GPR

Saturday PM, August 4, 2018 Room T1 Chaired by Motoyuki Sato, Xiaolan Xu

13:00 Towards an Automatic Urban Settlement Mapping from Multi-temporal InSAR Trained by Social Media Zelang Miao (Central South University); Lixin Wu (Northeastern University); Wenzhong Shi (The Hong Kong Polytechnic University); Paolo Gamba (University of Pavia); Mi Jiang (Hohai University);

- 13:20 Simultaneous Temperature and Strain Sensing Utilizing Brillouin Frequency Shifts Contributed by Multiple Acoustic Modes with High Spatial Resolution Chen Xing (Huazhong University of Science and Technology); Keyuan Yang (Huazhong University of Science and Technology); Changjian Ke (Huazhong University of Science and Technology); Haoyu Wang (Huazhong University of Science and Technology); Zhen Guo (Huazhong University of Science and Technology); Yue Deng (Huazhong University of Science and Technology); Yibo Zhong (Huazhong University of Science and Technology);
- 13:40 Snow Stratigraphy Using Tomography Radar Xiaolan Xu (California Institute of Technology); Chad A. Baldi (California Institute of Technology); Jan-Willem De Bleser (California Institute of Technolnology); Yang Lei (California Institute of Technology); Simon H. Yueh (California Institute of Technology); Daniel Esteban-Fernandez (California Institute of Technology);
- 14:00 Observation and Analysis of Electromagnetic Precursors of Crustal Rupturing in Tonankai or East-South Sea Area of Japan
 Masafumi Fujii (University of Toyama);
- 14:20 Automatic Building Extraction Based on Deep Convolutional Neural Networks from High-resolution Remote Sensing Images
 Jianwei Gao (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences);
 Zhengchao Chen (Institute of Remote Sensing and Digital Earth, CAS); Xuan Yang (Institute of Remote Sensing and Digital Earth, CAS); Qun Ma (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Baipeng Li (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Baipeng Li (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Baipeng Li (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Baipeng Li (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Baipeng Li (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Baipeng Li (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Baipeng Li (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Baipeng Li (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Baipeng Li (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Baipeng Li (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Baipeng Li (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Baipeng Li (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Baipeng Li (Institute Sensing Experimenter Sensing Experim
- 14:40 Handheld Bistatic Subsurface Radar Using Accelerometer Kazutaka Kikuta (Tohoku University); Motoyuki Sato (Tohoku University);

Sciences);

- 15:00 Investigation for the Measurement Accuracies of Silica Waveguide Sidewall Angles with Confocal Laser Scanning Microscope
 Hongpeng Shang (Changchun University of Science and Technology); De Gui Sun (University of Ottawa/Changchun University of Science & Technology); Jinzhu Gao (Institute of Metal Research, Chinese Academy of Sciences); Peng Yu (Institute of Metal Research, Chinese Academy of Science and Technology); Peng Liu (University of Science and Technology); Peng Liu (University of Ottawa); Trevor J. Hall (University of Ottawa);
- 15:20 An Experimental Study of Foliage Penetrating Radar with Coherent Change Detection Sevket Demirci (Mersin University); Betul Yilmaz (Mersin University); Hakan Isiker (Mersin University); Serhat Gokkan (Mersin University); Caner Ozdemir (Mersin University);

15:40 Coffee Break

Session 4P1b Electromagnetic Modeling and Inversion and Applications

Saturday PM, August 4, 2018

Room T1

Organized by Jianhua Li, Ganquan Xie Chaired by Shigu Cao, Ganquan Xie

16:00 Plane Wave Coupling to Overhead Lines over Stratified Earth

> Zeyneb Belganche (Mohammed V University); Abderrahman Maaouni (Mohammed V University); Ahmed Mzerd (Mohammed V University); Ayoub Lahmidi (Universite Mohammed V);

- 16:20 Metasurface Design by Surrogate-assisted Optimization
 Binbin Zhu (Kuang-Chi Institute of Advanced Technology); Yang Yang (Tsinghua University); Yiqi Liu (Kuang-Chi Institute of Advanced Technology); Xiao Guo (Kuang-Chi Institute of Advanced Technology); Ke Deng (Tsinghua University); Chunlin Ji (Kuang-Chi Institute of Advanced Technology);
- 16:40 Multiphysics Modeling for Ferroelectric Materials Shigu Cao (Shenzhen Inequation Technology Co. Ltd.);

17:00 GL Full Wave Modeling and Ray Tracing Method for Cloak

Jianhua Li (GL Geophysical Laboratory); Lee Xie (GL Geophysical Laboratory); Feng Xie (GL Geophysical Laboratory); Ganquan Xie (GL Geophysical Laboratory);

- 17:20 The Radial r in the Sphere Coordinate Can Be Negative as Well as a New Negative Space in Which Acoustic and Electromagnetic Wave Propagation Jianhua Li (GL Geophysical Laboratory); Feng Xie (GL Geophysical Laboratory); Lee Xie (GL Geophysical Laboratory); Ganquan Xie (GL Geophysical Laboratory);
- 17:40 GLHUA Practicable and GLHUANPII Electromagnetic Invisible Cloak and Novel GLHUANPII Spherical Radial Transformation maps the Negative Infinity $-\infty$ to $\mathbf{R_1}$ and $\mathbf{R_2}$ to $\mathbf{R_2}$ Jianhua Li (GL Geophysical Laboratory); Feng Xie (GL Geophysical Laboratory): Lee Xie (GL Geophysical Laboratory):

(GL Geophysical Laboratory); Lee Xie (GL Geophysical Laboratory); Ganquan Xie (GL Geophysical Laboratory);

Session 4P2a SC5: Advances in PolSAR/PolInSAR Analysis and Applications

Saturday PM, August 4, 2018

Room T2

Organized by Hiroyoshi Yamada, Ryoichi Sato Chaired by Hiroyoshi Yamada, Ryoichi Sato

- 13:00 Detection of Landslides of the 2016 Kumamoto Earthquake by Using Two Single-pass Cross-track Interferometry Airborne SAR Data *Toshifumi Moriyama (Nagasaki University); Fumiaki Jitsufuji (Nagasaki University);*
- 13:20 Monitoring Permafrost Environments with Polarimetric SAR and Optical Remote Sensing Data Sang-Eun Park (Sejong University);
- 13:40 Investigation of Seasonality-induced Polarimetric Backscatter Variations over Tropical Forests for Improved Geophysical Parameter Estimation Christian Koyama (Tokyo Denki University); Manabu Watanabe (Tokyo Denki University); Masanobu Shimada (Tokyo Denki University);

- 14:00 Polarimetric SAR Targets Detection and Classification with Deep Convolutional Neural Network
 Si-Wei Chen (National University of Defense Technology); Chen-Song Tao (National University of Defense Technology); Xuesong Wang (National University of Defense Technology); Shun-Ping Xiao (National University of Defense Technology);
- 14:20 Applying Polarimetric H/alpha Decomposition to Height Direction by Using TomoSAR Reconstruction Masanori Gocho (Niigata University); H. Yamada (Niigata University); Yoshio Yamaguchi (Niigata University); Ryoichi Sato (Niigata University);
- 14:40 Three-component Scattering Power Decomposition by Using Multi-baseline PolSAR Data of ALOS-2/PALSAR-2 Kosuke Miyazaki (Niigata University); H. Yamada (Niigata University); Ryoichi Sato (Niigata University); Yoshio Yamaquchi (Niiqata University);
- 15:00 Dynamic Polarimetric Backscattering Matrix Measurement System and Calibration Method Yu Wang (Institute of Electronics, Chinese Academy of Sciences); Mingkuan Yi (Institute of Electronics, Chinese Academy of Sciences); Jun Hong (Institute of Electronics, Chinese Academy of Science);
- 15:20 Urban Damage Mapping Using Fully Polarimetric SAR Data

Si-Wei Chen (National University of Defense Technology); Xuesong Wang (National University of Defense Technology); Shun-Ping Xiao (National University of Defense Technology); Yi Su (National University Of Defense Technology);

15:40 Coffee Break

Session 4P2b SC5: Theoretical and Experimental Studies Related to GPR

Saturday PM, August 4, 2018

Room T2

Organized by Masahiko Nishimoto, Akira Hirose Chaired by Masahiko Nishimoto, Akira Hirose 16:00 Underground Electromagnetic Wave Velocity Calculation Method

Wenqi Fang (HYlight Technology. Co., Ltd.); Jisheng Huang (Yunnan Power Grid Corporation); Zhengjie Cai (HYlight Technology. Co., Ltd.); Ping Guo (Yunnan Power Grid Corporation); Lingyun Tang (HYlight Technology. Co., Ltd.); Enxin Xiang (Power Grid Research Institute of Yunnan Power Grid Corporation); Wei Li (Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences);

- 16:20 Buried Target Identification Using Model Parameters of Scattering Transfer Function Masahiko Nishimoto (Kumamoto University);
- 16:40 Optimized Reconstruction of GPR Target Signature Using Evolving Sparse Representation Budiman Putra Asmaur Rohman (Kumamoto University); Masahiko Nishimoto (Kumamoto University);
- 17:00 Estimation of Near-surface Soil Moisture through GPR Signal Processing Based on Multi-scaled Spectral Feature Weighting Budiman Putra Asmaur Rohman (Kumamoto University); Masahiko Nishimoto (Kumamoto University);

Session 4P3a SC1: Novel Mathematical Methods in Electromagnetics 2

Saturday PM, August 4, 2018

Room T3

Organized by Kazuya Kobayashi, Yury V. Shestopalov

Chaired by Kazuya Kobayashi, Yury V. Shestopalov

- 13:20 Diffraction of *E*-polarized Plane Waves by Two Finite Sinusoidal Gratings
 Elena D. Vinogradova (Macquarie University);
 Kazuya Kobayashi (Chuo University);
- 13:40 Rigorous Approach to Multiple Plane Wave Scattering by Arbitrary Cylindrical Cavities with Longitudinal Slits: Ensembles of Coupled Resonators *Elena D. Vinogradova (Macquarie University)*;
- 14:00 The Dependence of Surface and Field Distributions upon the Curvature of Rounded Corners of a Scatterer

Paul D. Smith (Macquarie University); Audrey J. Markowskei (Macquarie University); 14:20 Propagation Modes in a Waveguide Perturbed by Inserts

PaulD.Smith(MacquarieUniversity);ElenaD.Vinogradova(MacquarieUniversity);YuryV.Shestopalov (University of Gavle);

- 14:40 On the Construction of Electromagnetic Green's Dyadics without Vector Wave Functions Prabhakar H. Pathak (Ohio State University); Kittisak Phaebua (King Mongkut's University of Technology North Bangkok);
- 15:00 Plane Wave Diffraction by Two Parallel Sinusoidal Strips Toru Eizawa (Chuo University); Kazuya Kobayashi (Chuo University);
- 00:00 Surface Electromagnetic Waves of Visible Range on the Interfaces of Gradient Dielectric Media Alexander Borisovich Shvartsburg (Joint Institute for High Temperatures, Russian Academy of Sciences); N. V. Silin (Far Eastern Federal University); Yu. G. Nesterov (Far Eastern Federal University);

15:40 Coffee Break

Session 4P3b Computational Electromagnetics, Hybrid Methods

Saturday PM, August 4, 2018

Room T3

Chaired by Nicolae-Coriolan Panoiu, Jean-Fu Kiang

- 16:00 Efficient Implementation of the CFS-PML for Arbitrary Media Based on the Matrix-exponential Method Haolin Jiang (Southeast University); Jianfeng Zhang (Southeast University); Tie Jun Cui (Southeast University); Yongxiao Tian (East China University of Science and Technology);
- 16:20 Brightness Temperatures from Moistured Soil with Rough Surface by Using Near-field Bistatic Transmission Coefficients and Domain-decomposition FDTD Method

Zhi-Hong Lai (National Taiwan University); Jean-Fu Kiang (National Taiwan University);

16:40 Analysis of Quantum and Classical Plasmon Interactions via a Novel TD-DFT-FDTD Hybrid Method Jian Wei You (University College London); Nicolae-Coriolan Panoiu (University College London);

- 17:00 Evaluation of the Impact of Deforestation on the Radio Wave Propagation Near the Large Antenna System in the Calculation of Sanitary Protection Zones Mikhail Sergeyevich Mikhailov (National Research University "Moscow Power Engineering Institute"); E. S. Malevich (National Research University "Moscow Power Engineering Institute"); Valery A. Permyakov (Moscow Power Engineering Institute (Technical University));
- 17:20 FDTD Studies of the Lasing Characteristics Yaxin Yu (Chang'an University); Xiaochuan Hu (Chang'an University); Yi Zhao (Chang'an University); Zan Zhang (Chang'an University); Bing Bai (Chang'an University); Guiping Wang (Chang'an University);
- 17:40 Wavelength Scanning Speed Analysis for Highresolution Optical Spectrometry Based on Stimulated Brillouin Scattering Yibo Zhong (Huazhong University of Science and Technology); Keyuan Yang (Huazhong University of Science and Technology); Changjian Ke (Huazhong University of Science and Technology); Chen Xing (Huazhong University of Science and Technology); Haoyu Wang (Huazhong University of Science and Technology); Zhen Guo (Huazhong University of Science ence and Technology);
- 18:00 Numerical Simulation of ILS Glide Path Signals above 3D Ground Model by Ray-tracing Method Junichi Honda (Electronic Navigation Research Institute (ENRI)); Hisashi Yokoyama (Electronic Navigation Research Institute (ENRI)); Hirohisa Tajima (Electronic Navigation Research Institute (ENRI));

