

MWP/APMP 2014 Advance Program

Plenary: 45min. Invited: 30min. Regular: 15min.

20 October 2014

- 12:45-15:00 WS-1 “Advanced Photonics & MWP” (tentative)
15:30-18:00 WS-2 “MWP Technologies in the Asia-Pacific Rim” (tentative)
18:00-19:30 Get-together party
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21 October 2014

9:00-10:15 *Session TuA: Plenary & Invited Paper Session 1*

TuA-1 (Plenary) Dalma Novak (Pharad, LLC, USA)

Advanced Radio over Fiber System Technologies

TuA-2 (Invited) Fumiyuki Adachi (Tohoku University, Japan)

Wireless Optical Convergence Enables Spectrum-Energy Efficient Wireless Networks

10:15-10:45 Coffee break

10:45-12:15 *Session TuB: RoF for Mobile Communication Systems*

TuB-1 Naoyasu Kamiya (KDDI R&D Laboratories Inc., Japan); Masayuki Oishi (KDDI R&D Laboratories Inc., Japan); Abdelmoula Bekkali (KDDI R&D Laboratories Inc., Japan); Kosuke Nishimura (KDDI R&D Laboratories Inc. & Optical Access Network Laboratory, Japan); Keiji Tanaka (KDDI R&D Laboratories Inc., Japan)

Study on Signal Modulation Schemes for Millimeter-Wave Band RoF Transmission Systems with Optical Signal Re-Modulation

TuB-2 Tien Dat Pham (National Institute of Information and Communications Technology, Japan); Atsushi Kanno (National Institute of Information and Communications Technology, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan)

Uplink Burst LTE-A Signal Transmission on a Converged Millimeter-Wave and RoF System

TuB-3 Yuting Fan (Beijing University of Posts and Telecommunications, P.R. China); Anthony Aighobahi

(University of Kent, United Kingdom); Nathan J Gomes (University of Kent, United Kingdom); Kun Xu (Beijing University of Posts and Telecommunications, P.R. China)

Performance of Commercial MIMO Access Point in Distributed Antenna System with Different Fiber Lengths

TuB-4 Masaki Shiraiwa (National Institute of Information and Communications Technology, Japan); Atsushi Kanno (National Institute of Information and Communications Technology, Japan); Toshiaki Kuri (NICT, Japan); Tien Dat Pham (National Institute of Information and Communications Technology, Japan); Yoshinari Awaji (National Institute of Information and Communications Technology, Japan); Naoya Wada (NICT, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan)

Performance of a New Burst-Mode Erbium-Doped Fiber Amplifier for Uplink Radio-over-Fiber Signal Transmission

TuB-5 Sebastian Babel (University of Duisburg-Essen, Germany); Rattana Chuenchom (University of Duisburg-Essen, Germany); Andreas Stöhr (University of Duisburg-Essen, Germany); Yigal Leiba (Siklu Communications Ltd., Israel); John Mitchell (University College London, United Kingdom)

Coherent Radio-over-Fiber (CRoF) Approach for Heterogeneous Wireless-Optical Networks

TuB-6 Zhihui Cao (Center of Optics Photonics and Laser, Université Laval, Canada); Truong An Nguyen (Laval University, Canada); Leslie Rusch (Université Laval, Canada) Full-duplex WiFi Analog Signal Transmission with Digital Downlink in a Radio-over-Fiber System Employing RSOA-based WDM-PON Architecture

12:15-13:45

Lunch break

13:45-15:45 **Session TuC: MWP integrated devices**

TuC-1 (Invited) Lawrence Chen (McGill University, Canada); Rhys Adams (CEGEP Vanier College, Canada); Reza Ashrafi (INRS, Canada); Junjia Wang (McGill University, Canada); Mohammad Rezagholipour Dizaji (McGill University, Canada); Md. Shafiqul Hai (McGill University, Canada); Odile Liboiron-Ladouceur (McGill University, Canada)

Photonic Integrated Circuits for Microwave Photonics Applications

TuC-2 (Invited) Cyril Renaud (University College London, United Kingdom); Katarzyna Balakier (University College London (UCL), United Kingdom); Martyn Fice (University College London, United Kingdom); Lalitha Ponnampalam (University College London, United Kingdom); Alwyn Seeds (University College London, United Kingdom); Frédéric Van Dijk (Alcatel Thales III-V Lab, France); Gael Kervella (III-V Lab, France)

Photonic integration for millimetre-wave and THz systems

TuC-3 Masahiro Yata (Graduate School of Engineering Science, Osaka University, Japan); Masayuki Fujita (Osaka University, Japan); Tadao Nagatsuma (Osaka University, Japan)

Diplexer for Terahertz-Wave Integrated Circuits using a Photonic-Crystal Slab

TuC-4 Caterina Taddei (University of Twente, The Netherlands); Leimeng Zhuang (University of Twente, The Netherlands); Marcel Hoekman (LioniX, The Netherlands); Chris Roeloffzen (University of Twente & SATRAX, The Netherlands); Arne Leinse (LioniX BV, The Netherlands); Ruud Oldenbeuving (Satrax, The Netherlands); Paul van Dijk (Satrax, The Netherlands)

Fully Reconfigurable Coupled Ring Resonator-based Bandpass Filter For Microwave Signal Processing

TuC-5 Jungwon Kim (KAIST, Korea); Kwangyun Jung (KAIST, Korea); Junho Shin (KAIST, Korea)

Microwave Synthesis and Remote Transfer Using Attosecond-Jitter Mode-Locked Fiber Lasers

TuC-6 Jianping Yao (University of Ottawa, Canada); Weifeng Zhang (University of Ottawa, Canada); Jiejun Zhang (University of Ottawa, Canada)

Largely Chirped Microwave Waveform Generation Using a Silicon-Based On-Chip Optical Spectral Shaper

