

2022 Optical Fiber Communications Conference and Exhibition (OFC 2022)

**San Diego, California, USA
6 – 10 March 2022**

Pages 1-534



**IEEE Catalog Number: CFP22OFC-POD
ISBN: 978-1-6654-7012-4**

**Copyright © 2022, Optica Publishing Group
All Rights Reserved**

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP22OFC-POD
ISBN (Print-On-Demand):	978-1-6654-7012-4
ISBN (Online):	978-1-55752-466-9

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

M1A: SPECIAL SESSION: REFLECTIONS ON THE PANDEMIC SESSION I

A New Era of Video Transmission using Open Transport System: Challenges in 2020 Sporting Events.....	1
<i>Daisuke Shirai</i>	

M1B: SYMPOSIA: OPTICAL SATELLITE COMMUNICATIONS ENTERING A NEW ERA SESSION

Applicability of Space Laser Communications for Low Earth Orbit Satellite Constellations.....	4
<i>Morio Toyoshima</i>	

M1C: DSP AND BEAMFORMING FOR WIRELESS COMMUNICATIONS

Demonstration of 74.7 Gbit/s 4096QAM OFDM E-Band Wireless Delivery over 700 m Employing Advanced DSP	7
<i>Li Zhao, Bohan Sang, Junting Shi, Yuxuan Tan, Kaihui Wang, Junjie Ding, Yanyi Wang, Wen Zhou, Jianjun Yu</i>	
10 Gbps Laser Communication for Low Earth Orbit Satellites with Volterra and Machine Learning Nonlinear Compensation Providing Link Budget up to 74 dB.....	10
<i>Yi-Jun Cai, Shao-Hung Yu, Zheng-Wei Huang, Yu-Wei Wang, Pin-Hsuan Ting, Yu-Pin Lan, Chen-Joe Fang, Hsin-Chia Lin, Bor-Chwan Chen, Chun-Ting Lin</i>	
A Novel Structure Design Method of Delta-Sigma Modulator Based on Genetic Algorithm for Mobile Fronthaul.....	13
<i>Dayong Tan, Linsheng Zhong, Yang Zou, Jie Zhang, Weiqi Lu, Xiaoxiao Dai, Qi Yang, Songnian Fu, Mengfan Cheng, Lei Deng, Deming Liu</i>	
Delivery of 103.2 Gb/s 4096QAM Signal over 180m Wireless Distance at D-Band Enabled by Truncated Probabilistic Shaping and MIMO Volterra Compensation.....	16
<i>Weiping Li, Yanyi Wang, Junjie Ding, Jiakuan Liu, Kaihui Wang, Feng Wang, Chen Wang, Li Zhao, Cuiwei Liu, Wen Zhou, Jianguo Yu, Feng Zhao, Jianjun Yu</i>	
Mobile 14-GHz Bandwidth Fronthaul Link Supporting 128 RF-Chain Signals for 6G Ma-MIMO Beamforming.....	19
<i>Yu-Jen Huang, Guan-Ting Lin, Pin-Hsuan Ting, Zheng-Wei Huang, Shao-Hung Yu, Yi-Jun Cai, Chia-Chien Wei, Sien Chi, Chun-Ting Lin</i>	
Variable Focus Lens-Based Beam Steering and Divergence Control for WDM Free-Space Optical Communication	22
<i>Vuong Mai, Hoon Kim</i>	
Actively Steerable Integrated Optical Phased Array (OPA) for Optical Wireless Communication (OWC).....	25
<i>Pin-Cheng Kuo, Sheng-I Kuo, Ju-Wei Wang, Yin-He Jian, Zohauddin Ahmad, Po-Han Fu, You-Chia Chang, Jin-Wei Shi, Ding-Wei Huang, Yang Liu, Chien-Hung Yeh, Chi-Wai Chow</i>	

MID: ADVANCED COHERENT TECHNOLOGY

Role of Coherent System in the Next DCI Generation.....	28
<i>D. Tauber</i>	
Demonstration of Thin-Film Lithium Niobate High-Bandwidth Coherent Driver Modulator	31
<i>Shuntaro Makino, Shintaro Takeuchi, Shinji Maruyama, Masaharu Doi, Yasuhiro Ohmori, Yoshinobu Kubota</i>	
Development of Low-Power Coherent ASIC	34
<i>Kiran Puttegowda, Christian Lutkemeyer, Elvio Serrano, Damian Morero, Kishore Kota</i>	
Highly Power-Efficient (2 pJ/Bit), 128Gbps 16QAM Signal Generation of Coherent Optical DAC Transmitter using 28-nm CMOS Driver and All-Silicon Segmented Modulator	37
<i>Yohei Sobu, Guoxiu Huang, Toshihiko Mori, Yukito Tsunoda, Takuji Yamamoto, Shinsuke Tanaka, Takeshi Hoshida</i>	
Fast Optical Frequency Detection Techniques for Coherent Distributed Sensing and Communication Systems	40
<i>X. Steve Yao, Xiaosong Ma, Ting Feng</i>	

M1E: MULTI-CORE FIBERS AND APPLICATIONS

Uncoupled Multi-Core Fiber Design for Practical Bidirectional Optical Communications	43
<i>Tetsuya Hayashi, Takuji Nagashima, Ayumi Inoue, Hirotaka Sakuma, Takahiro Suganuma, Takemi Hasegawa</i>	
Comparison of Transfer Matrix Stability between a 110 km 7-Core Coupled-Core Multi-Core Fiber and Single-Mode Fiber	46
<i>Mikael Mazur, Nicolas K. Fontaine, Steve Corteselli, Haoshuo Chen, Lauren Dallachiesa, Tetsuya Hayashi, Hirotaka Sakuma, Takemi Hasegawa, Roland Ryf, David T. Neilson</i>	
Method of Estimating Inter-Core Crosstalk for Constructing Uncoupled Multi-Core Fiber Transmission Line	49
<i>Atsushi Nakamura, Tomokazu Oda, Yusuke Koshikiya</i>	
Simultaneously Measuring Group Delays, Chromatic Dispersion and Skews of Multicore Fibers using a Frequency Domain Method.....	52
<i>Xin Chen, Kangmei Li, Jason Hurley, Ming-Jun Li</i>	
Wideband Impulse Response Measurement of Coupled 2-Core Fibers of Various Lengths Employing Dual-Comb Coherent Sampling.....	55
<i>Masafumi Uyama, Masaki Uno, Shuki Okamura, Chao Zhang, Fumihiko Ito, Atsushi Nakamura, Tatsuya Okamoto, Yusuke Koshikiya</i>	
Quantum Communications with Space Encoding Technique	58
<i>Davide Bacco, Mujtaba Zahidy, Nicola Biagi, Daniele Cozzolino, Yaoxin Liu, Yunhong Ding, Toshio Morioka, Cristian Antonelli, Antonio Mecozzi, Alessandro Zavatta, Leif K. Oxenlowe</i>	

M1F: INNOVATIONS FOR SUBSEA NETWORKS

Modern Subsea Cable Systems: Towards Ultimate Cable Capacity	61
<i>Mei Du</i>	

SDM Enabled Record Field Trial Achieving 300+ Tbps Trans-Atlantic Transmission Capacity.....	100
<i>Siddharth Varughese, Sumudu Edirisinghe, Marc Stephens, Buen Boyanov, Pierre Mertz</i>	
200 μ m Diameter Fiber for SDM Submarine Networks: Cabling Performance and Record Transmission Result	103
<i>Takanori Inoue, Kohei Nakamura, Yuushi Matsuo, Fatih Yaman, Sergejs Makovejs, Jennifer T. Prater, Juan Carlos Aquino, Daishi Masuda, Yoshihisa Inada, Eduardo Mateo</i>	
Agile Subsea Networks	106
<i>Lara D. Garrett</i>	