Session 4P4a FocusSession.SC1: Advances of Numerical Methods in Computational Electromagnetics

Saturday PM, August 4, 2018

Room T4

Organized by Mei Song Tong, Naoshi Nishimura Chaired by Mei Song Tong

 13:00 Fast Simulations of Beam Propagations via Adaptive Eikonal Splitting Qin Sheng (Baylor University); H. Sun (University of Macau); ences);

13:20 Numerical Modeling of Graphene Nano-ribbon by DGTD Taking into Account the Spatial Dispersion Effects

Ping Li (The University of Hong Kong); Li Jun Jiang (University of Hong Kong); Hakan Bagci (King Abdullah University of Science and Technology (KAUST));

- 13:40 Splitting Complex Variable-based Self-consistency of Adjoint Analysis for Topology Optimization of Electromagnetic Waves Yongbo Deng (Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sci-
- 14:00 Singular Complement Method for Scattering Problems in Plasmonic Structures Camille Carvalho (UC Merced); Patrick Ciarlet, Jr. (Ecole Nationale Superieure de Techniques Avancees);
- 14:20 Joint Inversion of Acoustic and Electromagnetic Data for Throax Imaging Xiaoqian Song (Tsinghua University); Maokun Li (Tsinghua University); Fan Yang (Tsinghua University); Shenheng Xu (Tsinghua University); Aria Abubakar (Schlumberger Houston Formation Evaluation);
- 14:40 Penetrable Numerical Modeling of Metallic Nanoparticles at Terahertz Frequencies Hande Ibili (Middle East Technical University); Bariscan Karaosmanoglu (Middle East Technical University); Ozgur Ergul (Middle East Technical University);
- 15:00 Blocked Iterative Algorithms for Solving Eigenvalue Problems and Sparse Systems of FEM Equations on a GPU Adam Dziekonski (Gdansk University of Technol-

Adam Dziekonski (Gaansk University of Technology); Michal Piotr Mrozowski (Technical University of Gdansk);

- 15:20 Fast Calculation of Near Electric Field by Skeletonized Impedance Matrix of Method of Moments Y. N. Liu (Beijing Institute of Technology); Xiao-Min Pan (Beijing Institute of Technology); Xin-Qing Sheng (Beijing Institute of Technology);
- 15:40 Coffee Break
- 16:00 A Finite Element Domain Decomposition Alogrithm for Modeling Geological Problems Yuan Guo Zhou (Xi'an University of Science and Technology); Qing Huo Liu (Duke University);
- 16:20 Theory of Potential-based Integral-form A- Φ Formulation in Electromagnetic Applications Qin S. Liu (University of Hong Kong); Li Jun Jiang (University of Hong Kong); Sheng Sun (University of Electronic Science and Technology of China); Weng Cho Chew (University of Illinois);

Session 4P4b Fast Methods in Electromagnetic Numerical Simulation

Saturday PM, August 4, 2018 Room T4

Organized by Ting Wan, Mei Song Tong Chaired by Ting Wan, Mei Song Tong

16:40 A Fast FE-BI Method for the Computation of Monostatic Radar Cross Section Ting Wan (Nanjing University of Posts and Telecommunications); Mengzhe Li (Nanjing University of Posts and Telecommunications); Benliu Tang (Nanjing University of Posts and Telecommunications);

- 17:00 Fast Solution of *E-H* Time-domain Finite-element Method with Improved *H*-matrix Arithmetic Jian Zhu (Nanjing University of Posts and Telecommunications); Zhenbao Ye (Nanjing University of Science and Technology); Ting Wan (Nanjing University of Posts and Telecommunications);
- 17:20 Change Detection of Huangqi Lake Based on Modified Active Contour Using Sentinel-1 SAR Image Shilin Zhang (Hohai University); Jiaqi Chen (Nanjing University of Science and Technology); Xi Liu (Hohai University); Jing Li (Hohai University);
- 17:40 Efficent Extraction of Daihai Lake Based on Neural Network Algorithm from High Resolution SAR Image Yan Zhang (Hohai University); Jiaqi Chen (Nanjing University of Science and Technology); Xi Liu (Hohai University); Shilin Zhang (Hohai University); Jing Li (Hohai University);
- 18:00 The Reduced-basis Boundary Element Method for Fast Electromagnetic Field Computation of Dielectric Scatterers

Yating Shi (Huazhong University of Science and Technology); Xiuguo Chen (Huazhong University of Science and Technology); Honggang Gu (Huazhong University of Science and Technology); Shiyuan Liu (Huazhong University of Science and Technology);

Session 4P5 Reconfigurable Antenna, Microstrip Antenna and Array

Saturday PM, August 4, 2018 Room T5 Chaired by Baiqiang You, Ilya V. Korogodin

- 13:00 High Resolution Detector Array with On-chip Crowding Honeycomb-shaped Patch Operating in Submillimeter Wave Seung Ho Choi (Korea University); K. M. Lee (Korea University);
- 13:20 A Compact Millimeter-wave Array Element Design Combining Integrated Feed and External Taper Slot Structure H. Lee (Korea University); Jaedon Park (Agency for

Defense Development); Moonil Kim (Korea University);

13:40 Naive Beamforming for Multi-element Antenna GNSS Receiver

Ilya V. Korogodin (National Research University); 14:00 Reconfigurable Antenna Based on Graphene at Tera-

> hertz Frequency Xing-Yun Zhang (Beihang University); Cun-Jun Ruan (Beihang University); Jun Dai (Beihang University);

- 14:20 A Novel Reconfigurable Liquid Metal Antenna Controlled by an Impressed Voltage Feng Xie (Tongji University); Mei Song Tong (Tongji University);
- 14:40 A Dual-band Dual-polarization Stacked Antenna Array for GPS Application Yueh-Lin Tsai (Industrial Technology Research Institute); Chia-Ching Huang (Industrial Technology Research Institute); Chen-Tsung Lin (National Space Organization); Ming-Yu Hsieh (National Space Organization);
- 15:00 Probabilistic Density-tapered Antenna Arrays Giovanni Buonanno (Seconda Universita di Napoli); Raffaele Solimene (Universita degli studi della Campania Luigi Vanvitelli);
- 15:20 A Band-notched UWB Antenna Loaded with Treeshaped Fractal Jianhua Zhou (Xiamen University); Xinjiang Wu (Xiamen University); Baiqiang You (Xiamen University); Yun Peng Shang (Xinghai Communication Science and Technology Co., Ltd.); Jiang Huang (Xiamen University); Tianzeng Huang (Xiamen University);
- 15:40 Coffee Break
- 16:00 A Novel Tapered Coplanar-strip Antenna Prasad N. Shastry (Bradley University); Mahmoud Basraoui (Bradley University);
- 16:20 Design of High Efficiency Multiband Rectenna for RF Energy Harvesting Shahid Ullah (Beihang University); Cun-Jun Ruan (Beihang University); Tanveer Ul Haq (Beihang University); Ayesha Kosar Fahad (Beihang University); Jun Dai (Beihang University);

- 16:40 On the Q-factor Optimal Position for Embedded Antennas in Small Devices
 Shuai Shi (KTH Royal Institute of Technology);
 B. Lars G. Jonsson (KTH Royal Institute of Technology); Fabien Ferrero (University of Nice Sophia Antipolis); L. Wang (Hamburg University of Technology);
- 17:00 Vertical Polarized 1 × 3 Series-fed Linear Array with Gain and Front-to-back Ratio Enhancement for Airborne SAR-X Applications
 Venkata Kishore Kothapudi (Koneru Lakshmaiah Education Foundation); Sarat Kumar Kotamraju (KLEF); K. Ch. Sri Kavya (KLEF); Vijay Kumar (Vellore Institute of Technology (VIT));
- 17:20 Dual Linearly Polarized 2-D Series-fed Patch Antenna Array with Direct Coupling for Airborne SAR Applications
 Venkata Kishore Kothapudi (Koneru Lakshmaiah Education Foundation); Vijay Kumar (Koneru Lakshmaiah Education Foundation); Sarat Kumar Kotamraju (KLEF); K. Ch. Sri Kavya (KLEF);
- 00:00 A Modified Super-wideband Planar Elliptical Monopole Antenna Umair Rafique (Capital University of Science and Technology); Muhammad Mansoor Ahmed (Capital University of Science and Technology); M. Mateen Hassan (Capital University of Science and Technology); Hisham Khalil (The University of Lahore);
- 00:00 Nose-cone Conformal Antenna Array Design for Xband Radar Applications Hisham Khalil (The University of Lahore); Saeed Ur Rahman (Nanjing University of Aeronautics and Astronautics (NUAA)); Umair Rafique (Capital University of Science and Technology); Muhammad Mansoor Ahmed (Capital University of Science and Technology);
- 00 Design of Cylindrical Conformal Substrate Integrated Waveguide Slot Antenna Array for X-band Applications

Hisham Khalil (The University of Lahore); Saeed Ur Rahman (Nanjing University of Aeronautics and Astronautics (NUAA)); Umair Rafique (Capital University of Science and Technology); Muhammad Mansoor Ahmed (Capital University of Science and Technology); Session 4P6a Inverse Problems in Microwaves and Optics

Saturday PM, August 4, 2018

Room T6

Organized by Rocco Pierri

Chaired by Raffaele Solimene, Won-Kwang Park

- 13:00 A Novel Complex-valued Convolutional Neural Network for Electromagnetic Imaging Problem
 Long Gang Wang (Peking University); Wei Zhong (Peking University); Lianlin Li (Peking University);
 Tie Jun Cui (Southeast University);
- 13:20 Accurate Far-field Pattern Reconstruction from Near-field Measurements with Inconvenient Probes
 Josef Knapp (Technical University of Munich);
 Roberto Morelli (Technical University of Munich);
 Thomas F. Eibert (Technical University of Munich);
- 13:40 Edge-preserving Regularized Microwave Tomography with No Information on Incident Field Rui Yang (South China Normal University); Zhi Qi Meng (Fukuoka University); Takashi Takenaka (Nagasaki University);
- 14:00 A Compressed Sensing Method for Phased Antenna Array Element Failures Diagnosis Using Only One Fixed Receiving Probe Can Xiong (Shanghai Jiao Tong University); Gaobiao Xiao (Shanghai Jiao Tong University);
- 14:20 Minimum Measurement Points in Near Field: Numerical Results

Maria Antonia Maisto (Universita degli studi della Campania Luigi Vanvitelli); Raffaele Solimene (Universita degli studi della Campania Luigi Vanvitelli); Rocco Pierri (Universita degli studi della Campania Luigi Vanvitelli);

- 14:40 The Subspace-based Distorted-Born Iteration Method TE and Anisotropic Case Xiuzhu Ye (Beihang University); Naixin Zhang (Beihang University); Xudong Chen (National University of Singapore);
- 15:00 MUSIC Algorithm for Imaging Small Anomaly from Scattering Parameter: Real-data Experiments Won-Kwang Park (Kookmin University);
- 15:20 Multifrequency 3-D Inversion of GREATEM Data by BCGS-FFT-BIM
 Chen Qiu (Xiamen University); Bingyang Liang (Xiamen University); Feng Han (Xiamen University); Hai Liu (Xiamen University); Na Liu (Xiamen University); Chunhui Zhu (Xiamen University); Qing Huo Liu (Duke University);

15:40 Coffee Break

16:00 The Integration and Impact of Beam Characteristics and Propagation Speed Correction in Holographic and MLEM Based Breast Microwave Radar Imaging Reconstruction

> Tyson Reimer (University of Manitoba); Diego Rodriguez Herrera (University of Manitoba); Mario Solis Nepote (University of Manitoba); Stephen Pistorius (University of Manitoba);

16:20 Parameter Estimation of a Plasmonic Channel Using Vlasov Equation

Manisha Khulbe (Ambedkar Institute of Advance Communication Technology and Research (AIACTR)); Malay Ranjan Tripathy (Amity University Uttar Pradesh); Harish Parthasarathy (Netaji Subhas Institute of Technology);

Session 4P6b Radar Imaging, and Radar Signal Processing

Saturday PM, August 4, 2018 Room T6

Chaired by Robert D. Palmer, Hiroyuki Yamaguchi

- 16:40 Development of an All-digital, Polarimetric, Phased Array Radar for Multi-mission Applications Robert D. Palmer (University of Oklahoma); Caleb Fulton (University of Oklahoma); Jorge Salazar (University of Oklahoma); Hjalti H. Sigmarsson (University of Oklahoma); Mark B. Yeary (University of Oklahoma);
- 17:00 Doppler Radar Vital Sign Detection Based on Complex Continuous Basis Pursuit Algorithm Lele Qu (Shenyang Aerospace University); Shenxiao Lian (Shenyang Aerospace University); Yanpeng Sun (Shenyang Aerospace University); Lili Zhang (Shenyang Aerospace University);
- 17:20 Joint Estimation of DOA and Carrier Frequency Based on Coprime Arrays Kai-Chieh Hsu (National Taiwan University); Jean-Fu Kiang (National Taiwan University);
- 17:40 Doppler Migration Estimation for a Complex Moving Target in Low Signal to Noise Ratio Environment *Hiroyuki Yamaguchi (Ministry of Defense)*;