15:45-16:15

Coffee break

16:15-18:00 ***Session TuD: Advanced Signal Processing Technology***

TuD-1 (Invited) Gabriella Cincotti (University Roma Tre, Italy); Satoshi Shimizu (National Institute of Information and Communications Technology, Japan); Naoya Wada (NICT, Japan); Hiroyuki Uenohara (Tokyo Institute of Technology, Japan); Kunihiro Hattori (NTT Electronics, Japan); Takahiro Kodama (Osaka University, Japan); Tsuyoshi Konishi (Osaka University, Japan); Masayuki Okuno (NTT Electronics, Japan)
OFDM to OTDM Conversion by Fractional Fourier Transform

TuD-2 Jianping Yao (University of Ottawa, Canada); Jiejun Zhang (University of Ottawa, Canada)
Broadband and Precise Microwave Time Reversal Using a Single Linearly Chirped Fiber Bragg Grating

TuD-3 Antoine Rolland (National Institute of Standards and Technology, USA); Tara Fortier (National Institute of Standards and Technology, USA); Franklyn Quinlan (National Institute of Standards and Technology, USA); Fred Baynes (National Institute of Standards and Technology, USA); Joseph Campbell (University of Virginia, USA); Scott Diddams (National Institute of Standards and Technology, USA)

Low-noise and agile X-band synthesizer based on optical frequency division

TuD-4 Tomotaka Nagashima (Osaka University, Japan); Makoto Hasegawa (Osaka University, Japan);

Takuya Murakawa (Osaka University, Japan); Tsuyoshi Konishi (Osaka University, Japan)
Effect Maximization of Quantization Step Slicing Approach for Resolution Improvement in Optical
Quantization

TuD-5 Makoto Hasegawa (Osaka University, Japan); Tomotaka Nagashima (Osaka University, Japan);
Takuya Murakawa (Osaka University, Japan); Tsuyoshi Konishi (Osaka University, Japan)
Interconnect Test between Optical Sampling and Quantization for Optical Analog-to-Digital Conversion

TuD-6 Chunyan Lin (SPAWAR Systems Center Pacific, USA); Bill Jacobs (SPAWAR Systems Center
Pacific, USA); James Adleman (SPAWAR Systems Center Pacific, USA); Shai Barak Jester (SPAWAR
Systems Center Pacific, USA); Douglass Evans (SPAWAR Systems Center Pacific, USA); Bienvenido Melvin L
Pascoguin (SPWAR Systems Center Pacific, USA)
Coherent Detection RF-IF Down Converting Link Using Injection Locked Laser Design

18:00-21:00 **Sessions TuEA~TuEH: Poster Session & Reception**
18:00-19:00 Core presentation time for Odd-number posters
18:30-19:30 Core presentation time for Even-number posters
19:30-21:00 Reception

22 October 2014

9:00-10:15 **Session WA: Plenary & Invited Paper Session 2**

WA-1 (Plenary) Masanori Koshiha (Hokkaido University, Japan)
Design Aspects of Multicore Optical Fibers for High-capacity Long-haul Transmission

WA-2 (Invited) Christina Lim (University of Melbourne, Australia); Yizhuo Yang (The University of
Melbourne, Australia); Ampalavanapillai Nirmalathas (The University of Melbourne, Australia)
OFDM with Digitized Transport for High Capacity Fiber-Wireless Links

10:15-10:45 Coffee break

10:45-12:15 **Session WB: MWP Sensing Technology**

WB-1 Benoît Gouhier (The University of Melbourne, Australia); Ka Lun Lee (University of Melbourne,

Australia); Ampalavanapillai Nirmalathas (The University of Melbourne, Australia); Christina Lim (University of Melbourne, Australia); Stan Skafidas (The University of Melbourne, Australia)

A flexible, wide bandwidth electro-optic probing system using a recirculating frequency shifter

WB-2 Perrine Berger (Thales Research and Technology, France); Muriel Schwarz (Thales Research and Technology, France); Stéphanie Molin (Thales Research and Technology, France); Daniel Dolfi (Thales Research & Technology, France); Anne Louchet-Chauvet (Laboratoire Aimé-Cotton CNRS-UPR 3321, France); Thierry Chanelière (Laboratoire Aimé Cotton CNRS-UPR 3321, France); Jean-Louis Le Gouët (Laboratoire Aimé Cotton CNRS-UPR 3321, France); Loic Morvan (Thales Research and Technology, France)

20 GHz instantaneous bandwidth RF spectrum analyzer with high time-resolution

WB-3 Chao Wang (University of Kent, United Kingdom); Nathan J Gomes (University of Kent, United Kingdom)

Photonics-Enabled Sub-Nyquist Radio Frequency Sensing based on Temporal Channelization and Compressive Sensing

WB-4 Christopher Huynh (SPAWAR Systems Center Pacific & University of California San Diego, USA); Sanja Zlatanovic (SPAWAR Systems Center Pacific, USA); James Adleman (SPAWAR Systems Center Pacific, USA); Andeas O J Wiberg (University of California, San Diego, USA); Evgeny Myslivets (UCSD, USA); Stojan Radic (University of California, USA); Bill Jacobs (SPAWAR Systems Center Pacific, USA)

Wideband RF Analyzer with 32 Channels Based on Parametric Multicasting

WB-5 Zhenzhou Tang (Nanjing University of Aeronautics & Astronautics, P.R. China); Shilong Pan (Nanjing University of Aeronautics & Astronautics, P.R. China)

A Reconfigurable Photonic Microwave Mixer

WB-6 Qiang Guo (Tsinghua University, P.R. China); Yunhua Liang (Tsinghua University, P.R. China); Minghua Chen (Broadband Optical Network Research Laboratory, P.R. China); Hongwei Chen (Tsinghua University, P.R. China); Sigang Yang (Tsinghua University, P.R. China); Shizhong Xie (Tsinghua University, P.R. China)

Radar pulse sensing based on photonic-assisted compressive sampling

12:15-13:45

Lunch break

13:45-15:45

Session WC: THz Technology

WC-1 (Invited) Alouini Mehdi (Institute of Physics of Rennes, France)

Bridging the gap between THz and microwave photonics through optoelectronic interleaved comb generation

WC-2 Motohiro Kumagai (National Institute of Information and Communications Technology, Japan); Shigeo Nagano (National Institute of Information and Communications Technology, Japan); Hiroyuki Ito (National Institute of Information and Communications Technology, Japan); Yuko Hanado (National Institute of Information and Communications Technology, Japan)