M1G: PHOTONIC NEUROMORPHIC COMPUTING

WDM-Conscious Synaptic Receptor Assisted by SOA+EAM	109
<i>Margareta V. Stephanie, Michael Waltl, Tibor Grasser, Bernhard Schrenk</i>	
Experimental Demonstration of an Extreme Learning Machine Based on Fabry Perot Lasers for Parallel Neuromorphic Processing	112
<i>George Sarantoglou, Kostas Sozos, Thomas Kamalakis, Charis Mesaritakis, Adonis Bogris</i>	
Photonic Neuromorphic Computing: Architectures, Technologies, and Training Models.....	115
<i>Miltiadis Moralas-Pegios, Angelina Totovic, Apostolos Tsakyridis, George Giamougiannis, George Mourgias-Alexandris, George Dabos, Nikolaos Passalis, Manos Kirtas, Anastasios Tefas, Nikos Pleros</i>	

M1H: ADVANCED DIGITAL SIGNAL PROCESSING FOR COHERENT SYSTEM

Neural Network-Based Fiber Nonlinearity Mitigation in High-Speed Coherent Optical Transmission Systems	118
<i>Fan Zhang, Xiansong Fang, Xinyu Chen</i>	
4-Dimensional IQ Characteristic Estimation for Polarization-Multiplexed Coherent Transceivers.....	121
<i>Akira Kawai, Masanori Nakamura, Takayuki Kobayashi, Yutaka Miyamoto</i>	
Efficient Training of Volterra Series-Based Pre-Distortion Filter using Neural Networks	124
<i>Vinod Bajaj, Mathieu Chagnon, Sander Wahls, Vahid Aref</i>	
Optical Polarization-Based Sensing and Localization of Submarine Earthquakes.....	127
<i>Jorge C. Castellanos, Zhongwen Zhan, Valey Kamalov, Mattia Cantono, Shuang Yin, Antonio Mecozzi, Shirshendu Bhattacharya, Richard M. Allen</i>	
Mitigation of Transmitter Impairment with 4 \times 2 WL MIMO Equalizer Embedding Preliminary CPR	130
<i>Masaki Sato, Manabu Arikawa, Hidemi Noguchi, Junichiro Matsui, Junaichi Abe, Emmanuel Le Taillandier De Gabory</i>	
Real-Time In-Field Automatic Bias Control and Self-Calibration Module for High-Baud Coherent Driver Modulator.....	133
<i>Hongyu Li, Yu Yang, Yuanxiang Wang, Mengfan Cheng, Qi Yang, Ming Tang, Deming Liu, Lei Deng</i>	

M1I: OPTICAL LOGIC AND MEMORY

16-Bit (4 \times 4) Optical Random Access Memory (RAM) Bank	136
<i>Christos Pappas, Theodoros Moschos, Theoni Alexoudi, Christos Vagionas, Nikos Pleros</i>	

Optical Content Addressable Memory Matchline and RAM Table Encoding/Decoding using an Integrated CAM Cell	139
<i>T. Moschos, S. Simos, C. Pappas, T. Alexoudi, C. Vagionas, N. Pleros</i>	
Scalable and Fast Optical Circuit Switch Exploiting Colorless Coherent Detection.....	142
<i>Ryosuke Matsumoto, Ryotaro Konoike, Keijiro Suzuki, Takashi Inoue, Shu Namiki, Ken-Ichi Sato</i>	
Flexible and Transparent Optical Labelling in Coherent Optical Wavelength Division Multiplexing Networks	145
<i>Chao Yang, Ming Luo, Zhixue He, Xi Xiao</i>	
Frequency Comb and Injection Locking Based Mutual Protections in Coherent Optical Access Network.....	148
<i>Haipeng Zhang, Mu Xu, Zhensheng Jia, Luis Alberto Campos</i>	
Photonic Integrated Unitary Processor Based on Multi-Plane Light Conversion.....	151
<i>Takuo Tanemura, Rui Tang, Ryota Tanomura, Yoshiaki Nakano</i>	

M2C: LONG-HAUL TRANSMISSION

The Next Decade of Optical Fibers: Implications on System Design	154
<i>Sergei Makovejs</i>	
Analysis of Impact of Polarization Dependent Loss in Point to Multi-Point Subsea Communication Systems.....	185
<i>Kaoutar Benyahya, Christian Simonneau, Amirhossein Ghazisaeidi, Philippe Plantady, Alexis Carbo Meseguer, Alain Calsat, Haik Mardoyan, Vincent Letellier, Jeremie Renaudier</i>	
Capacity Maximization of Power-Constrained Submarine Systems	188
<i>A. Bononi, J. Tiburcio De Araujo, C. Lasagni, P. Serena, J. C. Antona</i>	
Hollow-Core Fiber Capacities with Receiver Noise Limitations	191
<i>Werner Klaus, Peter J. Winzer</i>	

M2D: HIGH-SPEED ELECTRONICS AND PHOTONICS

A 106 Gb/s 2.5 V _{ppd} Linear Microring Modulator Driver with Integrated Photocurrent Sensor in 28nm CMOS.....	194
<i>Hao Li, Meer Nazmus Sakib, Duanni Huang, Ranjeet Kumar, Haisheng Rong, Ganesh Balamurugan, James Jaussi</i>	
A Low-Power, 128-Gbit/s, DC-Coupled Linear Driver IC for Electro-Absorption Modulated DFB Laser.....	197
<i>Taichi Misawa, Yoshiyuki Sugimoto, Keiji Tanaka</i>	
180 GBd Electronic-Plasmonic IC Transmitter.....	200
<i>David Moor, Yuriy Fedoryshyn, Henning Langenhagen, Jens Mullrich, Rolf Schmid, Christopher Uhl, Michael Moller, Ueli Koch, Yannik Horst, Bertold I. Bitachon, Wolfgang Heni, Benedikt Baeuerle, Marcel Destraz, Huajun Xu, Delwin L. Elder, Lewis E. Johnson, Paraskevas Bakopoulos, Elad Mentovich, Lars Zimmermann, Juerg Leuthold</i>	
A 240 Gb/s PAM4 Silicon Micro-Ring Optical Modulator.....	203
<i>Meer Sakib, Ranjeet Kumar, Chaoxuan Ma, Duanni Huang, Xinru Wu, Guan-Lin Su, Haisheng Rong</i>	

High Performance Thin-Film Lithium Niobate MZ Modulator Ready for Massive Production.....	206
<i>Heng Li, Quanan Chen, Ye Liu, Yongqian Tang, Qiaoyin Lu, Mingzhi Lu, Weihua Guo</i>	
Ultra Compact Athermal 400G-FR4 Silicon Photonics Receiver with Polarization Diversity	209
<i>Atsunobu Ohta, Dogan A. Atlas, Erman Timurdogan, Skylar Deckoff-Jones, Mike R. Watts, Michihiro Komoto, Hironori Honda, Naoto Yoshimoto</i>	
800 Gbps Fully Integrated Silicon Photonics Transmitter for Data Center Applications.....	212
<i>Haijiang Yu, David Patel, Wei Liu, Yann Malinge, Pierre Doussiere, Wenhua Lin, Sanjeev Gupta, Karthik Narayanan, Isako Hoshino, Michael Bresnehan, Sravan Sunkoju, Davide Mantegazza, Robert Herrick, Ranju Venables, Hari Mahalingam, Pegah Seddighian, Avi Fuerst, Jordan Davis, David Gold, Xing Pan, Kadhair Al-Hemyari, Ankur Agrawal, Yi Li, Xueyan Zheng, Mala Geethachar, Michael Favaro, Daniel Zhu, Ansheng Liu, Yuliya Akulova</i>	
Low-Loss Wafer-Bonded Silicon Photonic MEMS Switches.....	215
<i>Amirmahdi Honardoost, Johannes Henriksson, Kyungmok Kwon, Jianheng Luo, Ming C. Wu</i>	