18:00 Compressive Sensing-based Two-dimensional Diffraction Tomographic Algorithm for Through-the-Wall Radar Imaging

Lele Qu (Shenyang Aerospace University); Xing Cheng (Shenyang Aerospace University); Yanpeng Sun (Shenyang Aerospace University); Tianhong Yang (Shenyang Aerospace University);

Session 4P7a SC2: Metasurfaces and Metamaterials for Antenna Applications 2

Saturday PM, August 4, 2018

Room T7

Organized by Toru Uno, Naobumi Michishita Chaired by Toru Uno, Naobumi Michishita

- 13:20 Metasurface Loss Analysis for 1D TCDA Efficiency Improvement Seongjung Kim (Seoul National University); Sangwook Nam (Seoul National University);
- 13:40 A Simple Route to Design Multifunctional Coding Metasurface Guo Dong Bai (Lanzhou University); Tie Jun Cui (Southeast University);

Session 4P7b SC2: Recent Trends in Acoustic and Microwave Metamaterials

Saturday PM, August 4, 2018

Room T7

Organized by Hiroshi Kubo, Yasushi Horii Chaired by Tsunayuki Yamamoto, Yasushi Horii

- 14:00 Multifunctional Radar Absorbing Metamaterial Structures by 3D Printing of Composite Lixian Yin (Xi'an Jiaotong University); Xiaoyong Tian (Xi'an Jiaotong University); Zhentao Shang (Xi'an Jiaotong University); Xin Wang (Xi'an Jiaotong University); Dichen Li (Xi'an Jiaotong University);
- 14:20 Waveguide-type CRLH Transmission Line Composed
- Invited of Metallic Cylinder-pairs Arranged in Two Lines and Its Radiation Characteristics as a Leaky-wave Antenna

Tsunayuki Yamamoto (Yamaguchi University); Hiroshi Kubo (Yamaguchi University); Shogo Sadamasu (Yamaguchi University);

- 14:40 A Numerical Study on Nonreciprocal CRLH-TL Using
- Invited Antiparallel Magnetized Ferrite Loaded Waveguide Kensuke Okubo (Okayama Prefectural University);
- 15:00 Evaluation of Metamaterial Structures as Wideband Impedance Matching Network for RF Harvesting Systems

Ertugrul Coskuner (Universidad Autonoma de Barcelona); Guillem Martinez De Arriba (Universidad Autonoma de Barcelona); Joan Jose Garcia-Garcia (Universitat Autonoma de Barcelona);

15:40 Coffee Break

 $16{:}00~$ A Consideration on Design of Negative Impedance Invited Converter

TakeshiFukusako(KumamotoUniversity);KeisukeEguchi(KumamotoUniversity);

16:20 Microwave Analog of Stern-Gerlach Effects Using Invited Nonuniform Chiral Metamaterials

Satoshi Tomita (Nara Instituteof Science and Technology (NAIST));

16:40 Asymmetric Electromagnetic Field Profiles in Chiral Invited Metamaterials

Nobuyuki Hisamoto (Kyoto Institute of Technology); Tetsuya Ueda (Kyoto Institute of Technology); Kei Sawada (RIKEN SPring-8 Center); Satoshi Tomita (Nara Instituteof Science and Technology (NAIST));

17:00 Propagation and Transmission of Microwaves in Neg-Invited ative Permittivity Plasmas Affected by Negative Per-

meability Metamaterials Akinori Iwai (Kyoto University); Yoshihiro Nakamura (Kyoto University); Yuki Kabe (The University of Shiga Prefecture); Osamu Sakai (The University of Shiga Prefecture);

- 17:20 Extraordinary Acoustic Transmission Based Modeling of Sensory Hair Cells in Human Hearing System Wenjia Hong (Kansai University); Airi Tamaki (Kansai University); Toshiaki Kitamura (Kansai University); Yasushi Horii (Kansai University);
- 17:40 Extraordinary Acoustic Transmission Based Comprehension of Human Hearing System: Why Sensory Hair Cells Near the Base of Cochlea Receive Higher Frequency Sounds

Airi Tamaki (Kansai University); Wenjia Hong (Kansai University); Toshiaki Kitamura (Kansai University); Yasushi Horii (Kansai University); Session 4P8 FocusSession.SC1: Casimir Effect and Heat Transfer

Saturday PM, August 4, 2018 Room T8

Organized by Mauro Antezza, Brahim Guizal Chaired by Brahim Guizal, Mauro Antezza

13:00 Casimir Forces between Silicon Gratings Keynote

> Ho Bun Chan (The Hong Kong University of Science and Technology); Mingkang Wang (The Hong Kong University of Science and Technology); Lu Tang (The Hong Kong University of Science and Technology); C. Y. Ng (The Hong Kong University of Science and Technology); Che Ting Chan (The Hong Kong University of Science and Technology); Riccardo Messina (University of Montpellier); Brahim Guizal (University of Montpellier); Mauro Antezza (Universite de Montpellier); John Alexander Crosse (New York University Shanghai & New York University);

 $13{:}30$ Nonperturbative Dynamical Casimir Effect in Op-

Keynotetomechanical Systems: Vacuum Casimir-Rabi Splittings

Franco Nori (Advanced Science Institute, RIKEN);

14:00 Controlling Near-field Radiative Heat Transfer by Invited Phase-change and Hyperbolic Materials

Kota Ito (Toyota Central R&D Labs., Inc.); Kazutaka Nishikawa (Toyota Central R&D Labs., Inc.); Taro Ikeda (Toyota Central R&D Labs., Inc.); Atsushi Miura (Toyota Central R&D Labs., Inc.); Hiroshi Toshiyoshi (Japan Aerosp Explorat Agcy); Hideo Iizuka (Toyota Central R&D Labs., Inc.);

14:20 Magneto-optical Control of Thermal Radiation at the Invited Nanoscale

Svend-Age Biehs (Carl von Ossietzky Universitat); Annika Ott (Carl von Ossietzky Universitat); Philippe Ben-Abdallah (Universite Paris-Sud 11);

14:40 Numerics for the Casimir Effect in the Sphere-plane

Invited Geometry at Experimentally Relevant Aspect Ratios Gert-Ludwig Ingold (Universitat Augsburg); Michael Hartmann (Universitat Augsburg); Paulo A. Maia Neto (Universidade Federal do Rio de Janeiro);

15:00 Dispersion Interactions and the Curie Dissymmetry Invited Principle

> Stefan Scheel (University of Rostock); Stefan Yoshi Buhmann (University of Freiburg); Valery N. Marachevsky (Saint Petersburg State University);

15:40 Coffee Break

of Oldenburg);

16:00 On the Seeming Dependence of Near Field Heat Invited Transfer on the Apparent Barrier Height of a Tunnel

Junction Achim Kittel (University of Oldenburg); Philipp Thurau (University of Oldenburg); Till Ziehm (University

16:20 Near-field Heat Transfer between Graphene/hBN Invited Multilayers

Brahim Guizal (University of Montpellier); Bo Zhao (Stanford University); Zhuomin M. Zhang (Georgia Institute of Technology); Shanhui Fan (Stanford University); Mauro Antezza (Universite de Montpellier);

16:40 Tailoring Casimir Forces Using Gradient Metasurfaces ${\it Invited}$

Fanglin Bao (Zhejiang University); Sailing He (Zhejiang University);

17:00 Near-field Radiative Heat Transfer in Scanning Mi-Invited croscopy Applications

> Khac Long Nguyen (Universite de Lyon, CNRS, INSA-Lyon, Universite Claude Bernard Lyon 1); Olivier Merchiers (Universite de Lyon, CNRS, INSA-Lyon, Universite Claude Bernard Lyon 1); Pierre-Olivier Chapuis (CNRS, National Institute of Applied Physics (INSA) Lyon);

17:20 Collective Spontaneous Emission of Two Atoms Near Invited an Oscillating Mirror

Marta Reina (Universita degli Studi di Palermo); Roberto Passante (Universita degli Studi di Palermo); Lucia Rizzuto (Universita degli Studi di Palermo and CNISM);

17:40 Fluctuational Electrodynamics for Nonlinear Materi-Invited als

Heino Soo (Georg-August-Universitat Gottingen); Matthias Kruger (Georg-August-Universitat Gottingen);

18:00 Polaritonic Chemistry: Influencing Photochemical Invited and Ground-state Reactions

Javier Galego (Universidad Autonoma de Madrid); Francisco J. Garcia-Vidal (Universidad Autonoma de Madrid); Johannes Feist (Universidad Autonoma de Madrid);

18:20 Lateral van der Waals Forces

Invited

PabloBarcellona(University of Freiburg);RobertBennett(Freiburg University);Ste-fan YoshiBuhmann (University of Freiburg);

Session 4P9a FocusSession.SC3: Quantum Optics with Topological Materials 2

Saturday PM, August 4, 2018

Room A1

Organized by George W. Hanson, Mauro Antezza Chaired by George W. Hanson, Mauro Antezza

13:00 The Quantum Spin Hall Effect of Light: Photonic Invited Analog of 3D Topological Insulators

Franco Nori (Advanced Science Institute, RIKEN);

13:20 Surface State of a Topological Insulator: A Different Invited View

Shu Chen (University of Illinois at Urbana-Champaign); Kejie Fang (University of Illinois); Weng Cho Chew (University of Illinois);

13:40 Metamaterials with Index Ellipsoids at Arbitrary k-Invited points

Wen-Jie Chen (The Hong Kong University of Science and Technology); Bo Hou (The Hong Kong University of Science and Technology); Zhao-Qing Zhang (The Hong Kong University of Science and Technology); John B. Pendry (Imperial College London); Che Ting Chan (The Hong Kong University of Science and Technology);

14:00 Dispersion Forces with Topological Insulators Invited

> Sebastian Fuchs (University of Freiburg); Frieder Lindel (University of Freiburg); Roman V. Krems (University of British Columbia); George W. Hanson (University of Wisconsin-Milwaukee); Mauro Antezza (Universite de Montpellier); Stefan Yoshi Buhmann (University of Freiburg);

14:20 Photonic Polarization Anomaly in Supersymmetric Topological Quantum Walks

Henning Schomerus (Lancaster University); S. Barkhofen (University of Paderborn); L. Lorz (University of Paderborn); T. Nitsche (University of Paderborn); Christine Silberhorn (University of Paderborn); Session 4P9b SC1: Quantum Technologies

Saturday PM, August 4, 2018

Room A1 Organized by Mahdi Hosseini Chaired by Ben M. Sparkes

 14:40 Microwave Control of Superconducting Circuits for Quantum Computation Stefan Filipp (IBM Research — Zurich);

15:00 Hyperbolic Blockade: Suppression of the Photonic Density of States and the Spontaneous Emission Rate at the Interface with Conducting Medium *Evgenii E. Narimanov (Purdue University)*;

15:20 Enhancement of Spontaneous Emission of Quantum Emitters near Metallic Thin Films Shaimaa I. Azzam (Purdue University); Motoharu Saito (Kyoto University); Shunsuke Murai (Kyoto University); Satoshi Ishii (National Institute for Materials Science (NIMS)); Katsuhisa Tanaka (Kyoto University); Alexander V. Kildishev (Purdue University);

15:40 Coffee Break

16:00 Optical Quantum Information Processing with Atomfilled Hollow-core Photonic Crystal Fibres

Ben M. Sparkes (The University of Adelaide); Jed A. Rowland (The University of Adelaide); Ashby P. Hilton (The University of Adelaide); Philip S. Light (The University of Adelaide); Andre N. Luiten (The University of Adelaide); Chris Perrella (The University of Adelaide);

16:20 Towards Scatter-free Optical Levitation of a Macroscopic Mirror

Jiayi Qin (The Australian National University); Jinyong Ma (The Australian National University); Giovanni Guccione (Sorbonne Universite, CNRS); Ming Gui (The Australian National University); Kabilan Sripathy (The Australian National University); Ruvi L. Lecamwasam (The Australian National University); Alistair Graham (The Australian National University); Maria Fuwa (The Australian National University); Geoff T. Campbell (The Australian National University); Ben C. Buchler (The Australian National University); Craig M. Savage (The Australian National University); Joseph J. Hope (The Australian National University); Ping Koy Lam (The Australian National University);

- 16:40 Ti:LiNbO₃ OpticalWaveguide Resonators for Highly Efficient SHG and Optical Squeezing Michael Steve Stefszky (University of Paderborn); Raimund Ricken (University of Paderborn); Christof Eigner (University of Paderborn); Viktor Quiring (University of Paderborn); Harald Herrmann (University of Paderborn); Christine Silberhorn (University of Paderborn);
- 17:00 Optical Hybrid Entanglement: A Resource for Quantum Networks Giovanni Guccione (Sorbonne Universite, CNRS); Adrien Cavailles (Sorbonne Universite, CNRS); Tom Darras(Sorbonne Universite, CNRS); Hanna Le Jeannic (Sorbonne Universite, CNRS); Jeremy Raskop (Sorbonne Universite, CNRS); Kun Huang (Sorbonne Universite, CNRS); Julien Laurat (ENS-PSLResearch University, College de France);
- 17:20 Commutators and Energy Conservation Weng Cho Chew (University of Illinois);
- 17:40 Photon Statistics of the Dipole Hamiltonian Aiyin Y. Liu (University of Illinois); Weng Cho Chew (University of Illinois);