Terahertz frequency reference transfer via an optical fiber link

WC-3 Atsushi Kanno (National Institute of Information and Communications Technology, Japan); Tien Dat Pham (National Institute of Information and Communications Technology, Japan); Isao Morohashi (National Institute of Information and Communications Technology, Japan); Iwao Hosako (National Institute of Information & Communications Technology, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan)

Multilevel Signal Transmission at 600 GHz

WC-4 Haymen Shams (University College London (UCL), United Kingdom); Martyn Fice (University College London, United Kingdom); Katarzyna Balakier (University College London (UCL), United Kingdom); Cyril Renaud (University College London, United Kingdom); Alwyn Seeds (University College London, United Kingdom); Frédéric Van Dijk (Alcatel Thales III-V Lab, France)

Multichannel 200GHz 40Gb/s Wireless Communication System using Photonic Signal Generation

WC-5 Ho-jin Song (NTT Device Technology Laboratories, Japan); Jae-Young Kim (NTT Device Technology Laboratories, Japan); Hidetaka Nishi (NTT Device Technology Laboratories, Japan); Hiroshi Fukuda (NTT Device Innovation Center, Japan); Katsuhiro Ajito (NTT Device Technology Laboratories, Japan)

Terahertz Homodyne Spectroscopy System Based on Silicon Photonic Integrated Circuit

WC-6 Vincent Pagan (Laboratory for Physical Sciences & University of Maryland, USA); Thomas Murphy (University of Maryland, USA)

Electrooptic Millimeter-Wave Generation and High-Speed Vector Modulation

WC-7 Huy Hai Nguyen Pham (Osaka University, Japan); Shintaro Hisatake (Osaka University, Japan); Tadao Nagatsuma (Osaka University, Japan)

Far-field Antenna Characterization in the Sub-THz Region Based on Electrooptic Near-field Measurements

15:45-16:15 Coffee break

16:15-18:00 **Session WD: Beam Forming & Related Technology**

WD-1 (Invited) Toshiyuki Ando (Mitsubishi Electric Corporation, Japan)

Optical coherent beam control based on microwave photonics technologies

WD-2 Mattia Pagani (University of Sydney, Australia); David Marpaung (University of Sydney & Centre for Ultrahigh Bandwidth Devices for Optical Systems (CUDOS), Australia); Benjamin Eggleton (University of Sydney, Australia)

Ultra-Wideband RF Photonic Phase Shifter with 360 Tunable Phase and Configurable Amplitude Response

WD-3 Ton Koonen (COBRA, Eindhoven University of Technology, The Netherlands); Zizheng Cao (Eindhoven University of Technology, The Netherlands)

Optically Controlled 2D Radio Beam Steering System

WD-4 Maurizio Burla (INRS-EMT, Canada); Hamed Pishvai Bazargani (INRS-EMT, Canada); Jonathan St-Yves (COPL, Canada); Wei Shi (COPL, Canada); Lukas Chrostowski (University of British Columbia, Canada); Jose Azana (INRS, Canada)

Frequency agile microwave photonics notch filter based on a waveguide Bragg grating on silicon

WD-5 Javier Hervás (Universidad Politécnica de Valencia & ITEAM, Spain); David Barrera (Universidad Politécnica de Valencia, Spain); Jose Capmany (Universidad Politecnica de Valencia, Spain); Salvador Sales (Universidad Politecnica de Valencia, Spain)

Very high Q-factor microwave photonic FIR filter based on a ultralong FBG cascade

WD-6 Takahide Sakamoto (National Institution of Information and Communications Technology, Japan); Guo-Wei Lu (National Institute of Information and Communications Technology, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan)

Conjugated-Paired Radio-on-Fiber Transmission Scheme Highly Tolerant against Optical Fiber Nonlinearity

18:00-21:00

Banquet

23 October 2014

9:00-10:15 *Session ThA: Plenary & Invited Paper Session 3*

ThA-1 (Plenary) Ton Koonen (Eindhoven University of Technology, The Netherlands)

Optical Techniques for Gbit/s Wireless Indoor Access

ThA-2 (Invited) Sang Soo Lee (ETRI, Korea)

Future-proof optical-mobile converged access network based on integration of PON with RoF technologies

10:15-10:45 Coffee break

10:45-12:15 **Session ThB: High-Speed Photo-Detector & Optical Modulator**

ThB-1 (Invited) Andreas Beling (University of Virginia, USA); Joe Campbell (University of Virginia, USA); Kejia Li (University of Virginia, USA); Xiaojun Xie (University of Virginia, USA); Qinglong Li (University of Virginia, USA); Zhanyu Yang (University of Virginia, USA); Madison Woodson (University of Virginia, USA)

High-Power Photodiodes for Analog Applications

ThB-2 Katsuyuki Yamamoto (University of Hyogo, Japan); Tadashi Kawai (University of Hyogo, Japan); Akira Enokihara (University of Hyogo, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan)

LiNbO₃ Optical SSB Modulator using Microwave Branch-Line Coupler Miniaturized by Inter-digital Capacitors

ThB-3 Asako Suminokura (Osaka University, Japan); Kazuisao Tsuruda (University of Kyushu, Japan); Toshikazu Mukai (Rohm Co., Ltd., Japan); Masayuki Fujita (Osaka University, Japan); Tadao Nagatsuma (Osaka University, Japan)

Integration of Resonant Tunneling Diode with Terahertz Photonic-Crystal Waveguide and Its Application to Gigabit Terahertz-Wave Communications

ThB-4 Takashi Ikeda (Osaka University, Japan); Hiroshi Murata (Osaka University, Japan); Yasuyuki Okamura (Osaka University, Japan)

Millimeter-Wave Electro-Optic Modulator Using Integrated Patch Antennas and Stacked Structure

ThB-5 Saba Siadat Mousavi (University of Ottawa, Canada); Andreas Stöhr (University of Duisburg-Essen, Germany); Pierre Berini (University of Ottawa, Canada)

Surface Plasmon Nanoantenna-Based Photodetector with Terahertz Electrical Bandwidth