M2E: NOVEL APPLICATIONS OF PASSIVE PHOTONIC CIRCUITS

Integrated Optical Phased Arrays for Augmented Reality, LiDAR, and Beyond.....	218
<i>Jelena Notaros</i>	
Wide-Field-of-View Perovskite Quantum-Dots Fibers Array for Easing Pointing, Acquisition and Tracking in Underwater Wireless Optical Communication.....	220
<i>Chun Hong Kang, Omar Alkhazragi, Lutfan Sinatra, Sultan Alshaibani, Yue Wang, Kuang-Hui Li, Meiwei Kong, Marat Lutfullin, Osman M. Bakr, Tien Khee Ng, Boon S. Ooi</i>	
Light-Induced Thermomagnetic Recording of Ferromagnetic Thin-Film on Silicon Waveguide for Solid-State Magneto-Optical Memory	223
<i>Toshiya Murai, Yuya Shoji, Tetsuya Mizumoto</i>	
Photonic Tensor Core with Photonic Compute-in-Memory.....	226
<i>Xiaoxuan Ma, Jiawei Meng, Nicola Peserico, Mario Miscuglio, Yifei Zhang, Juejun Hu, Volker J. Sorger</i>	
Comparison of Al ₂ O ₃ and HfO ₂ MOSCAP III-V/Si Power Splitters and (De-) Interleavers for DWDM Optical Links	229
<i>Stanley Cheung, Geza Kurczveil, Yingtao Hu, Yuan Yuan, Bassem Tousson, Yiwei Peng, Mingye Fu, Di Liang, Raymond G. Beausoleil</i>	

M2F: SENSING ON FIBER-OPTIC NETWORKS

Optical Network Sensing: Opportunities and Challenges	232
<i>Mattia Cantono, Jorge C. Castellanos, Shirshendu Bathacharya, Shuang Yin, Zhongwen Zhan, Antonio Mecozzi, Valey Kamalov</i>	
Transoceanic Phase and Polarization Fiber Sensing using Real-Time Coherent Transceiver.....	236
<i>M. Mazur, J. C. Castellanos, R. Ryf, E. Borjeson, T. Chodkiewicz, V. Kamalov, S. Yin, N. K. Fontaine, H. Chen, L. Dallachiesa, S. Corteselli, P. Copping, J. Gripp, A. Mortelette, B. Kowalski, R. Dellinger, D. T. Neilson, P. Larsson-Edefors</i>	
Vibration Detection and Localization in Buried Fiber Cable after 80km of SSMF using Digital Coherent Sensing System with Co-Propagating 600Gb/s WDM Channels.....	239
<i>Sterenn Guerrier, Kaoutar Benyahya, Christian Dorize, Elie Awwad, Haik Mardoyan, Jeremie Renaudier</i>	

Microwave Frequency Dissemination Systems as Sensitive and Low-Cost Interferometers for Earthquake Detection on Commercially Deployed Fiber Cables	242
<i>Adonis Bogris, Christos Simos, Iraklis Simos, Thomas Nikas, Nikolaos S. Melis, Konstantinos Lentas, Charis Mesaritakis, Ioannis Chochliouros, Christina Lessi</i>	
Perimeter Intrusion Detection with Backscattering Enhanced Fiber using Telecom Cables as Sensing Backhaul	245
<i>Glenn A. Wellbrock, Tiejun J. Xia, Ming-Fang Huang, Jian Fang, Yuheng Chen, Chaitanya Narisetty, Daniel Peterson, James M. Moore, Annabelle Scarpaci, Paul Westbrook, Jie Li, Robert Lingle, Ting Wang, Yoshiaki Aono</i>	
Advanced Fiber Sensing Leveraging Coherent Systems Technology for Smart Network Monitoring	248
<i>Christian Dorize, Sterenn Guerrier, Elie Awwad, Kaoutar Benyahya, Haik Mardoyan, Jeremie Renaudier</i>	

M2G: PROGRAMMABLE AND INTELLIGENT PHOTONIC INFORMATION PROCESSORS

Self-Configuring Programmable Photonics for Processing, Communications and Sensing	251
<i>David A. B. Miller</i>	
Digital-Analog Co-Design for Precision Compressed Integrated Photonic Convolution Neural Network	282
<i>Yue Jiang, Wenjia Zhang, Zuyuan He</i>	
CHAMP: Coherent Hardware-Aware Magnitude Pruning of Integrated Photonic Neural Networks	285
<i>Sanmitra Banerjee, Mahdi Nikdast, Sudeep Pasricha, Krishnendu Chakrabarty</i>	
Solving Vertex Cover Problem using Quadrature Photonic Spatial Ising Machine	288
<i>Wenchen Sun, Wenjia Zhang, Yuanyuan Liu, Qingwen Liu, Zuyuan He</i>	
Comparison of Models for Training Optical Matrix Multipliers in Neuromorphic PICs	291
<i>A. Cem, S. Yan, U. C. De Moura, Y. Ding, D. Zibar, F. Da Ros</i>	

M2H: ADVANCED DIGITAL SIGNAL PROCESSING FOR DIRECT DETECTION SYSTEM

Partial Response O-Band EML Transmission beyond 300-GBd with a 128/256 GSa/s DAC	294
<i>Md Sabbir-Bin Hossain, Talha Rahman, Nebojsa Stojanovic, Fabio Pittala, Stefano Calabro, Georg Bocherer, Tom Wettlin, Jinlong Wei, Changsong Xie, Maxim Kuschnerov, Stephan Pachnicke</i>	
Real-Time Feedforward Clock Recovery for Optical Burst-Mode Transmission	297
<i>Patrick Matalla, Md Salek Mahmud, Christoph Fullner, Wolfgang Freude, Christian Koos, Sebastian Randel</i>	
Single-Span IM/DD Transmission over 120-km SMF with a Silicon Photonic Mach-Zehnder Modulator and THP	300
<i>Jingchi Li, Zhen Wang, Xingfeng Li, Yikai Su</i>	
Simplified TC-MLSE Equalizer for 210-Gb/s PAM-8 Signal Transmission in IM/DD Systems	303
<i>Jiahao Zhou, Jing Zhang, Xue Zhao, Wenshan Jiang, Shaohua Hu, Mingyue Zhu, Kun Qiu</i>	

112-Gb/s PAM-4 IM/DD Optical Transmission over 100-km Single Mode Fiber with Linear Equalizer.....	306
<i>Shaohua Hu, Jing Zhang, Jianming Tang, Qun Liu, Wei Jin, Zhuqiang Zhong, Roger Giddings, Jiahao Zhou, Taowei Jin, Xue Zhao, Bo Xu, Xiang Gao, Kun Qiu</i>	
Low-Complexity and Non-Iterative SSBI Decomposition and Cancellation Algorithm for SSB Direct Detection System.....	309
<i>Qi Wu, Yixiao Zhu, Weisheng Hu</i>	