Session 4P10a SC2: Meta-X: Beyond Metamaterials 2

Saturday PM, August 4, 2018

Room A2

Organized by Osamu Sakai, Satoshi Tomita Chaired by Osamu Sakai, Satoshi Tomita

13:00 Extraordinary Acoustic Transmission in Human Hear-Invited ing System

Yasushi Horii (Kansai University); Wenjia Hong (Kansai University); Airi Tamaki (Kansai University); Toshiaki Kitamura (Kansai University);

13:20 Experimental Realization of Unidirectional Zero Re-Invited flection from Microwave to Elastic Metamaterials

Yongquan Liu (Hong Kong University of Science and Technology); Jensen Li (Hong Kong University of Science and Technology); 13:40 Bloch Oscillations in Mechanical Vibrations Invited

Arreola-Lucas (Universidad Autonoma Α. G. *Metropolitana-Iztapalapa*): Baez(UniversidadAutonomaMetropolitanaAzcapotzalco); Rafael A. Mendez-Sanchez (Universidad Nacional Autonoma de Mexico); A. Climente (Universitat Politecnica de Valencia); F. Cervera (Universitat Politecnica de Valencia); Jose Sanchez-Dehesa (Universitat Politecnica de Valencia);

14:00 Design of Metamaterial Effects for Transverse and Longitudinal Waves in Plasma
Osamu Sakai (The University of Shiga Prefecture); Akinori Iwai (Kyoto University); Shinichi Sakamoto (The University of Shiga Prefecture);

Session 4P10b

SC5: Measurement Technology of Electromagnetic Waves in Space Plasma, and Its Application to Space Plasma Physics

> Saturday PM, August 4, 2018 Room A2

Organized by Yoshiya Kasahara, Keigo Ishisaka Chaired by Yoshiya Kasahara, Keigo Ishisaka

- 14:20 Experimental Validation of Ionospheric Influences in Full-wave Simulation for a HF Radar Takuya Kakumoto (Kanazawa University); Y. Goto (Kanazawa University); N. Hanada (Kanazawa University); Yoshiya Kasahara (Kanazawa University);
- 14:40 Analysis of Natural Electric Field and Plasma Density from the Sounding-rocket S-520-27 Mamoru Yamamoto (Kyoto University); Keigo Nishida (Kyoto University); Keigo Ishisaka (Toyama Prefectural University); Makoto Tanaka (Tokai University);
- 15:00 Analysis of Propagation Characteristics of MF Band Radio Waves in the Ionosphere Observed by S-310-40 Sounding Rocket Daiki Oka (Toyama Prefectural University); Keigo Ishisaka (Toyama Prefectural University); Takumi Abe (JAXA/ISAS); Atsushi Kumamoto

(Tohoku University);

15:20 Full-wave Simulations of a Combined Plasma Impedance Probe — Plasma Wave Receiver System for Plasma Measurements in the Ionosphere Edmund Spencer (University of South Alabama); Robert Arslanbekov (CFDRC Corporation); Vladimir Kolobov (University of Alabama In Huntsville); Saikrishna Vadepu (University of South Alabama); Riley Mayes (University of South Alabama);

15:40 Coffee Break

16:00 Onboard Processing on Plasma Wave Experiment (PWE) aboard the Arase Satellite

Shoya Matsuda (ISEE,Nagoya University);Yoshiya Kasahara (Kanazawa University); Hirotsugu Kojima (Kyoto University); Yasumasa Kasaba (Tohoku University); Satoshi Yagitani (Kanazawa University); Mitsunori Ozaki (Kanazawa Univer-Tomohiko Imachi (Kanazawa University); sity);Keigo Ishisaka (Toyama Prefectural University); Atsushi Kumamoto (Tohoku University); Fuminori Tsuchiya (Tohoku University); Mamoru Ota (Kanazawa University); Satoshi Kurita (Naqoya University); Yoshizumi Miyoshi (Nagoya University); Mitsuru Hikishima (ISAS/JAXA); Ayako Matsuoka (ISAS/JAXA); Iku Shinohara (ISAS/JAXA);

- 16:20 Study on Direction Finding of Plasma Waves Measured by the Waveform Capture (WFC) on Board the Arase Satellite Satoshi Ikarashi (Graduate School of Natural Science and Technology); Yoshiya Kasahara (Kanazawa University); S. Matsuda (ISEE, Nagoya University);
- M. Ota (Kanazawa University);
 16:40 Software-type Wave-particle Interaction Analyzer on Board the Arase Satellite: Implementation and Data

Processing Yuto Katoh (Tohoku University); H. Kojima (Kyoto University); Mitsuru Hikishima (ISAS/JAXA); T.Takashima (ISAS/JAXA);K. Asamura (ISAS/JAXA);Y. Miyoshi (Naqoya University); Yoshiya Kasahara (Kanazawa University); S. Kasahara (The University of Tokyo); T. Mitani (ISAS/JAXA); N. Higashio (JAXA); Ayako Matsuoka (Japan Aerospace Exploration Agency); Mitsunori Ozaki (Kanazawa University); Satoshi Yaqitani (Kanazawa University); S. Yokota (Osaka University); S. Matsuda (ISEE, Nagoya University); Masahiro Kitahara (Tohoku University); I. Shinohara (ISAS/JAXA);

- 17:00 Development of Signal Processing Modules for Plasma Waveform Measurements in Space Plasma Yoshiya Kasahara (Kanazawa University); T. Takahashi (Kanazawa University); Y. Ogawa (Kanazawa University); T. Hamano (Kanazawa University); Shoya Matsuda (ISEE, Nagoya University); Mamoru Ota (Kanazawa University); Hirotsugu Kojima (Kyoto University);
- 17:20 Can We Use an Optical Electric Field Sensor in Space Missions to Investigate Space Environments? *Hirotsugu Kojima (Kyoto University)*;
- 17:40 High Frequency Receiver of Radio and Plasma Waves Investigation Onboard the JUICE Spacecraft Fuminori Tsuchiya (Tohoku University); Yasumasa Kasaba (Tohoku University); Cecconi Baptiste (Lab Etud Spatiales & Instrumentat Astrophys): Hajime Kita (ISAS/JAXA); Tomoki Kimura (Tohoku University); Atsushi Kumamoto (Tohoku University); Hiroaki Misawa (Tohoku University); Yuto Katoh (Tohoku University); Yoshiya Kasahara (Kanazawa Tomohiko Imachi (Kanazawa Uni-University); Hirotsugu Kojima (Kyoto University); versity); Satoshi Yagitani (Kanazawa University); Mitsunori Ozaki (Kanazawa University); Keigo Ishisaka (Toyama Prefectural University); Yoshizumi Miyoshi (Nagoya University); Jan E. S. Bergman (Swedish Institute of Space Physics); Walter Puccio (Swedish Institute of Space Physics); Reine Gill (Swedish Institute of Space Physics); Jan-Erik Wahlund (Swedish Institute of Space Physics);
- 18:00 The Preamplifier of Radio & Plasma Wave Investigation (RPWI) for the ESA JUICE Mission (Tohoku Ya-Hiroaki Misawa University); sumasa Kasaba(Tohoku University);Fuminori Tsuchiya (Tohoku University): Yoshiya Kasahara (Kanazawa University); Tomohiko Imachi (Kanazawa University); Tomoki Kimura (RIKEN); Yuto Katoh (Tohoku University); Atsushi Kumamoto (Tohoku University); Hirotsugu Kojima (Kyoto University); Satoshi Yaqitani (Kanazawa University); Mitsunori Ozaki (Kanazawa University); Keiqo Ishisaka (Toyama Prefectural University); Yoshizumi Miyoshi (Nagoya University);

Session 4P11 FocusSession.SC3: Advanced Photonic Technologies for Spectroscopic Applications: Devoted to Prof. Frank K. Tittel 2

Saturday PM, August 4, 2018

Room A3

Organized by Wei Dong Chen, Vincenzo Spagnolo Chaired by Wei Dong Chen, Vincenzo Spagnolo

13:00 Trace Gas Sensing at the Limits Invited

Simone Borri (CNR-INO, Istituto Nazionale di Ottica); Saverio Bartalini (CNR-INO, Istituto Nazionale di Ottica); Francesco Cappelli (CNR-INO, Istituto Nazionale di Ottica); Iacopo Galli (CNR-INO, Istituto Nazionale di Ottica); Davide Mazzotti (CNR-INO, Istituto Nazionale di Ottica); Pablo Cancio (CNR-INO, Istituto Nazionale di Ottica); Pasquale Maddaloni (CNR-INO, Istituto Nazionale di Ottica); Iolanda Ricciardi (CNR-INO, Istituto Nazionale di Ottica); Maurizio De Rosa (CNR-INO, Istituto Nazionale di Ottica); Paolo De Natale (CNR-INO, Istituto Nazionale di Ottica);

13:20 Comb-calibrated Spectroscopy of Weakly-absorbing $_{\rm Invited}$ Molecules in the Near-IR

Livio Gianfrani (Universita degli Studi della Campania "Luigi Vanvitelli");

13:40 Quartz-enhanced Photoacoustic Spectroscopy Ex-Invited ploiting the First Overtone Mode of Quartz Tuning Forks

> Pietro Patimisco (Universita degli Studi di Bari and Politecnico di Bari); Angelo Sampaolo (Universita degli Studi di Bari and Politecnico di Bari); Marilena Giglio (Politecnico and University of Bari); Stefano Dello Russo (Universita degli Studi di Bari and Politecnico di Bari); Giansergio Menduni (Politecnico and University of Bari); Andrea Zifarelli (Universita degli Studi di Bari and Politecnico di Bari); Huadan Zheng (Shanxi University); Lei Dong (Shanxi University); Vittorio Passaro (Politecnico di Bari); Frank K. Tittel (Rice University); Vincenzo Spagnolo (Technical University of Bari);

14:00 Using QEPAS in Gas Mixtures — Challenges and Invited Strategies

Ulrike Willer (Clausthal University of Technology); Mario Mordmuller (Clausthal University of Technology); Wolfgang Schade (Clausthal University of Technology); 14:20 Photoacoustic Spectroscopy with Resonant Devices: Invited From QEPAS to Silicon Resonant Detection

Aurore	Vicet	$(Universit\acute{e}$	de	Montpellier);
Michael	Bahriz	$(Universit\acute{e}$	de	Montpellier);
Kaim	Chamassi	$(Universit\acute{e}$	de	Montpellier);
Roman	Rousseau	$(Universit\acute{e}$	de	Montpellier);
Zeineb	Loghmari	$(Universit\acute{e}$	de	Montpellier);
Dalil Oussalah (Université de Montpellier);				

14:40 Compact QEPAS Sensor for Multi-gas Detection

Yufei Ma (Harbin Institute of Technology); Ying He (Harbin Institute of Technology); Yao Tong (Harbin Institute of Technology);

15:00 From Lab to Market: Making a New Technology Ac-Invited cessible for a Broad Community

> Verena Mackowiak (Thorlabs GmbH); Bruno Gross (Thorlabs GmbH); Hubert Rossmadl (Thorlabs GmbH); Christian Kipplinger (Thorlabs GmbH);

15:20 New Silicon Micro-electromechanical Resonator for Enhanced Photoacoustic Spectroscopy Applications Kaim Chamassi (Universite de Montpellier); Aurore Vicet (Universite de Montpellier); Roman Rousseau (Universite de Montpellier); Dalil Oussalah (Universite de Montpellier); Michael Bahriz (Universite de Montpellier);

15:40 Coffee Break

16:00 Non-invasive Quantum Cascade Laser Photoacoustic Invited Glucose Sensing

Markus W. Sigrist (ETH Zurich); Jonas Kottmann (BIOTRONIK AG); Julien M. Rey (IQE-ETH Zurich);

16:20 Suppression of Flicker-noise in Free-running Invited Quantum-cascade Lasers

Masamichi Yamanishi (Hamamatsu Photonics KK); Toru Hirohata (Hamamatsu Photonics KK);

- 16:40 Filter-free Direct Measurements of Light Absorption
- Invited by Aerosols Using Photoacoustic Spectroscopy (PAS) Gaoxuan Wang (Universite du Littoral Cote d'Opale); Hongming Yi (Universite du Littoral Cote d'Opale); Patrice Hubert (Universite de Lille1); Alexandre Deguine (Universite de Lille1); Denis Petitprez (Universite de Lille1); Eric Fertein (University of the Littoral Opal Coast); Julien M. Rey (IQE-ETH Zurich); Markus W. Sigrist (ETH Zurich); Dean S. Venables (University College Cork); Wei Dong Chen (Universite du Littoral Cote d'Opale);