12:15-13:45 Lunch break

13:45-15:00 **Session ThC: Novel RoF Technology**

ThC-1 Edward Ackerman (Photonics Systems Inc, USA); Charles Cox (Photonic Systems, Inc., USA)
Optimization of Analog Optical Link Performance: First Minimize the Noise Figure

ThC-2 Hou-Tzu Huang (Institute of Photonic System, National Chiao Tung University, Taiwan); Chun-Ting Lin (Institute of Photonic System, National Chiao Tung University, Taiwan); Huan-Ching Liu (Institute of Photonic System, National Chiao Tung University, Taiwan); Hsun-Hao Hsu (Institute of Photonic System, National Chiao Tung University, Taiwan); Meng-Fan Wu (Institute of Photonic System, National Chiao Tung University, Taiwan); Chi-Hsiang Lin (Institute of Photonic System, National Chiao Tung University, Taiwan); Che-Hao Li (Institute of Photonic System, National Chiao Tung University, Taiwan); Chia-Chien Wei (National Sun Yat-sen University, Taiwan)

W-band DD-OFDM-RoF System Employing Pilot-aided PAPR Reduction

ThC-3 Jianping Yao (University of Ottawa, Canada); Xiang Chen (University of Ottawa, Canada)
A Coherent Microwave Photonic Link With Digital Phase Noise Cancellation

ThC-4 Xiaodong Liang (Beijing University of Posts and Telecommunications, P.R. China); Xi Liang (Beijing University of Posts and Telecommunications, P.R. China); Yitang Dai (Beijing University of Posts and Telecommunications, P.R. China); Kun Xu (Beijing University of Posts and Telecommunications, P.R. China); Feifei Yin (Beijing University of Posts and Telecommunications, P.R. China); Jianqiang Li (Beijing University of Posts and Telecommunications, P.R. China); Jintong Lin (), Beijing University of Posts and Telecommunications, P.R. China)

Mitigation of cross-modulation distortion in wideband analog photonic link based on digital post-processing

ThC-5 Eamonn Martin (Dublin City University, Ireland); Tong Shao (Institute of Microelectronics Electromagnetism and Photonics, France); Prince M Anandarajah (Dublin City University, Ireland); Vidak Vujicic (Dublin City University, Ireland); Colm Browning (Dublin City University, Ireland); Roberto Llorente (Universidad Politecnica de Valencia, Spain); Liam Barry (Dublin City University, Ireland)

Impact and Reduction of Fibre Nonlinearities in a 25 Gb/s OFDM 60 GHz Radio over Fibre System

15:00-16:00 ***Session ThD: Post Deadline & Closing Session***

Poster Session

21 October 18:00-21:00 ***Sessions TuEA~TuEH: Poster Sessions***

18:00-19:00 Core presentation time for Odd-number posters

18:30-19:30 Core presentation time for Even-number posters

TuEA: Novel device/integration technologies for MWP

TuEA-1 Nobuhiro Suenari (Osaka University, Japan); Hiroshi Murata (Osaka University, Japan); Yasuyuki Okamura (Osaka University, Japan)

100 GHz-Band Wireless Millimeter-Wave-Lightwave Signal Converter Using Electro-Optic Modulation with Meta-Material Structure

TuEA-2 Konosuke Aoyama (Tohoku University, Japan); Ryuichi Yoshioka (Tohoku University, Japan); Nobuhide Yokota (Tohoku University, Japan); Hiroshi Yasaka (Tohoku University, Japan); Wataru Kobayashi (NTT Corporation, Japan)

Narrow-linewidth Laser Diode with Compact Optical-feedback system

TuEA-3 Daniel Perez (Universidad Politecnica de Valencia, Spain); Ivana Gasulla (Universidad Politecnica de Valencia, Spain); Jose Capmany (Universidad Politecnica de Valencia, Spain)

Microwave Photonics Transistor Design Equations

TuEA-4 Peng-Chun Peng (National Taipei University of Technology, Taiwan); Vincent Hsiao (National Chi Nan University, Taiwan); Tzu-Lin Chang (National Taipei University of Technology, Taiwan); Hung-Yi Chen (National Taipei University of Technology, Taiwan); Yu-Chien Yu (National Taipei University of Technology, Taiwan); Chung-Yi Li (National Taipei University of Technology, Taiwan); Hai-Han Lu (National Taipei University of Technology, Taiwan)

Optically Controllable All-fiber Based Radio-Frequency Phase-Shifter

TuEA-5 Stavros Iezekiel (University of Cyprus, Cyprus); Andreas Christou (University of Cyprus, Cyprus)

Microwave Photonic Links Based on Transistor Lasers: Voltage Modulation versus Current Modulation

TuEA-6 Naokatsu Yamamoto (National Institute of Information and Communications Technology, Japan); Kouichi Akahane (National Institute of Information and Communications Technology, Japan); Toshimasa Umezawa (National Institute of Information and Communication Technology, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan)

A 1.55- μm Waveband Optical Absorption Characterization of Highly-stacked InAs/InGaAlAs Quantum Dot Structure for Electro-absorption Devices

TuEA-7 Akira Enokihara (University of Hyogo, Japan); Masashi Yamamoto (University of Hyogo, Japan); Tadashi Kawai (University of Hyogo, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan)

Low Chirp Electro-optic Intensity Modulation Using Planar Microwave 180-degree Hybrid Directly Prepared on LiNbO₃ Substrate

TuEA-8 Yutaka Fukuchi (Tokyo University of Science, Japan); Taku Sekine (Tokyo University of Science, Japan); Kazuhiro Ohnaka (Tokyo University of Science, Japan)

Ultra-Stable Short Pulse Generation from an Actively and Harmonically Mode-Locked Fiber Laser Employing a Bismuth-Oxide-Based Nonlinear Erbium-Doped Fiber

TuEB: High-speed and/or broadband photonic devices

TuEB-1 Xinyuan Yao (Osaka University, Japan); Hiroshi Murata (Osaka University, Japan); Yasuyuki Okamura (Osaka University, Japan)

High-Speed Electro-Optic Polarization Modulator Using a Buried Channel Optical Waveguide