M2I: OPTICAL SIGNAL PROCESSING

Slice-Less Optical Arbitrary Waveform Measurement (OAWM) in a Bandwidth of More than 600 GHz	312
<i>Daniel Drayss, Dengyang Fang, Christoph Fullner, Grigori Likhachev, Thomas Henauer, Yung Chen, Huanfa Peng, Pablo Marin-Palomo, Thomas Zwick, Wolfgang Freude, Tobias J. Kippenberg, Sebastian Randel, Christian Koos</i>	
200 GBd 16QAM Signals Synthesized by an Actively Phase-Stabilized Optical Arbitrary Waveform Generator (OAWG).....	315
<i>Thomas Henauer, Alban Sherifaj, Christoph Fullner, Wolfgang Freude, Sebastian Randel, Thomas Zwick, Christian Koos</i>	
Frequency-Time-Division-Multiplexed Single-Pixel Imaging for Biomedical Applications.....	318
<i>Hideharu Mikami</i>	
Propagation Symmetry Enhanced Distortion Compensation by Optical Phase Conjugation via Step-Profiling Fiber Links	321
<i>Mark Pelusi, Ryosuke Matsumoto, Takashi Inoue, Shu Namiki</i>	
64-Channel WDM Transmitter Based on Optical Fourier Transformation using a Portable Time Lens Assembly	324
<i>Mads Lillieholm, Michael Galili, Leif K. Oxenlowe, Pengyu Guan</i>	
Simultaneously Calibration of Tx/Rx Frequency Response and IQ Skew for Coherent Optical Transceiver	327
<i>Longquan Dai, Hongyu Li, Mengfan Cheng, Qi Yang, Ming Tang, Deming Liu, Lei Deng</i>	

M3A: SYMPOSIA: MULTIAccess NETWORK LEVERAGING EDGE COMPUTING FOR ENERGY EFFICIENT, ULTRA-RELIABLE, AND LOW LATENCY SERVICES SESSION I

SLA-Aware Real Time Control Technology across Optical and Mobile Networks.....	330
<i>Hiroshi Ou, Kota Asaka, Tatsuya Shimada, Tomoaki Yoshida</i>	

M3C: TOWARDS THZ COMMUNICATIONS

Liquid Crystal Control of Plasmonic Nanoantenna Arrays	333
<i>Jaime Gomez Rivas, Erik A. P. Van Heijst</i>	
Demonstration of Real-Time 125.516 Gbit/s Transparent Fiber-THz-Fiber Link Transmission at 360 GHz ~ 430 GHz Based on Photonic Down-Conversion	336
<i>Jiao Zhang, Min Zhu, Mingzheng Lei, Bingchang Hua, Yuancheng Cai, Yucong Zou, Liang Tian, Aijie Li, Yongming Huang, Jianjun Yu, Xiaohu You</i>	

104-m Terahertz-Wave Wireless Transmission Employing 124.8-Gbit/s PS-256QAM Signal.....	339
<i>Junjie Ding, Weiping Li, Yanyi Wang, Jiao Zhang, Feng Wang, Chen Wang, Jiakuan Liu, Kaihui Wang, Li Zhao, Cuiwei Liu, Miao Kong, Wen Zhou, Min Zhu, Jianguo Yu, Feng Zhao, Jianjun Yu</i>	
Implementation of Digital Chaotic Encryption in THz Wireless Communication	342
<i>Feng Wang, Bowen Zhu, Cuiwei Liu, Kaihui Wang, Jiao Zhang, Junjie Ding, Junting Shi, Chen Wang, Li Zhao, Miao Kong, Yanyi Wang, Wen Zhou, Min Zhu, Jianguo Yu, Feng Zhao, Jianjun Yu</i>	
A Bi-Directional Fiber-FSO-5G MMW/5G NR Sub-THz Converged System	345
<i>Poh-Suan Chang, Chen-Xuan Liu, Yan-Yu Lin, Chung-Yi Li, Hai-Han Lu</i>	
THz Transport Technologies and Strategists beyond 5G/6G Systems	348
<i>Hiroshi Okazaki, Yasunori Suzuki, Satoshi Suyama, Takahiro Asai</i>	

M3D: HIGH-SPEED SEMICONDUCTOR LASERS

Over-67-GHz-Bandwidth Membrane InGaAlAs EADFB Laser on Si Platform.....	351
<i>Tatsuro Hiraki, Takuma Aihara, Yoshiho Maeda, Takuro Fujii, Tomonari Sato, Tai Tsuchizawa, Kiyoto Takahata, Takaaki Kakitsuka, Shinji Matsuo</i>	
1060nm Single-Mode Transverse Coupled Cavity VCSEL with Surface Relief Engineering for 80Gbps PAM4 Modulation	354
<i>Shanting Hu, Xiaodong Gu, Hameeda R. Ibrahim, Masanori Nakahama, Satoshi Shinada, Fumio Koyama</i>	
Uncooled 100 GBd O-Band EML for Datacom Transmitter Arrays.....	357
<i>Ute Troppenz, Michael Theurer, Martin Moehrle, Ariane Sigmund, Marko Gruner, Martin Schell</i>	
Regrowth-Free 1.3 μ m Directly Modulated DBR Lasers Based on Inverted Trapezoid High-Order Surface-Gratings.....	360
<i>Wei Sun, Shuangzhi Wei, Qiaoyin Lu, John F. Donegan, Weihua Guo</i>	

M3E: COMPONENT OPTIMIZATION

Automatic Waveguide Balancing using Point Set Operations	363
<i>Won Suk Lee, Yusheng Bian, Thomas Weeks, Michal Rakowski, Francis O. Afzal, Takako Hirokawa, Asif Chowdhury, Rod Augur, Jae Gon Lee, Alexander Martin, Ken Giewont</i>	
Reflectionless Standing-Wave Operation in Microring Resonators	366
<i>Kenaish Al Qubaisi, Dorde Gluhovic, Deniz Onural, Milos A. Popovic</i>	
High-Speed Performance of 140 cm-Long Flexible Multimode Polymer Waveguides Link Supporting 1 mm-Radius Bend	369
<i>Ying Shi, Lin Ma, Motoya Kaneta, Yudi Zhuang, Zuyuan He</i>	
Fast-Response, Energy-Efficient Thermo-Optic Silicon Phase Shifter Based on Non-Hermitian Engineering	372
<i>Chang Chang, Ting Li, Yulin Wu, Peiji Zhou, Yi Zou</i>	

M3F: MACHINE LEARNING FOR NETWORK

On the Robustness of a ML-Based Method for QoT Tool Parameter Refinement in Partially Loaded Networks	375
<i>Nathalie Morette, Ivan Fernandez De Jauregui Ruiz, Hartmut Hafermann, Yvan Pointurier</i>	
Addressing Traffic Prediction Uncertainty in Multi-Period Planning Optical Networks.....	378
<i>Tania Panayiotou, Georgios Ellinas</i>	
ADMIRE: Demonstration of Collaborative Data-Driven and Model-Driven Intelligent Routing Engine for IP/Optical Cross-Layer Optimization in X-Haul Networks.....	381
<i>Zhuo Chen, Jiawei Zhang, Bojun Zhang, Ruikun Wang, Huangxu Ma, Yuefeng Ji</i>	
On the Application of Explainable Artificial Intelligence to Lightpath QoT Estimation.....	384
<i>Omran Ayoub, Andrea Bianco, Davide Andreoletti, Sebastian Troia, Silvia Giordano, Cristina Rottondi</i>	