17:00 Trace Gases Sensing with Laser Absorption Spec-Invited troscopy and Photoacoustic Spectroscopy

Kun Liu (Anhui Institute of Optics & Fine Mechanics, Chinese Academy of Sciences); Tu Tan (Anhui Institute of Optics & Fine Mechanics, Chinese Academy of Sciences); Guishi Wang (Anhui Institute of Optics & Fine Mechanics, Chinese Academy of Sciences); Weidong Chen (Universite du Littoral Cote d'Opale); Xiaoming Gao (Anhui Institute of Optics and Fine Mechanics, Chinese Academy of Sciences);

17:20 Dual-comb-spectroscopic Single-pixel Imaging with Invited High Frequency Resolution and Accuracy

Kyuki Shibuya (Tokushima University); Takeo Minamikawa (Tokushima University); Yasuhiro Mizutani (Osaka University); Hirotsugu Yamamoto (Utsunomiya University); Takeshi Yasui (Tokushima University); Tetsuo Iwata (Tokushima University);

17:40 Dual-comb Spectroscopy in the Mid-infrared and Ter-

Invited ahertz Using Quantum and Interband Cascade Lasers Jonas Westberg (Princeton University); L. A. Sterczewski (Princeton University); Gerard Wysocki (Princeton University);

18:00 Application of Spectroscopic Techniques for the Char-

Invited acterization of Atmospheric Particulate Matter Tomoki Nakayama (Nagoya University);

18:20 Hyperspectral and Ultraspectral Imaging by Compressive Sensing
August Issac (Ben-Gurion University of the Negev);
Yaniv Oiknine (Ben-Gurion University of the Negev);
Adrian Stern (Ben-Gurion University of the Negev);

Session 4P12a

FocusSession.SC3&SC4: Recent Advances in Devices and System Technologies for Terahertz Wireless Communications 2

Saturday PM, August 4, 2018

Room A4

Organized by Tadao Nagatsuma, Guillaume Ducournau Chaired by Tadao Nagatsuma, Guillaume Ducournau

13:00 Terahertz Package Technologies for Practical Appli-Invited cations

> *Ho-Jin Song* (*Pohang University of Science and Technology* (*POSTECH*));

13:20 The Applications of Ultra-fast Type-II Hybrid-Invited absorber Uni-traveling Carrier Photodiodes for Extremely Wide Band Photonic THz Transmitters *Jinwei Shi (National Central University)*; 13:40 Photonics Integrated Circuit for High-power Coherent Invited THz Generation

Kazutoshi Kato (Kyushu University);

14:00 Towards 100 Gbps in the 300 GHz Band Using Linear Invited Uni-travelling Carrier Photodiodes

V. K. Chinni (Université Lille, CNRS, Centrale Lille, ISEN, Université Valenciennes); S. Bretin (Université Lille, CNRS, Centrale Lille, ISEN, Université Valenciennes); P. Latzel (Université Lille, CNRS, Centrale Lille, ISEN, Université Valenciennes); M. Zegaoui (Université Lille, CNRS, Centrale Lille, ISEN, Université Valenciennes); C. Coinon (Université Lille, CNRS, Centrale Lille, ISEN, Université Valenciennes); X. Wallart (Université Lille, CNRS, Centrale Lille, ISEN, Université Valenciennes); E. Peytavit (Université Lille, CNRS, Centrale Lille, ISEN, Université Valenciennes); J. F. Lampin (Université Lille, CNRS, Centrale Lille, ISEN, Université Valenciennes); K. Engenhardt (Tektronix GmbH); P. Szriftgiser (Université Lille 1); M. Zaknoune (Université Lille, CNRS, Centrale Lille, ISEN, Université Valenciennes); Guillaume Ducournau (Institute of Electronics. Microelectronics and Nanotechnology (IEMN), CNRS/University of Lille);

14:20 Photonic Integrated Circuits for Ultrawide Frequency

KeynoteRange Generation, from Microwaves to Terahertz Guillermo Carpintero del Barrio (Universidad Carlos III de Madrid); Robinson Cruzoe Guzman Martinez (Universidad Carlos III de Madrid); Mu-Chieh Lo (Universidad Carlos III de Madrid); Muhsin Ali (Universidad Carlos III de Madrid); Alberto Zarzuelo (Universidad Carlos III de Madrid); Luis-Enrique Garcia Munoz (Universidad Carlos III de Madrid); Daniel Segovia-Vargas (Universidad Carlos III de Madrid); David De Felipe (Fraunhofer Heinrich Hertz Institute); Norbert Keil (Fraunhofer Heinrich Hertz Institute);

14:50 A 600-GHz-band Photodiode with Rectangular Invited Waveguide Output and Its Application to Communication

Tadao Nagatsuma (Osaka University);

15:10 Wireless Terahertz Communications Using Optoelec-Invited tronic Techniques

> Tobias Harter (Karlsruhe Institute of Technology (KIT)); S. Ummethala (Karlsruhe Institute of Technology (KIT)); S. Muchlbrandt (Karlsruhe Institute of Technology (KIT)); M. Blaicher (Karlsruhe Institute of Technology (KIT)); K. Koehnle (Karlsruhe Institute of Technology (KIT)); M. M. H. Adib (Karlsruhe Institute of Technology (KIT)); M. Weber (Karlsruhe Institute of Technology (KIT)); S. Wolf (Karlsruhe Institute of Technology (KIT)); Y. Kutuvantavida (Karlsruhe Institute of Technology (KIT)); J. N. Kemal (Karlsruhe Institute of Technology (KIT)); S. Nellen (Heinrich Hertz Institute (HHI)); L. Hahn (Karlsruhe Institute of Technology (KIT)); Axel Tessmann (Fraunhofer Institute for Applied Solid State Physics); M. Walther (Fraunhofer Institute for Applied Solid State Physics (IAF)); Thomas Zwick (Karlsruhe Institute of Technology); S. Randel (Karlsruhe Institute of Technology (KIT)); W. Freude (Karlsruhe Institute of Technology (KIT)); Christian Koos (Karlsruhe Insitute of Technolgy);

15:40 Coffee Break

16:00 Spectral-efficient Terahertz-wave Communication As-Invited sisted by Photonics

Koichi Takiguchi (Ritsumeikan University);

16:20 Coherent THz Wireless Signals for Distributed Re-Invited mote Antenna Units

Haymen Shams (University College London); Katarzyna Balakier (University College London); Luis Gonzalez-Guerrero (University College London); Martyn J. Fice (University College London); Cyril C. Renaud (University College London); Alwyn J. Seeds (University College London);

16:40 Terahertz-wave Communication System Using a Invited Traveling-wave Tube Amplifier

Atsushi Kanno (National Institute of Information and Communications Technology); Norihiko Sekine (National Institute of Information and Communications Technology); Akifumi Kasamatsu (National Institute of Information and Communications Technology); Naokatsu Yamamoto (National Institute of Information and Communications Technology); Mitsuru Yoshida (NEC Network and Sensor Systems, Ltd); Norio Masuda (National Institute of Information and Communications Technology); Session 4P12b SC5&SC4: On Earth's Electromagnetic Environment, Space Weather Phenomena, and Global Climate Variability

> Saturday PM, August 4, 2018 Room A4 Organized by Rachid Talhi Chaired by Rachid Talhi

17:00 Study on Seasonal Variability of Ionospheric TEC Estimated Using Signals of Compass/BeiDou Geostationary Satellites

> Ekaterina Anatolyevna Kozlovtseva (Lomonosov Moscow State University); Nikita Alekseyevich Tereshin (Lomonosov Moscow State University); Artem M. Padokhin (M. V. Lomonosov Moscow State University); Gregory A. Kurbatov (M. V. Lomonosov Moscow State University);

- 17:20 Monitoring Traveling Ionospheric Disturbances Using GNSS Interferometry with Geostationary Satellites Nikita Alekseyevich Tereshin (Lomonosov Moscow State University); Ekaterina Anatolyevna Kozlovtseva (Lomonosov Moscow State University); Artem M. Padokhin (M. V. Lomonosov Moscow State University); Gregory A. Kurbatov (M. V. Lomonosov Moscow State University);
- 17:40 Tool for Creating Maps of GNSS Total Electron Content Variations

Yury Vladimirovich Yasyukevich (Institute of Solar-Terrestrial Physics (ISTP), Siberian Branch of Russian Academy of Sciences); Ilya V. Zhivetiev (Institute of Solar-Terrestrial Physics SB RAS); Alexander V. Kiselev (Institute of Solar-Terrestrial Physics SB RAS); Alexei S. Shabalin (Institute of Solar-Terrestrial Physics SB RAS); Ilya K. Edemskiy (Institute of Solar-Terrestrial Physics (ISTP), Siberian Branch of Russian Academy of Sciences); Artem M. Vesnin (Institute of Solar-Terrestrial Physics SB RAS);

18:00 Global Electron Content in the 23rd and 24th Solar Cycles
Yury Vladimirovich Yasyukevich (Institute of Solar-Terrestrial Physics (ISTP), Siberian Branch of Russian Academy of Sciences); Anna S. Yasyukevich (Institute of Solar-Terrestrial Physics of Siberian Branch of Russian Academy of Sciences); Ilya V. Zhivetiev

(Institute of Solar-terrestrial Physics SB RAS); 18:20 Anthropogenic Electromagnetic Pollution: Is It a Con-

tribution to Global Climate Variability? Rachid Talhi (University of Tours and CNRS/LPCEE); Session 4P13 SC3: Progresses in the Study of Topological Waves 2

Saturday PM, August 4, 2018

Room A5

Organized by Jian-Hua Jiang, Xiao Hu

Chaired by Xiao Hu, Jie Ren

13:00 Topological Localized State in Photonic Crystal Invited Nanobeam

Satoshi Iwamoto (The University of Tokyo); Yasutomo Ota (The University of Tokyo); Ryota Katsumi (The University of Tokyo); Katsuyuki Watanabe (The University of Tokyo); Yasuhiko Arakawa (The University of Tokyo);

13:20 Deterministic Interface States and Unidirectional

Invited Electromagnetic Propagations in Two Dimensional Photonic Crystals

> Yu Ting Yang (Soochow University); Zhi Hong Hang (Soochow University);

- 13:40 Experimental Observation of Valley-locked Topological Edge States in Designer Surface Plasmon Crystals Xiaoxiao Wu (The Hong Kong University of Science & Technology); Yan Meng (Chongqing University); Jingxuan Tian (The Hong Kong University of Science & Technology); Yingzhou Huang (Chongqing University); Hong Xiang (Chongqing University); Dezhuan Han (Chongqing University); Weijia Wen (The Hong Kong University of Science and Technology);
- 14:00 Acoustic Topological States

Invited

Ming-Hui Lu (Nanjing University); Cheng He (Nanjing University); Hao Ge (Nanjing University); Xu Ni (Nanjing University); Si-Yuan Yu (Nanjing University); Yan-Feng Chen (Nanjing University);

14:20 Tuning Topological Phase Transitions in Hexagonal

Invited Photonic Lattices Made of Triangular Rods Guang-Yu Guo (National Taiwan University); Hsun-

Chi Chan (National Taiwan University);

14:40 Experimental Studies of All-dielectric Topologically

Invited Nontrivial Structures Alexey P. Slobozhanyuk (ITMO University); Yuri S. Kivshar (Australian National University); Alexander B. Khanikaev (ITMO University);

15:00 Experimental Discovery of Nodal Chains in Photonic Invited Crystals

Rong-Juan Liu (Institute of Physics, Chinese Academy of Sciences);

15:20 Dirac Photonics and Topological Light-trapping Invited

Jian-Hua Jiang (Soochow University);

15:40 Coffee Break

16:00 Type-II Dirac Photons at the Metasurfaces Invited

Chuandeng Hu (The Hong Kong University of Science and Technology); Bo Hou (Soochow University); Weijia Wen (The Hong Kong University of Science and Technology);

16:20 Topological Nodal-line Semimetals in FCC Photonic Invited Crystals

Takuto Kawakami (Kyoto University); Xiao Hu (National Institute for Materials Science);

16:40 Transitional Weyl and Dirac Points in Photonics Keynote

Shuang Zhang (University of Birmingham);

17:10 Topological Phonon and Chiral Phonon Invited

Lifa Zhang (Nanjing Normal University);

17:30 Topological Classification of Linear and Weakly Non-Invited linear Electromagnetic Media

Giuseppe De Nittis (Pontificia Universidad Catolica de Chile); Max Lein (Tohoku University);

Session 4P14a Emerging Electromagnetic Functionalization of Graphene and 2D Materials for Terahertz Device Applications 2

Saturday PM, August 4, 2018

Room A6

Organized by Taiichi Otsuji Chaired by Victor Ryzhii, Taiichi Otsuji

13:20 Cyclotron Resonance in Graphene/h-BN van der Invited Waals Heterostructures

Tomoki Machida (Institute of Industrial Science (IIS), University of Tokyo); 13:40 Comparison of Infrared and Terahertz Photodetectors Invited Based on Graphene, CdHgTe, and $A_{3}B_{5}$ Quantumwell Heterostructures