TuEB-2 Takayuki Mitsubo (Osaka University, Japan); Hiroshi Murata (Osaka University, Japan); Yasuyuki Okamura (Osaka University, Japan)

Design of Pre-equalizing High-Speed EO Modulator with Polarization-Reversed Structure Using Delta-Sigma Transformation

TuEB-3 Toshimasa Umezawa (National Institute of Information and Communication Technology, Japan); Kouichi Akahane (National Institute of Information and Communications Technology, Japan); Atsushi Kanno (National Institute of Information and Communications Technology, Japan); Naokatsu Yamamoto (National Institute of Information and Communications Technology, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan); Nobuhiko Shibasaki (Hitachi, Japan); Kuniyoshi Jitsuno (Teknometrix Inc., Japan)

High-Performance Analog Photoreceiver for Millimeter-Wave Radio-over-Fiber Applications

TuEB-4 Keizo Inagaki (National Institute of Information and Communications Technology, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan); Yoichi Oikawa (Trimatiz Limited, Japan); Hidenori Iwai (Trimatiz Limited, Japan)

Development of lightwave frequency response analyzer for characterizing O/E conversion devices

TuEB-5 Yuji Nishi (Doshisha University, Japan); Naoya Ichino (Doshisha University, Japan); Takahiro Hayashi (Graduate School of Science and Engineering, Doshisha University, Japan); Hiroyuki Toda (Doshisha University, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan)

Influence of Harmonic Distortions of Driving Signal on the Measurement of Mach-Zehnder Modulator Parameters

TuEB-6 Shigeru Mieda (Tohoku University, Japan); Satoshi Shiratori (Tohoku University, Japan); Nobuhide Yokota (Tohoku University, Japan); Wataru Kobayashi (NTT Corporation, Japan); Hiroshi Yasaka (Tohoku

University, Japan)

High-speed Optically Controlled Semiconductor Light Source with an External Cavity

TuEB-7 Hiroyuki Koyano (Waseda University, Japan); Yuya Yamaguchi (Waseda University, Japan); Atsushi Kanno (National Institute of Information and Communications Technology, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan); Masayuki Izutsu (Waseda University, Japan); Hirochika Nakajima (Waseda University, Japan)

Wavelength Characteristics of Mach-Zehnder Modulator Using Active Y-branch

TuEB-8 Ukrit Mankong (Chiang Mai University & Faculty of Engineering, Thailand); Tanawat Tangmala (Chiang Mai University, Thailand); Keizo Inagaki (National Institute of Information and Communications Technology, Japan); Atsushi Kanno (National Institute of Information and Communications Technology, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan)

Direct Chirp Measurement in Vector Space of Electroabsorption Modulator

TuEB-9 Tuptim Angkeaw (Chulalongkorn University, Thailand); Toshimasa Umezawa (National Institute of Information and Communication Technology, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan)

Crosstalk Reduction for Large Scale Photonic Integrated Circuits

TuEB-10 Yoshikazu Toba (SEIKOH GIKEN Co., Ltd., Japan); Kazuhisa Haeiwa (Hiroshima City University, Japan); Takeshi Kamio (Hiroshima City University, Japan); Hisato Fujisaka (Hiroshima City University, Japan)

Development of Lumped Constant Type LN Optical Modulators Operating at 10GHz Band

TuEB-11 Jeong-Min Lee (Yonsei University, Korea); Woo-young Choi (Yonsei University, Korea)

An Equivalent Circuit Model for Germanium Waveguide Vertical Photodetectors on Si

TuEB-12 Toshimasa Umezawa (National Institute of Information and Communication Technology, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan); Tuptim Angkeaw (Chulalongkorn University, Thailand)

Data Rate Penalty for High-Density Photonic Integrated Circuits in Advanced Modulation Formats

TuEC: Optical generation of RF/MW/MMW/THz-waves

TuEC-1 Gregoire Pillet (Thales Research and Technology, France); Jérémy Maxin (Thales Research and Technology, France); Hadrien Lanctuit (Thales Research and Technology, France); Pascale Nouchi (Thales Research & Technology, France); Daniel Dolfi (Thales Research & Technology, France); Olivier Llopis (LAAS-CNRS, France); Loic Morvan (Thales Research and Technology, France)

Tunable Opto-Electronic Oscillator based on a Fiber-Ring Resonator and a Dual-Frequency Laser

TuEC-2 Atsushi Kanno (National Institute of Information and Communications Technology, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan)

Frequency-Stabilized Terahertz-Signal Generation Using an Optical Frequency Comb and an Injection-Locking Technique

TuEC-3 Yusuke Takashima (Osaka University, Japan); Yuto Maejima (Osaka University, Japan); Hiroshi Murata (Osaka University, Japan); Yasuyuki Okamura (Osaka University, Japan); Atsushi Kanno (National Institute of Information and Communications Technology, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan)

Millimeter-Wave Signal Generation Device Using Optical Difference Frequency Generation in LiTaO₃ Crystal Suspended to Rectangular Waveguide

TuEC-4 Kazuki Seki (Waseda University, Japan); Yuya Yamaguchi (Waseda University, Japan); Atsushi Kanno (National Institute of Information and Communications Technology, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan); Masayuki Izutsu (Waseda University, Japan); Hirochika Nakajima (Waseda University, Japan)

Suppression of Third-order Harmonics in Two-tone Signals Using Cascaded Mach-Zehnder Modulators

TuEC-5 Yuya Yamaguchi (Waseda University, Japan); Shinya Nakajima (National Institute of Information and Communications Technology, Japan); Atsushi Kanno (National Institute of Information and Communications Technology, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan); Masayuki Izutsu (Waseda University, Japan); Hirochika Nakajima (Waseda University, Japan)

Frequency-Quadruple Optical Two-Tone Signal Generation Using Integrated High Extinction-Ratio Mach-Zehnder Modulator

TuEC-6 X LU (Faculty of Engineering, Hokkaido University & Division of Materials Science, Japan); Tetsu Yonezawa (Faculty of Engineering, Hokkaido University, Japan)