M3G: NEXT-GEN HIGH-SPEED PON I: ADVANCED DSP

DSP Enabled Next Generation Flexible PON for 50G and Beyond.....	387
<i>Borui Li, Derek Nasset, Dekun Liu, Zhicheng Ye, Liangchuan Li</i>	
Real-Time 58,2Gb/s Equalization-Free NRZ Mode Burst Transmission for Upstream HS-PON and beyond with Monolithically Integrated SOA-UTC Receiver	390
<i>Gael Simon, Jeremy Potet, Fabienne Saliou, Philippe Chanclou, Fabrice Blache, Philippe Charbonnier, Bernadette Duval, Christophe Caillaud, Franck Mallecot</i>	
50Gb/s Real-Time Transmissions with Upstream Burst-Mode for 50G-PON using a Common SOA Pre-Amplifier/Booster at the OLT.....	393
<i>Gael Simon, Fabienne Saliou, Jeremy Potet, Philippe Chanclou, Ricardo Rosales, Ivan N. Cano, Derek Nasset</i>	
Architectures and Key DSP Techniques of Next Generation Passive Optical Network (PON).....	396
<i>Fan Li, Zhibin Luo, Mingzhu Yin, Xiaowu Wang, Zhaohui Li</i>	
Flexible Upstream FEC for Higher Throughput, Efficiency, and Robustness for 50G PON	399
<i>Amitkumar Mahadevan, Yannick Lefevre, Ed Harstead, Werner Van Hoof, Doutje Van Veen, Vincent Houtsma</i>	
>87% Complexity Reduction at 25-GS/s, 50-Gbps and 30-dB Loss Budget LR-OFDM PON using Digital Predistortion	402
<i>Hong-Minh Nguyen, Chia-Chien Wei, Chun-Yen Chuang, Jyehong Chen</i>	

M3H: ULTRA-HIGH BAUD RATE SYSTEMS

High Information Rate of 128-GBaud 1.8-Tb/s and 64-GBaud 1.03-Tb/s Signal Generation and Detection using Frequency-Domain 8×2 MIMO Equalization	405
<i>M. Nakamura, T. Kobayashi, F. Hamaoka, Y. Miyamoto</i>	
Experimental Investigation of Influence of SOA-Induced Nonlinear Distortion on High-Symbol-Rate 168-GBaud Signal for Achieving Ultra-Broadband Optical Frontend.....	408
<i>F. Hamaoka, M. Nakamura, T. Kobayashi, M. Nagatani, H. Wakita, H. Yamazaki, Y. Ogiso, Y. Miyamoto</i>	

Demonstration of 120-GBaud 16-QAM Driver-Less Coherent Transmitter with 80-km SSMF Transmission	411
<i>Xi Chen, Prashanta Kharel, Greg Raybon, Di Che, Christian Reimer, Kevin Luke, Mian Zhang</i>	
OSNR-Aware Digital Pre-Emphasis for High Baudrate Coherent Optical Transmissions	414
<i>Son Thai Le, Junho Cho</i>	
Generation and Detection of 200-GBaud Signals via Electrical Multiplexing	417
<i>Xi Chen</i>	
FrFT Based Joint Time/Frequency Synchronization for Digital Subcarrier Multiplexing System.....	420
<i>Zihe Hu, Li Wang, Junda Chen, Yizhao Chen, Can Zhao, Weihao Li, Ming Tang</i>	

M3I: QUANTUM AND NEURAL NETWORKS

Self-Tuning Quantum Key Distribution Transmitter Based on a Genetic Algorithm	423
<i>Y. S. Lo, R. I. Woodward, T. Roger, V. Lovic, Z. L. Yuan, A. J. Shields</i>	
Demonstration of an Algorithm for Quantum State Generation in Polarization-Encoding QKD Systems.....	426
<i>S. T. Mantey, M. F. Ramos, N. A. Silva, A. N. Pinto, N. J. Muga</i>	
A Continuous Variable Quantum Microcomb with 2.1 dB Raw Squeezing	429
<i>Mandana Jahanbozorgi, Zijiao Yang, Dongin Jeong, Shuman Sun, Olivier Pfister, Hansuek Lee, Xu Yi</i>	
Time-Bin Quantum Key Distribution Exploiting the iPOGNAC Polarization Moulator and Qubit4Sync Temporal Synchronization	432
<i>Costantino Agnesi, Davide Scalcon, Marco Avesani, Luca Calderaro, Giulio Foletto, Andrea Stanco, Giuseppe Vallone, Paolo Villoresi</i>	

M3Z: OFC DEMO ZONE

A Fibre Bragg Grating Sensor-Based Instrumented Glove for Virtual Rehabilitation Applications.....	435
<i>Chandan Kumar Jha, Arup Lal Chakraborty</i>	
qTRex: A Semi-Autonomous Continuous-Variable Quantum Key Distribution System.....	438
<i>Nitin Jain, Hou-Man Chin, Hossein Mani, Erik Bidstrup, Ulrik L. Andersen, Tobias Gehring</i>	
Kubernetes Orchestration in SDN-Based Edge Network Infrastructure.....	441
<i>Alessio Giorgetti, Davide Scano, Javad Chamanara, Mustafa Albado, Edgard Marx, Sean Ahearne, Andrea Sgambelluri, Francesco Paolucci, Filippo Cugini</i>	
Proof-of-Concept Demonstration of Time Critical Periodic Traffic in Industry-Grade Passive Optical Networks.....	444
<i>K. Christodouloupoulos, S. Bidkar, Th. Pfeiffer, R. Bonk</i>	
Demonstration of a Resilient and Quantum-Secured Time-Shared Optical Network with Multi-Level Programmability	447
<i>R. D. Oliveira, E. Arabul, R. Wang, G. T. Kanellos, R. Nejabati, D. Simeonidou</i>	

Optical Field Characterization using Off-Axis Digital Holography	450
<i>Sjoerd Van Der Heide, Bram Van Esch, Menno Van Den Hout, Thomas Bradley, Amado M. Velazquez-Benitez, Nicolas K. Fontaine, Roland Ryf, Haoshuo Chen, Mikael Mazur, Jose Enrique Antonio-Lopez, Juan Carlos Alvarado-Zacarias, Rodrigo Amezcua-Correa, Chigo Okonkwo</i>	
Demonstration of a Low Latency Bandwidth Allocation Mechanism for Mission Critical Applications in Virtual PONs with P4 Programmable Hardware.....	453
<i>Diego Rossi Mafioletti, Frank Slyne, Robin Giller, Michael Oahanlon, David Coyle, Brendan Ryan, Marco Ruffini</i>	
Using Network Operations Platform and Orchestrator to Enhance Programmable OpenROADM Optical Networks.....	456
<i>Nathan Ellsworth, Behzad Mirkhanzadeh, Tianliang Zhang, Miguel Razo, Andrea Fumagalli</i>	
6G Oriented 100 GbE Real-Time Demonstration of Fiber-THz-Fiber Seamless Communication Enabled by Photonics	459
<i>Jiao Zhang, Min Zhu, Bingchang Hua, Mingzheng Lei, Yuancheng Cai, Yucong Zou, Liang Tian, Aijie Li, Yongming Huang, Jianjun Yu, Xiaohu You</i>	
Interactive Visual Analytics Dashboard for the Paradigm of ML-Assisted Autonomous Optical Networking.....	462
<i>Behnam Shariati, Wanda Baltzer, Geronimo Bergk, Pooyan Safari, Johannes Karl Fischer</i>	
DeepALM: Holistic Optical Network Monitoring Based on Machine Learning.....	465
<i>Joo Yeon Cho, Jose-Juan Pedreno-Manresa, Sai Patri, Khoulood Abdelli, Carsten Tropschug, Jim Zou, Piotr Rydlichowski</i>	
Demonstration of Real-Time Photonics-Assisted mm-Wave Communication Based on Ka-Band Large-Scale Phasedarray Antenna and Automatic Beam Tracking Technique	468
<i>Yuancheng Cai, Min Zhu, Sheng Liang, Jiao Zhang, Mingzheng Lei, Bingchang Hua, Pengyuan Wang, Liang Tian, Yucong Zou, Aijie Li, Yongming Huang, Jianjun Yu, Xiaohu You</i>	
LYNX: A GNPY-Based Web Application for Multi-Vendor Optical Network Planning	471
<i>Mohammad Saad Raza, Andrea Daamico, Fehmida Usmani, Sami Mansoor Alavi, Muhammad Ali Taimoor, Vittorio Curri, Arsalan Ahmad</i>	
Demonstration of AI-Light: An Automation Framework to Optimize the Channel Powers Leveraging a Digital Twin.....	474
<i>Alessio Ferrari, Venkata Virajit Garbhapu, Dylan Le Gac, Ivan Fernandez De Jauregui Ruiz, Gabriel Charlet, Yvan Pointurier</i>	
Demonstration of Zero-Touch Device and L3-VPN Service Management using the TeraFlow Cloud-Native SDN Controller	477
<i>Ll. Gifre, C. Natalino, S. Gonzalez-Diaz, F. Soldatos, S. Barguil, C. Aslanoglou, F. J. Moreno-Muro, A. N. Quispe Cornelio, L. Cepeda, R. Martinez, C. Manso, V. Apostolopoulos, S. Petteri Valiviita, O. Gonzalez De Dios, J. Rodriguez, R. Casellas, P. Monti, G. P. Katsikas, R. Munoz, R. Vilalta</i>	
Autonomous Pulse Control for Quantum Transducers with Deep Reinforcement Learning.....	480
<i>Mekena Metcalf, Huo Chen, Anastasiia Butko, Mariam Kiran</i>	