Victor Ryzhii (Tohoku University); Taiichi Otsuji (Tohoku University); Maxim Ryzhii (The University of Aizu); Valeriy E. Karasik (Bauman Moscow State Technical University); Vladimir G. Leiman (Moscow Institute of Physics and Technology (State University)); Vladimir Mitin (University at Buffalo, The State University of New York); Michael S. Shur (Rensselaer Polytechnic Institute); V. Ya. Aleshkin (Institute for Physics of Microstructures); A. A. Dubinov (University of Aizu); S. V. Morozov (Institute for Physics of Microstructures);

Session 4P14b Metamaterials and Plasmonics 2

Saturday PM, August 4, 2018

Room A6

- Chaired by Jianhua Zhou
- 14:00 Surface Plasmon Infrared Spectrum Transmission Enhancement Broadening by Introducing Distancevarying Metallic Holes

Xiumin Xie (Southwest Institute of Technical Physics); Qiang Xu (Southwest Institute of Technical Physics); Jian Chen (Southwest Institute of Technical Physics); Qian Dai (Southwest Institute of Technical Physics); Zhu Shi (Southwest Institute of Technical Physics); Libo Yu (Southwest Institute of Technical Physics); Qiang Zhou (University of Electronic Science and Technology of China); Hai-Zhi Song (Southwest Institute of Technical Physics);

14:20 1D and 2D Left-handed Materials Loaded with Circularly Coupled Ring-circular Baiqiang You (Xiamen University); Tao Huang (Xiamen University); Jianhua Zhou (Xiamen University); Yun Peng Shang (Xinghai Communication Science and Technology Co., Ltd.); Haike Xu (Xiamen University);

14:40 Plasmonically Enhanced Spectrally-sensitive Coatings for Gradient Heat Flux Sensors *Kevin Conley (Aalto University); Vaibhav Thakore* (University of Western Ontario); Tapio Ala-Nissila (Aalto University);

15:40 Coffee Break

Session 4P14c SC1: Researches of Electromagnetic Field Problem in KOSEN

Saturday PM, August 4, 2018 Room A6

Organized by Toshihiko Shibazaki, Toshihisa Kamei Chaired by Toshihisa Kamei

16:00 A Study on Highly Resonant Wireless Power Transfer Scheme Using Planar Coils
Kei Asahi (Tokyo Metropolitan College of Industrial Technology); Kazuyuki Takasaki (Tokyo Metropolitan College of Industrial Technology); Ryoji Wakabayashi (Tokyo Metropolitan College of Industrial Technology);

- 16:20 Development of Optics Simulator Using Efficient Laguerre-based FDTD Method Ryota Ikazaki (Tokuyama College); Norihiko Harada (Tokuyama College);
- 16:40 FDTD Analysis of the Complex Current Distribution on a Circular Disk Exposed to a Plane EM Wave with Oblique Incident Angle Takuto Muto (Science and Technology Inst., Co.); Teppei Misumi (Science and Technology Inst., Co.);
- 17:00 Development of a Simple Ground-based Synthetic Aperture Radar System for Monitoring Fault Creep Yuya Akiyama (Tokyo Metropolitan College of Industrial Technology); Naoki Miyata (Tokyo Metropolitan College of Industrial Technology); Masahiro Yoshida (Tokyo Metropolitan College of Industrial Technology); Katsumi Kurita (Tokyo Metropolitan College of Industrial Technology); Motoyuki Sato (Tohoku University);
- 17:20 Diffracted Field Calculation Using Multiple Precision Arithmetic and Parallel Computing Takashi Kuroki (Tokyo Metropolitan College of Industrial Technology); Toshihiko Shibazaki (Tokyo Metropolitan College of Industrial Technology); Teruhiro Kinoshita (Tokyo Polytechnic University);
- 17:40 Numerical Analysis Using FDTD Method in Periodic Structure of Capacitive Iris Chihiro Osawa (Tokyo Metropolitan College of Technology); Shota Arai (Science & Technology Inst., Co.); Toshihiko Shibazaki (Tokyo Metropolitan College of Industrial Technology); Teruhiro Kinoshita (Tokyo Institute of Polytechnics);

00:00 Analysis of Phase Mode Variation Due to Bias Voltage in Arrayed Oscillators Using Resonant Tunneling Diodes Integrated with Bow-tie Antennas Masahiro Fukuoka (Tokyo Metropolitan College of Industrial Technology); Kiyoto Asakawa (Tokyo Metropolitan College of Industrial Technology); Michihiko Suhara (Tokyo Metropolitan University);

Session 4P15 SC4: Wireless Power Transfer and Energy Harvesting

Saturday PM, August 4, 2018

Room A7 Organized by Ning Li, Qiaowei Yuan Chaired by Ning Li, Jiafeng Zhou

- 13:20 Wireless Power Transfer System with Constant Inductive Coupling over a Wide Range of Distances
 Y. Zhuang (University of Liverpool); A. Chen (University of Liverpool); C. Xu (University of Liverpool);
 Y. Huang (University of Liverpool); Jiafeng Zhou (University of Liverpool);
- 13:40 Design of Inductive Powering Unit for Battery-less Implantable Medical Devices

Arseny Anatolevich Danilov (National Research University of Electronic Technology); Eduard Adipovich Mindubaev (National Research University of Electronic Technology); Konstantin Olegovich Gurov (National Research University of Electronic Technology); Rafael Rafaelievich Aubakirov (Joint Stock Company "Zelenograd Innovative Technology Centre"); Oleg Alekseevich Surkov (Joint Stock Company "Zelenograd Innovative Technology Centre"); Sergey Vasilyevich Selishchev (National Research University of Electronic Technology "MIET");

- 14:00 Universal Output Characteristics of the Two-coil Resonant Wireless Energy Transfer System Arseny Anatolevich Danilov (National Research University of Electronic Technology); Eduard Adipovich Mindubaev (National Research University of Electronic Technology); Sergey Vasilyevich Selishchev (National Research University of Electronic Technology "MIET");
- 14:20 An Optimal Design Method of Coils for Magnetic Coupled Wireless Power Transfer System Peiyue Wang (Chongqing University); Yue Sun (Chongqing University); Zhao-Hong Ye (Chongqing University); Xin Dai (Chongqing University); Chunsen Tang (Chongqing University); Zhi-Juan Liao (Chongqing University);

 14:40 A Comprehensive Electromagnetic Design, Simulation and Analysis of Wireless Charging Coils for Large Power Applications Haris Gulzar (UET Lahore); Noor Ul Ain (UET

Lahore); Talha Zahid (UET Lahore); Muhammad Farhan Yaseen (UET Lahore); Ali Hussain (UET Lahore); Syed Abdul Rahman Kashif (UET Lahore);

15:00 Investigation of Multi-layer Metamaterial for Enhancing Efficiency of Near-field Wireless Power Transfer Systems Ming-Lung Kung (R.O.C. Air Force Academy); Ken-

Ming-Lung Kung (R.O.C. Air Force Academy); Ken-Huang Lin (National Sun Yat-Sen University);

15:40 Coffee Break

16:00 Enhanced RF Energy Harvesting by Using Resonant Cavities

Guillem Martinez De Arriba (Universidad Autonoma de Barcelona); Ertugrul Coskuner (Universidad Autonoma de Barcelona); Joan Jose Garcia-Garcia (Universitat Autonoma de Barcelona);

- 16:20 Opportunities and Challenges for Smart LED Light Bulbs: Illumination, Communication, Indoor Positioning and Energy Harvesting Ming Che (Kyushu University); Takeshi Kuboki (Kyushu University); Kazutoshi Kato (Kyushu University);
- 16:40 Efficiency of Multi-loop Wireless Power Transfer System Depending on Switch and Tunable Matching Network Configurations Kyeongmok Ryu (Sogang University); Jinho Jeong (Sogang University);

Session 4P16a Optical Nonreciprocity and Its Applications

Saturday PM, August 4, 2018

Room A8

Organized by Lei Shi Chaired by Lei Shi 13:20 Monolithic Integration of Low Loss Magneto-optical Ce:YIG Thin Films and a Broadband Optical Isolator on Silicon

Yan Zhang (University of Electronic Science and Technology of China); Chuangtang Wang (University of Electronic Science and Technology of China); Qingyang Du (MIT); Shuyuan Liu (University of Electronic Science and Technology of China); Takian Fakhrul (MIT); Caroline A. Ross (MIT); Juejun Hu (Massachusetts Institute of Technology); Lei Bi (University of Electronic Science and Engineering of China);

- 13:40 Heterogeneously Integrated Optical Isolators and Circulators for Silicon Photonics
 Duanni Huang (University of California); Paolo Pintus (University of California); Jonathan Peters (University of California); Yuya Shoji (Tokyo Institute of Technology); Tetsuya Mizumoto (Tokyo Institute of Technology); John E. Bowers (University of California);
- 14:00 Forward Stimulated Brillouin Scattering in Siliconbased Chips Junqiang Sun (Huazhong University of Science and Technology):
- 14:20 All-optically Controlled Non-reciprocal Photonic Devices Based on Optomechanical Microresonator Zhen Shen (University of Science and Technology of China); Yan-Lei Zhang (University of Science and Technology of China); Yuan Chen (University of Science and Technology of China); Fangwen Sun (University of Science and Technology of China); Xubo Zou (University of Science and Technology of China); Guangcan Guo (University of Science and Technology of China); Changling Zou (University of Science and Technology of China); Changling Zou (University of Science and Technology of Science and Technology of China); Changling Zou (University of Science and Technology of Science and Technology of Science and Technology of China); Chun-Hua Dong (University of Science and Technology of Science and Technology of China);
- 14:40 Optical Nonreciprocity in Integrated Optomechanical Devices

Linhao Ren (Huazhong University of Science and Technology); Xinbiao Xu (Huazhong University of Science and Technology); Lei Shi (Huazhong University of Science and Technology); Xinliang Zhang (Huazhong University of Science and Technology);

- 15:00 Brillouin-based Non-reciprocal Light Storage Moritz Merklein (The University of Sydney); Birgit Stiller (The University of Sydney); Benjamin J. Eggleton (University of Sydney);
- 00:00 Quantum Single-photon Isolation Keyu Xia (Macquarie University); Guowei Lu (Peking University); Yuqing Cheng (Peking University); Jason Twamley (Macquarie University);

15:40 Coffee Break

Session 4P16b Laser, Optical Sensors and Environmental Monitoring

Saturday PM, August 4, 2018 Room A8 Chaired by Ibrahim H. Giden, Kaiyu Cui

16:00 Novel Photonic Crystal Based Interferometric Design for All-optical Sensing Applications
Ibrahim H. Giden (TOBB University of Economics and Technology); Utku G. Yasa (TOBB University of Economics and Technology); Hamza Kurt (TOBB University of Economics and Technology);

16:20 Piezoelectric Sensors' Electric Response When Used as Detectors for Short Time Photo Acoustic Pulses with Heat Transport Included
Edahi-Antonio Gutierrrez-Reyes (CONACYT — Centro de Investigación Científica y de Educación Superior de Ensenada); C. Garcia-Segundo (Universidad Nacional Autónoma de México); Augusto Garcia-Valenzuela (Universidad Nacional Autónoma de México); B. Reyes-Ramirez (Universidad de Guanajuato Campus León); Roberto Ortega (CONACYT — Centro de Investigación Científica y de Educación Superior de Ensenada);

- 16:40 Investigation of Distributed Fibre Optic Sensing for Coal Burst Prediction — A Laboratory Experiment Xun Luo (CSIRO Energy);
- 17:00 All-optical Fiber Power-frequency Electric Field Sensor Using a Twin-FBG Based Fiber-optic Accelerometer with Charged Polyimide Lutang Wang (Shanghai University); Nian Fang (Shanghai University);
- 17:20 Phonon Laser with Hetero Optomechanical Crystals Kaiyu Cui (Tsinghua University); Zhilei Huang (Tsinghua University); Yidong Huang (Tsinghua University);
- 17:40 Tunable Extremely Ultra-violet Emitter Based on Threshold-less Cherenkov Radiation Long Xiao (China Ship Development and Design Center); Jun-Feng Chen (Huazhong University of Science and Technology); Qi Zhang (China Ship Development and Design Center); Longying Guo (China Ship Development and Design Center);

Session 4P17a SC3: Photonics-based Signal Source and Its Application 2

Saturday PM, August 4, 2018

Room A9 Organized by Fangzheng Zhang, Jianqiang Li Chaired by Fangzheng Zhang

- 13:20 Microwave Photonics for Integrated Multi-band RF Receiving and Emitting Dan Zhu (Nanjing University of Aeronautics and Astronautics); Shilong Pan (Nanjing University of Aeronautics and Astronautics);
- 13:40 Frequency Stabilization and Spurious Suppression for the Optoelectronic Oscillator Jian Dai (Beijing University of Posts and Telecommunications); Kun Xu (Beijing University of Posts and Telecommunications);
- 14:00 Photonic Generation of Microwave Signals with Tunable Modulation Formats

Jia Ye (Southwest Jiaotong University); Lianshan Yan (Southwest Jiaotong University); Hengyun Jiang (Southwest Jiaotong University); Xihua Zou (Southwest Jiaotong University); Wei Pan (Southwest Jiaotong University); Bin Luo (Southwest Jiaotong University);