Terahertz Emission from CuxO/Au Thin Film

TuEC-7 Isao Morohashi (National Institute of Information and Communications Technology, Japan); Takahide Sakamoto (National Institution of Information and Communications Technology, Japan); Norihiko Sekine (National Institute for Information and Communications Technology, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan); Akifumi Kasamatsu (National Institute of Information and Communications Technology, Japan); Iwao Hosako (National Institute of Information and Communications Technology, Japan)

Generation of Arbitrary Patterned Optical Pulse Trains for THz-UWB Application

TuEC-8 Junichi Hamazaki (National Institute of Information and Communications Technology, Japan);

Norihiko Sekine (National Institute for Information and Communications Technology, Japan); Akifumi Kasamatsu (National Institute of Information and Communications Technology, Japan); Iwao Hosako (National Institute of Information and Communications Technology, Japan)

High Power THz Radiation using Double-clad Yb-doped Fiber Amplifier

TuEC-9 Caterina Braggio (University of Padova, Italy); Francesco Armando Borghesani (CNISM and University of Padova, Italy); Giovanni Carugno (University of Padova, Italy)

Microwave signal generation based on the interaction of mode-locked laser pulses with a nonlinear optical crystal

TuED: Innovative applications of MWP & Optical sensing of MW fields

TuED-1 Michitaka Ameya (NMIJ/AIST, Japan); Satoru Kurokawa (National Institute of Advanced Industrial Science and Technology, Japan)

EMI Noise Source Discrimination Using Cross Domain Analyzer and Analog RoF Link with Mobile Robot

TuED-2 Fumiaki Ueno (Osaka University, Japan); Hiroshi Murata (Osaka University, Japan); Yasuyuki Okamura (Osaka University, Japan); Tadahiro Okuda (Kurimoto LTD, Japan); Masaya Hazama (Kurimoto LTD, Japan)

New Nondestructive Measurement for Fiberglass-Reinforced Plastic Mortar Pipes Using Microwave and Photonic Techniques

TuED-3 Toan Thang Pham (ENS Cachan, France); Isabelle Ledoux-Rak (ENS de Cachan, France); Bernard Journet (ENS de Cachan, France); Van Yem Vu (Hanoi University Of Science and Technology & School of Electronics and Telecommunications, Vietnam)

Calibration of the Optical Propagation Time of an Optoelectronic Oscillator for Sensing Applications

TuED-4 Kensuke Ikeda (Central Research Institute of Electric Power Industry, Japan)

Lightning Protection of Microwave Radio Equipment Using Radio on Fiber and Power over Fiber

TuED-5 Hitoshi Kiuchi (National Astronomical Observatory of Japan, Japan)

A Wide-bandwidth Chromatic Dispersion Measurement Method

TuEE: Photonic systems for antennas & beam forming

TuEE-1 Yusuf Nur Wijayanto (National Institute of Information and Communication Technology, Japan); Atsushi Kanno (National Institute of Information and Communications Technology, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan); Hiroshi Murata (Osaka University, Japan); Yasuyuki Okamura (Osaka University, Japan)

Z-Cut LiNbO₃ Optical Modulator Using Patch-Antenna with Orthogonal-Gaps for Millimeter-Wave Radar Applications

TuEE-2 Fangzheng Zhang (Nanjing University of Aeronautics & Astronautics, P.R. China); Juan Wei (Nanjing University of Aeronautics & Astronautics, P.R. China); De Ben (Nanjing University of Aeronautics & Astronautics, P.R. China); Shilong Pan (Nanjing University of Aeronautics & Astronautics, P.R. China)
Stable Radio Transfer via an Optic Cable with Multiple Fibers Based on Passive Phase Error Correction

TuEE-3 Ghaya Baili (Thales Research and Technology & TRT-FR, France); Muriel Schwarz (Thales Research and Technology, France); Perrine Berger (Thales Research and Technology, France); Loic Morvan (Thales Research and Technology, France); Pascale Nouchi (Thales Research & Technology, France); Daniel Dolfi (Thales Research & Technology, France)

Low noise semiconductor-based mode-locked laser at 800 nm suitable for high bandwidth photonic analog-digital conversion

TuEE-4 Can Cui (Nanjing University of Science and Technology, P.R. China); Duo Zhang (Nanjing University of Science and Technology, P.R. China); Jindong Zhang (Nanjing University of Science and Technology, P.R. China); Wen Wu (Nanjing University of Science & Technology, P.R. China)
A Novel Single RF Channel Scheme for Smart Antenna Based on Optical Delay Lines

TuEF: Optical technologies for high-frequency wireless systems

TuEF-1 Shota Takeuchi (Kyushu University, Japan); Shintaro Hisatake (Osaka University, Japan); Tadao Nagatsuma (Osaka University, Japan); Kazutoshi Kato (Kyushu University, Japan)
Coherent Sub-THz Carrier Frequency Transmission with Novel Pseudo-Mach-Zehnder Interferometric Phase Stabilization

TuEF-2 Fangzheng Zhang (Nanjing University of Aeronautics & Astronautics, P.R. China); Tingting Zhang (Nanjing University of Aeronautics & Astronautics, P.R. China); Shilong Pan (Nanjing University of Aeronautics & Astronautics, P.R. China)
A full-duplex radio-over-fiber system with centralized light source and bidirectional fiber transmission based on optical sideband reuse

TuEF-3 Sun-Young Jung (Yonsei University, Korea)
AMO-FBMC Based RoF Transmission for Efficient Wired/Wireless Converged Optical Networks

TuEF-4 Toshiaki Kuri (National Institute of Information and Communications Technology, Japan); Atsushi Kanno (National Institute of Information and Communications Technology, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan)

Performance Evaluation of Wavelength Division Multiplexed Radio-over-Fiber De-multiplexer in Frequency-Modulated Continuous-Wave Signal Delivery Systems

TuEF-5 Jingjing Wang (Tsinghua University, P.R. China); Minghua Chen (Broadband Optical Network Research Laboratory, P.R. China); Yunhua Liang (Tsinghua University, P.R. China); Hongwei Chen (Tsinghua University, P.R. China); Sigang Yang (Tsinghua University, P.R. China); Shizhong Xie (Tsinghua University, P.R. China)