M4A: SYMPOSIA: MULTI-ACCESS NETWORK LEVERAGING EDGE COMPUTING FOR ENERGY EFFICIENT, ULTRA-RELIABLE, AND LOW LATENCY SERVICES SESSION II

- Exploration and Practice of Computing Power Network(CPN) to Realize Convergence of Computing and Network 482
Bo Lei, Gefan Zhou
- Energy Efficiency in Multi-Access Technologies with a Disaggregated Architecture 485
Dominique Chiaroni, Raffaele Luca Amalfi

M4B: SDM TRANSMISSION

- First Demonstration of Uncoupled 4-Core Multicore Fiber in a Submarine Cable Prototype with Integrated Multicore EDFA..... 488
Hitoshi Takeshita, Kohei Nakamura, Yuushi Matsuo, Takanori Inoue, Daishi Masuda, Tetsuya Hiwatashi, Kohei Hosokawa, Yoshihisa Inada, Emmanuel Le Taillandier De Gabory
- High-Capacity Mode Division Multiplexing Transmission Technology 491
Daiki Soma, Shohei Beppu, Noboru Yoshikane, Takehiro Tsuritani
- 372 Tb/s Unrepeated 213 km Transmission over a 125 μm Cladding Diameter, 4-Core MCF 494
Ruben S. Luis, Benjamin J. Puttnam, Georg Rademacher, Yoshinari Awaji, Hideaki Furukawa
- 3-Mode Real-Time MDM Transmission using Single-Mode OTN Transceivers over 300 km Weakly-Coupled FMF..... 497
Mingqing Zuo, Dawei Ge, Yuyang Gao, Jian Cui, Shuailuo Huang, Rui Zhou, Qiang Guo, Yin Zhang, Ding Zhang, Xinhua Xiao, Lei Shen, Dong Wang, Yunbo Li, Liuyan Han, Lei Zhang, Xiaobo Lan, Dechao Zhang, Han Li, Yongqi He, Zhangyuan Chen, Juhao Li
- Novel Mirror-Flipped Mode Permutation Technique for Long-Haul Mode-Division Multiplexing Transmissions..... 500
Yanze Wang, Tianyu Gao, Yaping Liu, Tao Xu, Wenbo Yu, Zhiqun Yang, Qiang Guo, Rui Zhou, Shiyi Cao, Xinhua Xiao, Lin Zhang

M4D: SEMICONDUCTOR LASERS

- 1.5- μm Indium Phosphide-Based Quantum Dot Lasers and Optical Amplifiers..... 503
Sven Bauer, Vitalii Sichkovskiy, Ori Eyal, Tali Septon, Annette Becker, Igor Khanonkin, Gadi Eisenstein, Johann Peter Reithmaier
- Single-Mode Emission from a Topological Lattice with Distributed Gain and Dielectric Medium 506
M. Scherrer, S. Kim, H. Choi, H. Schmid, C. W. Lee, K. E. Moselund
- Over 100 mW Uncooled Operation of SOA-Integrated 1.3- μm Highly Reliable CW-DFB Laser 509
Shoko Yokokawa, Atsushi Nakamura, Shigetaka Hamada, Ryosuke Nakajima, Kaoru Okamoto, Masatoshi Arasawa, Kouji Nakahara, Shigehisa Tanaka
- III-V Micro/Nano-Lasers and Photodetectors in the Telecom Band Grown on SOI..... 512
Kei May Lau, Ying Xue, Yu Han, Zhao Yan
- Electrically Pumped High Power Laser Transmitter Integrated on Thin-Film Lithium Niobate 515
Amirhassan Shams-Ansari, Dylan Renaud, Rebecca Cheng, Linbo Shao, Lingyan He, Di Zhu, Mengjie Yu, Hannah R. Grant, Leif Johansson, Mian Zhang, Marko Loncar

M4E: SPECIALTY FIBERS, CABLES AND CONNECTORS

Reduced Coating Diameter Fibers for High Density Cables	517
<i>Ming-Jun Li, Arash Abedijaberi, Weijun Niu, Eric E. Leonhardt, Donald A. Clark, Garth W. Scannell, Matthew R. Drake, Jeffery S. Stone, Joseph E. McCarthy, Arthur L. Wallace, Huayun Deng, Linda S. Baker, Hector M. De Pedro, Brian A. Kent, Yunfeng Gu</i>	
Reduced-Coated Fibers and Micro-Duct Cables	520
<i>P. Sillard, A. Amezcua-Correa, C. Mentzler, G. Ferri</i>	
Comparison of Different Deformation Functions Modeling Micro-Bending Loss of Optical Fibers on Sandpaper Test	523
<i>Zoltan Varallyay, Tamas Mihalfy, Kazunori Mukasa</i>	
Side-View Rotational Alignment Method for Trench-Assisted 4-Core Fibers	526
<i>Masaki Ohzeki, Yusuke Sasaki, Katsuhiro Takenaga, Kentaro Ichii, Kazuhiko Aikawa</i>	
No-Polish Air-Gap Single-Mode Low-Loss Multi-Fiber Anti-Reflection Coated Connector.....	529
<i>K. K. Wojewoda, I. A. Radice, M. O. D. Kearney, U. Thapa, I. J. Murgatroyd</i>	
Stripping-Free Direct Fiber Insertion Connectors using Thin-Coated Optical Fibers	532
<i>Jie Liu, Randy McClure, Qi Wu, Weijun Niu, Matthew R. Drake, Joseph E. McCarthy, Jeffery S. Stone, Yunfeng Gu, Ming-Jun Li</i>	
Low-Loss Mode Field Adapter using Reverse Tapering for Fundamental Mode Transmission over MMFs.....	535
<i>Linbo Yang, Zhiqun Yang, Tao Xu, Lijie Hou, Rui Zhou, Lin Gan, Shiyi Cao, Xinhua Xiao, Lin Zhang</i>	