14:20 A Multi-antenna and Clock-synchronized GNSS-overfiber System with High Vertical Accuracy Xiangchuan Wang (Nanjing University of Aeronautics and Astronautics); Xin Jiang (Nanjing University of Aeronautics and Astronautics); Shilong Pan (Nanjing University of Aeronautics and Astronautics);

Session 4P17b SC3: Electromagnetic and Optical Properties of Photonic Materials, Structures, and Crystals

Saturday PM, August 4, 2018 Room A9

Organized by Tzong-Jer Yang Chaired by Szu-Cheng Cheng, Wen-Kai Kuo

14:40 Group Velocities and Resonance State in Metallic Photonic Crystals
Khee Lam Low (KDU Penang University College); Mohd Zubir Mat Jafri (Universiti Sains Malaysia); Sohail A. Khan (Universiti Sains Malaysia);

- 15:00 Optical Properties of Spinor Exciton-polariton Condensates in a Magnetic Field *Ting-Wei Chen (National Chiayi University); Szu-Cheng Cheng (Chinese Culture University);*
- 15:20 The Optical Properties of Oblique Incident on One Dimensional Photonic Crystal with Defect Layer Surrounded by Graphene Hua-Cian Huang (National Taiwan Normal University); Chien-Jang Wu (National Taiwan Normal University); Tzong-Jer Yang (National Chiao Tung University);

15:40 Coffee Break

16:00 Equivalent Circuit Analysis of Subwavelength Periodic Microstrip Structures for Transmission of Low Frequency Surface Plasmon Polaritons

Po Wei Wang (Chung Hua University); Jin-Jei Wu (Chung Hua University); Tzong-Jer Yang (National Chiao Tung University); Jian Qi Shen (Zhejiang University); Li-Yi Cheng (Chung Hua University); Chin-Chih Chang (Chung Hua University);

16:20 Implementation of Narrowband and Tunable Guidedmode Resonance Filters Using Nanoimprinting Process

> Wen-Kai Kuo (National Formosa University); Che-Jung Hsu (National Formosa University); Yu-Ming Chang (National Formosa University);

- 16:40 High-Q Nodes-free Mode for Lasing Natalya Victorovna Rudakova (Siberian Federal University); Ivan Vladimirovich Timofeev (Siberian Federal University); Stepan Yakovlevich Vetrov (Siberian Federal University); Wei Lee (National Chiao Tung University);
- 00:00 Quasi-bound States in the Continuum in a Finite Chain of Dielectric Scatterers: Theory and Experiment

M. Balyzin (ITMO University); Z. Sadrieva (ITMO University); M. Belyakov (ITMO University); P. Kapitanova (ITMO University); A. Sadreev (Federal Research Center KSC SB RAS); Andrey A. Bogdanov (ITMO University);

Session 4P18a Novel Approach to Electromagentics

Saturday PM, August 4, 2018 Room A10

Organized by Simin Feng Chaired by Sahin Kaya Ozdemir 13:00 Analytical Method for the Wave Propagation in Random Media *Hichem Eleuch (Abu Dhabi University)*;

13:20 Coalescence of Exceptional Points in PT-symmetric Conductive/Magnetic Waveguides Jin Wang (Southeast University); Kin Hung Fung (The Hong Kong Polytechnic University);

- 13:40 Reflecting on an Alternative (Parity-time-symmetric) Quantum Theory, and Its Analog in Optics Ray-Kuang Lee (National Tsing-Hua University);
- 14:00 Electromagnetic Fields in Lossy Open Dielectric Invited Spheres

Ingo Wolff (IMST GmbH);

14:20 Novel Fractional-dimensional Approach to Electromagnetics

> Muhammad Zubair (Information Technology University (ITU)); Yee Sin Ang (Singapore University of Technology and Design (SUTD)); Lay Kee Ang (Singapore University of Technology and Design (SUTD));

14:40 Exceptional Points in Optics and Optomechanics Invited

Sahin Kaya Ozdemir (The Pennsylvania State University);

15:00 Data Analytics for Electromagnetic Signals of Opportunities in Ambient of Objects over Heterogeneous Surface
Kun-Shan Chen (University of California at Santa Barbara); Hirokazu Kobayashi (Osaka Institute of

Technology); Chih-Yuan Chu (Xuchang University);

15:20 Extension of Maxwell's Equations for Charge Creation-annihilation and Its Applications *Hideki Mutoh (Link Research Corporation)*;

15:40 Coffee Break

Session 4P18b Microwave and Millimeter Wave Circuits and Devices, CAD

Saturday PM, August 4, 2018 Room A10

Chaired by Baruch Levush, Jinho Jeong

16:00 Improvement of Transmission Characteristics of Composite Right/Left Handed Transmission Lines by Using Impedance Matching

Akikazu Mishiro (Doshisha University); Hiroyuki Deguchi (Doshisha University); Mikio Tsuji (Doshisha University); 16:20 Generalized Large-signal Modeling of Vacuum Electronic Devices Based on Impedance Matrix Approach I. A. Chernyavskiy (Naval Research Laboratory); Baruch Levush (Naval Research Laboratory); .1. C. Rodgers (Naval ResearchLaboratory); N. Vlasov (Naval Research Α. Laboratory); D. Chernin (Leidos, Inc.); T. M. Antonsen, Jr. (Leidos, Inc.);

16:40 Improvement of Output Performance in G-band Extended Interaction Klystron Renjie Li (Beihang University); Cun-Jun Ruan (Beihang University); Hua-Feng Zhang (Beihang University);

- 17:00 Design of Broadband InP HBT Power Amplifier Integrated Circuit Operating at Full H-band (220–320 GHz)
 Jisu Choi (Sogang University); Jungsik Kim (Sogang University); Won-Seok Choe (Sogang University);
- 17:20 Analysis of SiGe Heterojunction Tunneling Fieldeffect Transistor in the Microwave Regime through Its Small-signal Equivalent Circuit Yung Hun Jung (Gachon University); In Man Kang (Kyungpook National University); Seongjae Cho (Gachon University);

sity); Jinho Jeong (Sogang University);

17:40 Design of a 3rd-order Single-loop 1-bit Discrete Time $\Sigma\text{-}\Delta$ Modulator

Xiao Chen (Southeast University); Zhigong Wang (Southeast University); Fei Li (Southeast University);

Session 4P0 Poster Session 6

Saturday PM, August 4, 2018 14:00 PM - 17:00 PM Room Foyer

The Use of a Multi-position Radar System with a Limited Number of Receiving Positions for Operational Control of Small-sized Space Debris

Baskakov (National Research Univer-Α. Ι. sity "Moscow PowerEngineering Institute"); Grachyov V. G_{\cdot} (National Research University "Moscow PowerEngineering Institute"); Vladlen Ilych Gusevsky (National Research University "Moscow Power Engineering Institute"); Aleksey Aleksandrovich Komarov (National Research University "Moscow Power Engineering Institute");

2 Airborne Communication Antenna Protection and 10 Stealth Yanpeng Sun (Shenyang Aerospace University); Fei Li

(Shenyang Aerospace University); Hongpeng Sun (Shenyang Aerospace University); Lele Qu (Shenyang Aerospace University);

- 3 A Dynamic Detection Method for RFID Strain Sensor Tag Antenna Based on USRP X300 Ling Yi Tang (Tongji University); Zi Wei Xia (Tongji University); Guo Chun Wan (Tongji University); Mei Song Tong (Tongji University);
- 4 Multipath Interference Suppression Based on a Stable and Effective Neural Network Jianhua Zhou (Xiamen University); Hui Zhou (Xiamen University); Baiqiang You (Xiamen University); Hsi-Tseng Chou (National Taiwan University); Yu Tang (Xiamen University);
- 5 An Improved Algorithm for Fingerprint Identification Based on Line Tracking and Mirror-assisted Method Lan Chen (Shanghai Institute of Technology); Tao Wang (Shanghai Institute of Technology); Haiyang Yin (Shanghai Institute of Technology); He Xu (Tongji University); Mei Song Tong (Tongji University);
- 6 Precession Period Extraction of Axisymmetric Space Target from RCS Sequence via Convolutional Neural Network

Jian Chen (National University of Defense Technology); Shiyou Xu (National University of Defense Technology); Pengjiang Hu (National University of Defense Technology); Wenzhen Wu (National University of Defense Technology); Jiangwei Zou (National University of Defense Technology); Zengping Chen (National University of Defense Technology);

7 The Progress of VLBI Digital Backend Development Based on ROACH2

> Jiyun Li (Shanghai Astronomical Observatory, Chinese Academy of Science); Renjie Zhu (Shanghai Astronomical Observatory, Chinese Academy of Science); Shaoguang Guo (Shanghai Astronomical Observatory, Chinese Academy of Science);

8 An Efficient Systematic Scheme for Antenna Design Ching-Lieh Li (Tamkang University); Cha-Lin Ni (Tamkang University);

9 The Research of FPGA Acceleration for VLBI Hardware Correlator Jiangying Gan (Shanghai Astronomical Observatory, Chinese Academy of Science); Zhijun Xu (Shanghai Astronomical Observatory, Chinese Academy of Science); Magnetic Field Stimulation on Cell Line HEK-293T Line with Gadolinium

Teodoro Cordova (Universidad de Guanajuato); Gloria Barbosa (University of Guanajuato Campus León); Carlos Adrian Gonzalez (University of Guanajuato Campus León); Luis Fernando Gomez (Universidad de Guanajuato); David Ramirez (Universidad de Guanajuato);

11 Extremely Compact High Gain 2.4 GHz Antenna with Folded Finger Meander Line Structure Ja-Hao Chen (Feng-Chia University); Yu-Ju Lin (Tunghai University); Cheng-Chi Yu (Feng-Chia University); He-Jin Lin (Feng Chia University); Cheng-Hsing Hsu (National United University); Ching-Fang Tseng (National United University);

12 Dual-polarized Broadband Capped Bow-tie Antenna Subarray for 5G Communication

> Yan Zheng (Hunan Univesity); Jungang Yin (Hunan University); Xiaofei Wang (State Grid Hunan Electric Power Company); Xun Wan (State Grid Hunan Electric Power Company); Runqi Wu (Hunan University); Zhengting Liu (Hunan Univesity); Jian Yang (Chalmers University of Technology);

- A 10 GHz Oscillator Based on the Principle of Negative Resistance
 Seyi Stephen Olokede (University of Johannesburg); Chuckwuemeka Joshua Okonkwo (National Open University of Nigeria); Clement Anowe Adamariko (University of Ilorin); Oladimeji O. Oniyide (University of Ilorin); Mohd Fazil Ain (Universiti Sains Malaysia);
- 14 A Ka Band Multi-channel Integrated Receiver for Passive Millimeter Wave Imaging System Xi Chen (Beihang University); Xiuzhu Ye (Beihang University); Chao Wang (Beihang University); Anyong Hu (Beihang University); Jungang Miao (Beihang University);
- 15 Infinite Speed of Energy Transport Namik Yener (Kocaeli University);
- 16 Directional Backlight Generator for Larger Field Angle Autostereoscopic Display Wentao Yu (Zhejiang University); Phil Surman (Nanyang Technological University); Sailing He (Zhejiang University);

- 17 Relaxation Sounding Technique for Electron Density Measurement in Space Plasma, Interpretation of the Electrostatic Signatures in the Magnetosphere Regions: The WHISPER Instrument on Board ESA/CLUSTER Mission Jean Louis Rauch (Centre National de la Recherche Scientifique, CNRS); X. Vallieres (LPC2E, 3A av. de la Recherche Scientifique); K. Jegou (Centre National de la Recherche Scientifique, CNRS); P. M. E. Decreau (Centre National de la Recherche Scientifique,
- 18 Impact from JFET Region Doping on Characteristics of Power MOSFETs Tao Jin (Southwest Jiaotong University); Quanyuan Feng (Southwest Jiaotong University); Xiaopei Chen (Southwest Jiaotong University);

CNRS); P. Canu (LPP/CNRS);

- 19 Pollution Detection for Insulators of Power System Based on Image Processing Shu Jia Yan (Shanghai University of Engineering Science); Qing Xu (Tongji University); Mei Song Tong (Tongji University);
- 20 Implementation of a High PSRR Low Power CMOS Bandgap Voltage Reference Circuit Min-Chin Lee (Orient Institute of Technology); Shu-Zhe Chang (Orient Institute of Technology);
- 21 Young's Double-slit Experiment Based on Roomtemperature Single Photon Source Luqing Shao (Zhejiang University); Qianqian Qiao (Zhejiang University); Xing Lin (Zhejiang University); Jianhai Zhou (Zhejiang University); Wei Fang (Zhejiang University);
- 22 Estimation of Electron Density Profile in the Lower Ionosphere from Ionogram Data by the Full Wave Method Tetsuo Fukami (National Institute of Technology, Ishikawa College); Isamu Nagano (Kanazawa University); Ryoichi Higashi (National Institute of Technol-
- ogy);
 23 Automatic Target Recognition by Multi-spectral Imaging
 Kai-Hsiang Ke (National Chung Cheng University);
 Kai-Chun Li (National Chung Cheng University);
 Wen-Nung Lie (National Chung Cheng University);
 Wei-Min Liu (National Chung Cheng University);
 You-Fu Zhang (National Chung-Shan Institute of Science and Technology); Hsiang-Chen Wang (National Chung Cheng University);