Interference Suppression and Tunability Enhancement for OFC-based Simultaneous Microwave Down-conversion and Filtering

TuEF-6 Joo-Young Lee (Gwangju Institute of Science and Technology, Korea); Seung-Hun Lee (Gwangju Institute of Science and Technology, Korea); Jong-In Song (Gwangju Institute of Science and Technology, Korea)

All-optical Frequency Up-conversion Technique Utilizing a Frequency-Doubling Optoelectronic Oscillator Based on Electro-Absorption modulators

TuEF-7 Yu-Han Hung (National Cheng-Kung University, Taiwan); Sheng-Kwang Hwang (National Cheng Kung University, Taiwan)

Photonic millimeter-wave frequency multiplication with tunable multiplication factor utilizing period-one dynamics of semiconductor lasers

TuEF-8 Jianbin Fu (Nanjing University of Aeronautics & Astronautics, P.R. China); Fangzheng Zhang (Nanjing University of Aeronautics & Astronautics, P.R. China); Dan Zhu (Nanjing University of Aeronautics & Astronautics, P.R. China); Jian-jiang Zhou (Nanjing University of Aeronautics and Astronautics, P.R. China); Shilong Pan (Nanjing University of Aeronautics & Astronautics, P.R. China)

A photonic-assisted transceiver with wavelength reuse for distributed UWB radar

TuEF-9 Shunichi Futatsumori (Electronic Navigation Research Institute, Japan); Kazuyuki Morioka (Electronic Navigation Research Institute, Japan); Akiko Kohmura (Electronic Navigation Research Institute, Japan); Kunio Okada (Electronic Navigation Research Institute, Japan); Naruto Yonemoto (Electronic Navigation Research Institute, Japan)

Experimental Feasibility Study of 96 GHz FMCW Millimeter-Wave Radar Based upon Radio-over-Fiber Technology -Fundamental radar reflector detection test on the Sendai airport surface

TuEF-10 Sangdaun Potha (Faculty of Engineering, Chiang Mai University, Thailand); Nipapon Siripon (Faculty of Engineering, Chiang Mai University, Thailand); Ukrit Mankong (Chiang Mai University & Faculty of Engineering, Thailand); Keizo Inagaki (National Institute of Information and Communications Technology, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan)

Simple Directly Modulated Laser Diode Frequency Characterization Using Calibrated PD by Two-tone Light

MZM Method

TuEF-11 Katsumi Takano (Yamagata University, Japan); Tomoaki Yamada (Yamagata University, Japan)

100-km Standard SMF Transmission of Japanese Digital Terrestrial Television Broadcasting Signal with EDFA and Optical Single Sideband Modulation

TuEF-12 Thavamaran Kanesan (Telekom Malaysia (TM) Research & Development, Malaysia); Sufian Mousa Mitani (Tm Research & Development, Malaysia); Romli Mohamad (TM Research & Development, Malaysia); Syamsuri Yaakob, Ir. (Telekom Research & Development, Malaysia); Wai Pang Ng (Northumbria University, United Kingdom); Zabih Ghassemlooy (Northumbria University, United Kingdom); Sujan Rajbhandari (University of Oxford, United Kingdom); Paul Anthony Haigh (Northumbria University, United Kingdom)
Spectral Shape Impact of Nonlinear Compensator Signal in LTE RoF system

TuEG: Optical processing and control of analog & digital signals

TuEG-1 Jieyu Ning (Beijing University of Posts and Telecommunications, P.R. China); Yitang Dai (Beijing University of Posts and Telecommunications, P.R. China); Feifei Yin (Beijing University of Posts and Telecommunications, P.R. China); Jianqiang Li (Beijing University of Posts and Telecommunications, P.R. China); Kun Xu (Beijing University of Posts and Telecommunications, P.R. China)

Linear Demodulation of Intensity-Modulated Analog Photonic Link Based on Polarization Modulator

TuEG-2 Minghua Cao (Beijing University of Posts and Telecommunications, P.R. China); Jianqiang Li (Beijing University of Posts and Telecommunications, P.R. China); Kun Xu (Beijing University of Posts and Telecommunications, P.R. China); Yitang Dai (Beijing University of Posts and Telecommunications, P.R. China); Feifei Yin (Beijing University of Posts and Telecommunications, P.R. China); Jintong Lin (), Beijing University of Posts and Telecommunications, P.R. China)

Bandpass Sampling in Digital Coherent Receiver with Free-Running Local Oscillator Laser for Phase Modulated Radio-over-Fiber Systems

TuEG-3 Yu-Chieh Chi (National Taiwan University, Taiwan); Gong-Ru Lin (National Taiwan University, Taiwan) Self-pulsated hybrid 40-Gbit/s BPSK-OOK Transmission

TuEG-4 Chung-Yu Lin (National Taiwan University, Taiwan); Min-Chi Cheng (National Taiwan University, Taiwan); Cheng-Ting Tsai (National Taiwan University, Taiwan); Yu-Chieh Chi (National Taiwan University, Taiwan); Gong-Ru Lin (National Taiwan University, Taiwan)

Master-to-slave injection-locked WRC-FPLD for Multi-QAM-OFDM transmission

TuEG-5 Xiyou Han (Dalian University of Technology, P.R. China); Lina Wang (Dalian University of Technology, P.R. China); Chao Tong (Dalian University of Technology, P.R. China); Yunchen Shao (Dalian University of Technology, P.R. China); Chenlin Wu (Dalian University of Technology, P.R. China); Qing Ye

(Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, P.R. China); Yiyang Gu (Dalian University of Technology, P.R. China); Mingshan Zhao (Dalian University of Technology, P.R. China)
Bandwidth tunability of stimulated Brillouin scattering based microwave photonic Filter

TuEG-6 Akito Chiba (Gunma University, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan); Takahide Sakamoto (National Institution of Information and Communications Technology, Japan); Kaoru Higuma (Sumitomo Osaka Cement co. Ltd., Japan); Kazumasa Takada (Gunma University, Japan); Masayuki Izutsu (Waseda University, Japan)
Evaluation of Crosstalk in optical cross-bar switch driven by high-frequency signal