M4F: OPEN NETWORKING AND STREAMING TELEMETRY

Dynamic Reconfiguration of WDM Virtual Network Topology over SDM Networks for Spatial Channel Failure Recovery with gRPC Telemetry	538
<i>Raul Munoz, Carlos Manso, Filippos Balasis, Ramon Casellas, Ricard Vilalta, Ricardo Martinez, Cen Wang, Noboru Yoshikane, Takehiro Tsuritani, Itsuro Morita</i>	
A Control Hierarchy for Integrated Packet-Optical Networks Utilizing Pluggable Transceivers	541
<i>Ori Gerstel, Gabriele Galimberti, Brent Foster</i>	
Applications of P4-Based Network Programmability in Optical Networks	544
<i>Filippo Cugini, Davide Scano, Alessio Giorgetti, Andrea Sgambelluri, Francesco Paolucci, Juan Jose Vegas Olmos, Piero Castoldi</i>	
Experimental Demonstration of a Metro Area Network with Terabit-Capable Sliceable Bitrate Variable Transceiver using Direct Modulated VCSELs and Coherent Detection	547
<i>J. M. Fabrega, F. J. Vilchez, M. Svaluto Moreolo, R. Martinez, A. Quispe, L. Nadal, R. Casellas, R. Vilalta, R. Munoz, C. Neumeyr, S. Y. Lee, J. U. Shin, H. D. Jung, G. Mariani, R. Heuvelmans, A. Gatto, P. Parolari, P. Boffi, N. M. Tessema, N. Calabretta, D. Larrabeiti, J. P. Fernandez-Palacios</i>	
QoT-Driven Optical Control and Data Plane in Multi-Vendor Disaggregated Networks	550
<i>Giacomo Borraccini, Stefano Straullu, Alessio Giorgetti, Rocco Daingillo, Davide Scano, Andrea Daamico, Emanuele Virgillito, Antonino Nespola, Nicola Sambo, Filippo Cugini, Vittorio Curri</i>	

GNPy Experimental Validation for Nyquist Subcarriers Flexible Transmission up to 800 G 553
Andrea D'Amico, Bertrand Le Guyader, Florian Frank, Esther Le Rouzic, Erwan Pincemin, Antonio Napoli, Han Sun, Bernhard Spinnler, Nicolas Brochier, Vittorio Curri

Bringing Disaggregated Telemetry and ML to the Transceiver for Autonomic Signal Adaptation 556
M. Felipe Silva, A. Pacini, A. Sgambelluri, L. Valcarenghi, F. Paolucci

M4G: NEXT-GEN HIGH-SPEED PON II: OPTOELECTRONIC SUBSYSTEMS

Reconfigurable PIC Transmitter for Short Reach Applications 559
A. Kaszubowska-Anandarajah, K. Sivapalan, E. Martin, D. Gutierrez-Pascual, F. Smyth, J. Braddell, P. Lakshmijayasimha, P. M. Anandarajah

High Speed Ge/Si Avalanche Photodiode with High Sensitivity for 50Gbit/s and 100Gbit/s Optical Access Systems 562
Chingyin Hong, Bin Shi, Fan Qi, Pengfei Cai, Yanhui Duan, Guanghui Hou, Tzungi Su, Tehuang Chiu, Su Li, Wang Chen, Dong Pan

Surface Normal Electro-Absorption Modulators as Colorless Upstream Transmitters in a WDM Passive Optical Network 565
Patrick Iannone, Stefano Grillanda, Xi Chen, Ting-Chen Hu, Nagesh Basavanhally, Alaric Tate, Rose Kopf, Mark Cappuzzo, Yee Low, Mark Earnshaw, David Neilson

Analysis of Potential Four-Wave Mixing Risk in 5G Fronthaul System 568
Dawei Ge, Dong Wang, Dechao Zhang, Jiang Sun, Yunbo Li, Sheng Liu, Liuyan Han, Han Li

Experimental Characterization of Colorless Phase Retrieval under Ultrafast Wavelength Drift for Upstream PON Transmission 571
Hanzi Huang, Haoshuo Chen, Nicolas K. Fontaine, Yingxiong Song, Mikael Mazur, Lauren Dallachiesa, Yuanhang Zhang, Chenhui Ye, Dora Van Veen, Vincent Houtsma, Roland Ryf, David T. Neilson

M4H: ULTRA-HIGH BAUD RATE DATA CENTER TECHNOLOGIES

Silicon Photonics for 800G and Beyond 574
Po Dong, Jing Chen, Argishti Melikyan, Tianren Fan, Taylor Fryett, Changyi Li, Jiashu Chen, Chris Koeppen

288 Gb/s 850 nm VCSEL-Based Interconnect over 100 m MMF Based on Feature-Enhanced Recurrent Neural Network 577
Yunfeng Gao, Chuanchuan Yang, Jiaying Wang, Xin Qin, Haipeng Guo, Xiaoyu Zhang, Chih-Chiang Shen, Hongbin Li, Zhangyuan Chen, Constance J. Chang-Hasnain

Reach Extension for 100 Gb/s PAM-4 IM/DD Transmission by Chirp Managed Laser 580
Son Thai Le, Yasuhiro Matsui, Gregory Raybon, Ashish Verma, Martin Kwakernaak, Tsurugi Sudo

Real-Time 100 Gb/s IM/DD DMT with Chirp Managed Laser Supporting 400 Gb/ CWDM-4 over 20 km 583
Son Thai Le, Tomislav Drenski, Andrew Hills, Malcolm King, Yasuhiro Matsui, Ashish Verma, Martin Kwakernaak, Tsurugi Sudo

Up to 360 Gb/s Optical Interconnects with Ultra-High Bandwidth Thin Film Lithium Niobate Modulator 586
Fan Yang, Xiansong Fang, Xinyu Chen, Yanping Li, Fan Zhang

Experimental Evaluation of PAM and Polybinary Modulation for Intra-DCI Optical Lanes with up to 300 Gbit/s Net Bitrates	589
<i>Robert Borkowski, Qian Hu, Yannick Lefevre, Fred Buchali, Rene Bonk, Karsten Schuh, Junho Cho, Juerg Leuthold, Wolfgang Heni, Benedikt Baeuerle, Claudia Hoessbacher</i>	

M4I: FREE-SPACE OPTICAL COMMUNICATIONS

Free-Space Laser Communications for Small Moving Platforms (Invited Paper)	592
<i>Alberto Carrasco-Casado</i>	
Experimental Demonstration of Adaptive-Optics-Based Turbulence Mitigation in a Mode-Multiplexed Free-Space Optical Link by using both Radial and Azimuthal Spatial Indices.....	595
<i>Xinzhou Su, Yuxiang Duan, Huibin Zhou, Hao Song, Kai Pang, Cong Liu, Kaiheng Zou, Runzhou Zhang, Haoqian Song, Nanzhe Hu, Moshe Tur, Alan E. Willner</i>	
400-Pixel High-Speed Photodetector for High Optical Alignment Robustness FSO Receiver.....	598
<i>Toshimasa Umezawa, Atsushi Matsumoto, Kouichi Akahane, Atsushi Kanno, Naokatsu Yamamoto</i>	
Demonstration of Turbulence Resilient Self-Coherent Free-Space Optical Communications using a Pilot Tone and an Array of Smaller Photodiodes for Bandwidth Enhancement.....	601
<i>Hao Song, Runzhou Zhang, Huibin Zhou, Xinzhou Su, Kaiheng Zou, Yuxiang Duan, Haoqian Song, Kai Pang, Nanzhe Hu, Narek Karapetyan, Amir Minoofar, Moshe Tur, Alan E. Willner</i>	
Demonstration of an Air-Water Communication Link through Dynamic Aerosol and Water Curvature when Considering the 2-D Modal Coupling of a Spatially Structured Beam.....	604
<i>Haoqian Song, Runzhou Zhang, Huibin Zhou, Kaiheng Zou, Nanzhe Hu, Xinzhou Su, Hao Song, Kai Pang, Yuxiang Duan, Daeyoung Park, Brittany Lynn, Greg Gbur, Aristide Dogariu, Richard J. Watkins, Jerome K. Miller, Eric Johnson, Moshe Tur, Alan E. Willner</i>	
Free-Space Optics for Communications at Sea	607
<i>K. T. Newell, M. P. O'Toole, K. Patel, R. B. Youssef, R. A. Venkat, A. H. Willitsford, N. B. Talisa</i>	