24 Automatic Dehazing and Color Restoration for Satellite Remote Sensing Imagery in a Variety of Weather Conditions

> Baipeng Li (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Zhengchao Chen (Institute of Remote Sensing and Digital Earth, CAS); Dakai Xu (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Chao Yan (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences); Jianwei Gao (Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences);

25 GNSS Phase Altimetry of the Sea Level: Mitigation of Effects of Sea Surface Waves

> Yaroslaw A. Ilyushin (Moscow State University); Artem M. Padokhin (M. V. Lomonosov Moscow State University);

One-minute Rain Rate Distribution in Indonesia Derived from TRMM, GPM and GSMAP Data Marzuki (Andalas University); Rini Oktaviani (Andalas University); L. Meylani (Kyoto University); Hiroyuki Hashiguchi (Kyoto University); Mutya Vonnisa

(Andalas University); Harmadi (Andalas University);
Passive Compensation Design for Inductive Noncontact Interfaces in Modular Mobile Devices
Ting-Yi Huang (Feng Chia University); Hong-

Wei Chou (Feng Chia University); Chih-Heng Lin (Feng Chia University);

28 LTE Area Coverage Probability for All MCS Weighted and Multi-EnodeB Averaged Cell Range in Urban Area

> Yi Hua Chen (Oriental Institute of Technology); Mei-Lin Su (Oriental Institute of Technology); Kai Jen Chen (Oriental Institute of Technology);

- 29 Development of a Climber Location Information Sharing System in Mountainous Areas Keigo Ishisaka (Toyama Prefectural University); Yoshihiro Honma (Hokuriku Electric Industry Co., Ltd); Yuhei Oguri (Toyama Prefectural University);
- 30 Monitoring of Continental and Ocean Crust Subduction Patterns in the Magma Covered by the Philippine Plate as a Young Drifting Crust Shigehisa Nakamura (Kyoto University);

31 Direct Determination of Laguerre-Gauss Vortex Beams' Topological Charges by Aperture Diffraction Pattern

> Jiao Wang (Xi'an University of Technology); Ming-Jun Wang (Xianyang Normal College); Xi-Zheng Ke (Xi'an University of Technology); Zhen-Kun Tan (Xi'an University of Technology); Ting Wu (Xi'an University of Technology);

26

32 The Asset Administration Shell as a Framework of 37 Industry 4.0

Petr Marcon (Brno University of Technology); Frantisek Zezulka (Brno University of Technology); Ivo Vesely (Brno University of Technology); Zdenek Bradac (Brno University of Technology); Jakub Arm (Brno University of Technology); Tomas Benesl (Brno University of Technology); Premysl Dohnal (Brno University of Technology);

- 33 Empirical Identification of Narrowband Interference in Broadband PLC Networks at the Receiver Steven O. Awino (University of KwaZulu Natal); Thomas Joachim Odhiambo Afullo (University of KwaZulu-Natal (UKZN)); Modisa Mosalaosi (University of KwaZulu-Natal); Peter O. Akuon (University of Kwa-Zulu Natal (UKZN));
- 34 Impedance Modelling, Profiling and Characterisation of the Powerline Communication Channel Florence Chelangat (University of KwaZulu-Natal); Thomas Joachim Odhiambo Afullo (University of KwaZulu-Natal (UKZN)); Modisa Mosalaosi (University of KwaZulu-Natal);
- 35 A Study of Hand Motion Trajectory Tracking by Utilizing Channel State Information of off-the-shelf Wi-Fi Devices

Nopphon Keerativoranan (Tokyo Institute of Technology); Kentaro Saito (Tokyo Institute of Technology); Jun-Ichi Takada (Tokyo Institute of Technology);

36 Gyrotron-based Microwave Systems for Technological Applications: Recent Experiments and New Designs Alexander I. Tsvetkov (Federal State Budgetary Scientific Institution "Federal Research Center The Institute of Applied Physics of the Russian Academy of Sciences"); Yu. V. Bykov (Institute of Applied Physics of the Russian Academy of Sciences (IAP RAS)); A. G. Eremeev (Institute of Applied Physics of the Russian Academy of Sciences (IAP RAS)); Alexander G. Luchinin (Institute of Applied Physics of the Russian Academy of Sciences (IAP RAS)); Vladimir N. Manuilov (Institute of Applied Physics RAS); Ivan V. Plotnikov (Institute of Applied Physics RAS); M. V. Morozkin (Institute of Applied Physics of the Russian Academy of Sciences (IAP RAS)); M. D. Proyavin (Institute of Applied Physics of the Russian Academy of Sciences (IAP RAS)); V. V. Holoptsev (Institute of Applied Physics of the Russian Academy of Sciences (IAP RAS)); Mikhail Yu. Glyavin (Federal State Budgetary Scientific Institution "Federal Research Center The Institute of Applied Physics of the Russian Academy of Sciences");

The Electromagnetic Properties of a Multilayered Resonant Structure Formed from Inorganic Elements Petr Drexler (Brno University of Technology); Pavel Fiala (Brno University of Technology); Premysl Dohnal (Brno University of Technology); Petr Marcon (Brno University of Technology);

Nanoparticles of RGD-functionalized Magnetite for Magnetic Hyperthermia of Colon Cancer
Teodoro Cordova (Universidad de Guanajuato); Luis Fernando Gomez (Universidad de Guanajuato);
Juan Luis Pichardo (Centro de Investigaciones en Óptica); Gustavo Basurto (Universidad de Guanajuato);

39 Measurement of Surface Temperature of Metal under Laser Ablation

> Oleg A. Ryabushkin (State University); Dmitrii V. Protasenya (Moscow Institute of Physics and Technology (State University));

40 Study for the Optical Properties of BaTiO₃ Crystal Thin-film Waveguides

Xiangyu Sun (Changchun University of Science and Technology); De Gui Sun (University of Ottawa); Ben Niu (Nanjing University); Kaiping Zhang (Institute of Microelectronics of the Chinese Academy of Sciences); Mengxi Luo (Changchun University of Science & Technology); Na Sun (Changchun University of Science and Technology); Di Wu (Nanjing University); Yuan Hu (Institute of Microelectronics of the Chinese Academy of Sciences);

41 A Novel M-Z Modulator Based on Photonic Crystal and Nanowire Waveguide Yuchen Hu (Nanjing University of Posts and Telecommunications); Heming Chen (Nanjing University of Posts and Telecommunications); Haotian Zhou (Nanjing University of Posts and Telecommunications);

42 Development of Light-emitting Diode Array-based Optical Communications Chia-Lung Tsai (National Tsing Hua University); Yi-Chen Lu (Chang Gung University); Chih-Min Yu (Chang Gung University); Yen-Chen Tu (Chang Gung University);

43 Observation of EM Nonreciprocal Transmission under Very Low Magnetic Field Yin Poo (Nanjing University); Qun Lou (Nanjing University); Fei-Fei Li (Nanjing University); Weijin Pei (Nanjing University); Rui-Xin Wu (Nanjing University);

44 A Multi-function Device Realized Based on Plasma Metamaterial: Ultra-wide Band Absorber and Reflector

> Jing Yang (Nanjing University of Posts and Telecommunications); Hai Feng Zhang (Nanjing University of Aeronautics and Astronautics); Hao Zhang (Nanjing University of Posts and Telecommunications); Jia-Xuan Liu (Nanjing University of Posts and Telecommunications);

- 45 Exciting Resonant Acoustic Phonons by Optical Forces in a Photonic Crystal Nanobeam Cavity Jin-Chen Hsu (National Yunlin University of Science and Technology); Chieh-Chun Chang (National Taiwan Ocean University); Tzy-Rong Lin (National Taiwan Ocean University);
- 46 Biofunctionalized γ -Fe₂O₃@Au Core-shell Magnetoplasmonic Nanoparticles for Alzheimer's Disease Assay

Kuen-Lin Chen (National Chung Hsing University); Jian-Ming Chen (National Chung Hsing University); Yi-Hsin Lin (National Chung Hsing University); Lin-Wei Chou (National Chung Hsing University); Chien-Chung Jeng (National Chung Hsing University); Chiu-Hsien Wu (National Chung Hsing University);

47 AGILD EM Modeling For GPR Radar Imaging Data Analysis

Jianhua Li (GL Geophysical Laboratory); Qing Xie (Hunan Super Computational Science Center); Zhongchu Tian (Changsha University of Science and Technology); Shigu Cao (Shenzhen Inequation Technology Co. Ltd.); Ganquan Xie (GL Geophysical Laboratory);

48 Capabilities of GIMS-technology to the Study of the Marine Ecosystems Ferdenant A. Mkrtchyan (V. A. Kotelnikov's Institute of Radioengineering and Electronics, Russian Academy of Sciences); V. F. Krapivin (V. A. Kotelnikov's Institute of Radioengineering and Electronics, Russian Academy of Sciences); Sergey M. Shapovalov (Shirshov's Institute of Oceanology, RAS);

 49 Pollution Change Monitor in Beijing Area Using VI-IRS DNB Data
 Shi Qiu (The Academy of Opto-Electronics, Chinese Academy of Sciences);

50 An Adaptive Optical Technology for Monitoring Aquatic Ecosystem

> Ferdenant A. Mkrtchyan (V. A. Kotelnikov's Institute of Radioengineering and Electronics, Russian Academy of Sciences); V. F. Krapivin (V. A. Kotelnikov's Institute of Radioengineering and Electronics, Russian Academy of Sciences); V. V. Klimov (V. A. Kotelnikov's Institute of Radioengineering and Electronics, Russian Academy of Sciences);

Photonic Crystal Fabry-Perot Filter Based on Si/SiO $_{\bf 2}$ for Visible-laser Spectral Selectivity

Dong Qi (Huazhong University of Science and Technology); Xian Wang (Huazhong University of Science and Technology); Fu Chen (Huazhong University of Science and Technology); Lei Liu (Huazhong University of Science and Technology); Rong Zhou Gong (Huazhong University of Science and Technology);

52 Power-efficient Excitation of Optical Surface Waves Using Principles of Holography Anton I. Ignatov (All-Russia Research Institute of Automatics); Alexander M. Merzlikin (Institute for Theoretical and Applied Electromagnetics of the Russian Academy of Sciences);

53 Humidity and NO₂ Optical Gas Sensors
I. A. Nechepurenko (Dukhov Research Institute of Automatics); Alexander V. Dorofeenko (Institute for Theoretical and Applied Electromagnetics, RAS); V. V. Kornienko (Dukhov Research Institute of Automatics); P. N. Tananaev (Dukhov Research Institute of Automatics); A. V. Baryshev (Dukhov Research Institute of Automatics); A. S. Baburin (Bauman Moscow Technical State University); I. A. Rodionov (Dukhov Research Institute of Automatics);

54 Investigation of Low-profile RFID Antenna Using AMC Substrate for Anti-metallic Application Wang He (Zhejiang University); Bo Xu (Ericsson AB);

55 Full Color Hologram of Single Neuron Using Spatial Frequency Multiplexing Behnam Tayebi (Korea University); Davood Khodadad (Linnaeus University);

56 Generating of $\mathbf{2} \times \mathbf{1}$ Outputs for Cylindrical Vector Beams

Jingheng Chen (Feng Chia University); Wei-Xuan Wu (Feng Chia University); Chien-Yuan Han (National United University); Kun-Huang Chen (Feng Chia University); Chien-Hung Yeh (Feng Chia University);

57 Design of a Novel and Compact LTE/WWAN Antenna for Mobile Phone Applications Ming Yang (Anhui University); Yufa Sun (Anhui University); Zuming Li (Anhui University);

58 Inorganic Perovskite CsPbBr_{3-x}I_x Quantum Dots: Enhancing Optical Stability Yun-Hyuk Ko (Hannam University); Sinil Choi (Hannam University); Prem Prabhakaran (Hannam University); Jea-Gun Park (Hanyang University); Kwang-Sup Lee (Hannam University);

59 Improving the Response of THz Metamaterials Biosensor Using Gold Nanoparticles Chin-Wei Lin (National Taiwan University); Tsung-Hao Chang (National Chung Hsing University); Zu-Yin Deng (National Chung Hsing University); Kuen-Lin Chen (National Chung Hsing University); Chiu-Hsien Wu (National Chung Hsing University); Li-Min Wang (National Taiwan University);

60 Metamaterial Inspried Long Read Range UHF RFID Tag Antenna

> Kewen Pan (University of Manchester); Ting Leng (University of Manchester); Xinyao Zhou (University of Manchester); Habiba Hafdallah-Ouslimani (Universite Paris Ouest Nanterre La Defense); Zhirun Hu (University of Manchester);

- 61 A Practical Application of Using a Microwave Technique to Determine the Blood Glucose Level Ayodunni Ayodele Oloyo (The University of Manchester); Zhirun Hu (University of Manchester);
- 62 Super-Resolution in Miniature Spectrometer by Combination of Hadamard Transform and Sub-pixel Reconstruction Technology Mingbo Chi (Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences); Yihui Wu (Changchun Institute of Optics, Fine Mechanics and Physics, Chinese Academy of Sciences);