TuEG-7 Eamonn Martin (Dublin City University, Ireland); Prince M Anandarajah (Dublin City University, Ireland); Liam Barry (Dublin City University, Ireland)
60 GHz SSB SCM QPSK Radio over Fibre System Based on a Gain Switched Distributed Feedback Laser

TuEG-8 Takuya Murakawa (Osaka University, Japan); Makoto Hasegawa (Osaka University, Japan); Tomotaka Nagashima (Osaka University, Japan); Tsuyoshi Konishi (Osaka University, Japan)
Load Mitigation of Chromatic Dispersion Estimation using WSS-Based Chirp Indicator

TuEG-9 Cheng Lei (Tsinghua University, P.R. China); Ying Yu (Tsinghua University, P.R. China); Minghua Chen (Broadband Optical Network Research Laboratory, P.R. China); Hongwei Chen (Tsinghua University, P.R. China); Sigang Yang (Tsinghua University, P.R. China); Shizhong Xie (Tsinghua University, P.R. China)
Temporally Controlled Wideband Optical Frequency Comb Generation based on Recirculating Frequency Shifting

TuEG-10 Quynh Nguyen (The University of Electro-Communications, Tokyo, Japan); Quang Nguyen-The (The University of Electro-Communications, Tokyo, Japan); Hung Nguyen Tan (AIST, Japan); Motoharu Matsuura (The University of Electro-Communications, Japan); Naoto Kishi (The University of Electro-Communications, Chofu, Tokyo, Japan)
Parametric NRZ-to-RZ Wavelength Multicasting with Pulsewidth Tunability Using Raman Amplification
Multiwavelength Pulse Compressor

TuEG-11 Pierre Buechler (Graduate School of Science and Engineering, Doshisha University, Japan); Kiyotaka Sugiyama (Doshisha University, Japan); Hiroyuki Toda (Doshisha University, Japan)
Optimization of an Optical Bandpass Filter on a Stabilized Quadruple OTDM Multiplier for RZ/CS-RZ Optical Clock

TuEG-12 Vladimir Iakovlev (EPFL, Russia); Mikhail Belkin (Moscow State Technical University MIREA, Russia); Caliman Andrei (EPFL, Switzerland); Kapon Eli (EPFL, Switzerland)
VCSEL-based Processing of Microwave Signals

TuEG-13 Ziping Zhang (Beijing University of Posts and Telecommunications, P.R. China); Ruixin Wang (Beijing University of Posts and Telecommunications, P.R. China); Yitang Dai (Beijing University of Posts and Telecommunications, P.R. China); Feifei Yin (Beijing University of Posts and Telecommunications, P.R. China); Jianqiang Li (Beijing University of Posts and Telecommunications, P.R. China); Kun Xu (Beijing University of Posts and Telecommunications, P.R. China); Jintong Lin (), Beijing University of Posts and Telecommunications, P.R. China)

Generation of high-speed, broadband optical frequency comb in actively mode-locked fiber laser based on stretch-lens effect

TuEH: Photonic techniques for microwave backhaul

TuEH-1 Atsushi Kanno (National Institute of Information and Communications Technology, Japan); Toshiaki Kuri (NICT, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan); Hiroyo Ogawa (National Institute of Information and Communications Technology & Association of Radio Industries and Businesses, Japan); Yoshihiro Imajo (Stack Electronics Co., Ltd, Japan)

High-Gain Radio-over-Fiber Uplink for Mobile Fronthaul

TuEH-2 Y Washino (Osaka Institute of Technology, Japan); Takao Mochii (Osaka Institute of Technology, Japan); Kazuo Kumamoto (Osaka Institute of Technology, Japan); Katsutoshi Tsukamoto (Osaka Institute of Technology, Japan)

Proposal of Cascaded Millimeter-wave Digital Radio-on-Radio and Radio-on-Fiber Entrance Link for Small Cell Mobile Access

TuEH-3 Hao Chen (Beijing University of Posts and Telecommunications, P.R. China); Jianqiang Li (Beijing University of Posts and Telecommunications, P.R. China); Chunjing Yin (Beijing University of Posts and Telecommunications, P.R. China); Kun Xu (Beijing University of Posts and Telecommunications, P.R. China); Yitang Dai (Beijing University of Posts and Telecommunications, P.R. China); Feifei Yin (Tsinghua University, P.R. China); Jintong Lin (Beijing University of Posts and Telecommunications, P.R. China)

Multi-Dimensional Crest Factor Reduction for Multi-Band Directly-Modulated Radio-over-Fiber Links

TuEH-4 Hwan Seok Chung (ETRI, Korea); Seung-Hyun Cho (ETRI, Korea); Changyo Han (ETRI, Korea); Sang Soo Lee (ETRI, Korea); Jyung Chan Lee (Electronics and Telecommunications Research Institute, Korea); Jong Hyun Lee (ETRI, Korea)

Design of RoF based Mobile Fronthaul Link with Multi-IF Carrier for LTE/LTE-A Signal Transmission

TuEH-5 Arsalan Saljoghei (Dublin City University, Ireland); Colm Browning (Dublin City University, Ireland); Liam Barry (Dublin City University, Ireland)

Spectral Shaping for Hybrid Wired/Wireless PON with DC Balanced Encoding

TuEH-6 Changyo Han (ETRI, Korea); Seung-Hyun Cho (ETRI, Korea); Hwan Seok Chung (ETRI, Korea); Sang Soo Lee (ETRI, Korea); Jong Hyun Lee (ETRI, Korea)

Experimental Comparison of the Multi-IF Carrier Generation Methods in IF-over-Fiber System Using LTE Signals

TuEH-7 Meisaku Suzuki (Aoyama Gakuin University, Japan); Atsushi Kanno (National Institute of Information and Communications Technology, Japan); Tetsuya Kawanishi (National Institute of Information and Communications Technology, Japan); Hideyuki Sotobayashi (Aoyama Gakuin University, Japan)

22.5-GHz-band radio-over-fiber signal transmission over fiber-wireless hybrid link using optical phase-locked loop source