M4J: PASSIVE DEVICES FOR NEXT GENERATION TRANSMISSION

Momentum Space Controlled Flexible Spatial Light Modulator for Optical Wireless Communication	610
<i>Zizheng Cao, Xinda Yan, Yiwen Zhang, Chao Li, Juhao Li, Chia Wei Hsu, Ton Koonen</i>	
Core Selective Switch Supporting 15 Cores Per Port using Bundled Three 5-Core Fibers.....	613
<i>Yudai Uchida, Tsubasa Ishikawa, Itsuki Urashima, Shoma Murao, Takahiro Kodama, Yasuki Sakurai, Ryuichi Sugizaki, Masahiko Jinno</i>	
A CMOS Compatible On-Chip MMI Based Wavelength Diplexer with 60 Gbit/s System Demonstration	616
<i>Zakriya Mohammed, Bruna Paredes, Mahmoud Rasras</i>	
Silica-PLC Based Mode-Dependent-Loss Equalizer for two LP Mode Transmission.....	619
<i>Takeshi Fujisawa, Takayoshi Mori, Junji Sakamoto, Yoko Yamashita, Taiji Sakamoto, Ryota Imada, Ryoto Ima, Takanori Sato, Kei Watanabe, Ryoichi Kasahara, Toshikazu Hashimoto, Kazuhide Nakajima, Kunimasa Saitoh</i>	
Surface-Normal Stokes Vector Receiver Based on Superimposed Metasurface.....	622
<i>Go Soma, Yoshiro Nomoto, Yoshiaki Nakano, Takuo Tanemura</i>	

64-QAM Self-Coherent Transmission using Symmetric Silicon Photonic Stokes-Vector Receiver.....	625
<i>Shota Ishimura, Taichiro Fukui, Ryota Tanomura, Go Soma, Yoshiaki Nakano, Takuo Tanemura</i>	

TU2A: SYMPOSIA: EMERGING PHOTONIC INTERCONNECTS AND ARCHITECTURES FOR FEMTOJOULE PER BIT INTRA DATA CENTER LINKS SESSION I

Bringing 2-Phase Immersion Cooling to Hyperscale Cloud.....	628
<i>Ashish Raniwala</i>	

TU2D: LIGHT SOURCE FOR DATACOM APPLICATIONS

Performance and Reliability of Advanced CW Lasers for Silicon Photonics Applications	631
<i>John E. Johnson, Kenneth Bacher, Rebecca Schaevitz, Vivek Raghunathan</i>	

Integrated Optical Transmitter with Micro-Transfer-Printed Widely Tunable III-V-on-Si Laser.....	658
<i>Jing Zhang, Emadreza Soltanian, Bahawal Haq, Stefan Ertl, Johanna Rimbock, Bozena Matuskova, Emanuele Pelucchi, Agnieszka Gocalinska, Joris Van Campenhout, Guy Lepage, Peter Verheyen, Wim Bogaerts, Gunther Roelkens</i>	

Up to 600 Gbit/s Data Transmission over 100 m of Single Multi-Mode Fiber using 4×λ 850-940 nm VCSELs.....	661
<i>N. Ledentsov, C. Kottke, L. Chorchos, V. A. Shchukin, O. Yu. Makarov, M. Bou Sanayeh, V. P. Kalosha, V. Jungnickel, R. Freund, J. P. Turkiewicz, N. N. Ledentsov</i>	

Behavioral PAM-4 VCSEL Model using Stochastic Multimode Rate Equations for Link Design Optimization.....	664
<i>Alirio Melgar, V. A. Thomas, Benjamin D. B. Klein, Itshak Kalifa, Paraskevas Bakopoulos, Elad Mentovich, Stephen E. Ralph</i>	

Highly Reliable 106 Gb/s PAM-4 850 nm Multi-Mode VCSEL for 800G Ethernet Applications	667
<i>Mirko Hoser, Wolfgang Kaiser, David Quandt, Julian Bueno, Stephanie Saintenoy, Sven Eitel</i>	

TU2E: COMB AND MULTIWAVELENGTH SOURCES

III-V-on-Silicon-Nitride Mode-Locked Lasers	670
<i>Bart Kuyken, Stijn Cuyvers, Artur Hermans, Stijn Poelman, Camiel Op De Beeck, Bahawal Haq, Gunther Roelkens, Kasper Van Gasse, Jon O. Kjellman, Charles Caer, Gunther Roelkens, Philippe Soussan, Xavier Rottenberg</i>	

High-Temperature Error-Free Operation in a Heterogeneous Silicon Quantum Dot Comb Laser.....	672
<i>Geza Kurczveil, Xian Xiao, Antoine Descos, Sudharsanan Srinivasan, Di Liang, Raymond G. Beausoleil</i>	

Dual Laser Indium Phosphide Photonic Integrated Circuits for Remote Active Carbon Dioxide Sensing	675
<i>Fengqiao Sang, Victoria Rosborough, Joseph Fridlander, Fabrizio Gambini, Simone Suran Brunelli, Jeffrey R. Chen, Stephan R. Kawa, Kenji Numata, Mark Stephen, Larry Coldren, Jonathan Klamkin</i>	

16 Wavelengths Comb Source using Large-Scale Hybrid Photonic Integration.....	678
<i>Stefano Grillanda, Cristian Bolle, Mark Cappuzzo, Rick Papazian, Bob Farah, Nicolas Fontaine, Mikael Mazur, Rose Kopf, Mark Earnshaw</i>	

Demonstration of a Hybrid III-V/Si Multi-Wavelength DFB Laser for High-Bandwidth Density I/O Applications.....	681
<i>Ranjeet Kumar, Duanni Huang, Meer Sakib, Guan-Lin Su, Chaoxuan Ma, Xinru Wu, Haisheng Rong</i>	

TU2F: HIGH CAPACITY NETWORKS

Building a Global Content Provider Network at Scale.....	684
<i>Alexander Nikolaidis</i>	
High-Capacity 400Gb/s Real-Time Transmission over SCUBA110 Fibers for DCI/Metro/Long-Haul Networks.....	711
<i>B. Zhu, T. Geisler, P. I. Borel, R. Jensen, M. Stegmaier, B. Palsdottir, D. W. Peckham, R. Lingle, M. F. Yan, D. J. Digiovanni</i>	

TU2G: OPTICAL ACCESS NETWORKS FOR MOBILE, INDUSTRY AND MORE

New Use Cases for PONs beyond Residential Services.....	714
<i>R. Bonk, Th. Pfeiffer</i>	
Radio-Over-Fiber Transmission Supporting 65536-QAM at 25GHz Band with High-Pass Delta-Sigma Modulation and RF Fading Mitigation.....	717
<i>Yixiao Zhu, Xiansong Fang, Longjie Yin, Fan Zhang, Weisheng Hu</i>	
Latency-Aware Network Architectures for 5G Backhaul and Fronthaul	720
<i>D. Larrabeiti, G. Otero, J. P. Fernandez-Palacios, L. M. Contreras, J. A. Hernandez</i>	
Multipoint-to-Point Data Aggregation using a Single Receiver and Frequency-Multiplexed Intensity-Modulated ONUs	723
<i>Zichuan Zhou, Jinlong Wei, Kari A. Clark, Eric Sillekens, Callum Deakin, Ronit Sohanpal, Yuan Luo, Radan Slavik, Zhixin Liu</i>	
White Rabbit Protocol Enhanced TDM-PON with Nanoseconds Clock and Data Recovery and Picoseconds Time Synchronization Accuracy.....	726
<i>Yisong Zhao, Xuwei Xue, Bingli Guo, Zuoqing Zhao, Yuanzhi Guo, Shanguo Huang</i>	
Demonstration of Industrial-Grade Passive Optical Network	729
<i>K. Christodoulopoulos, S. Bidkar, W. Lautenschlaeger, Th. Pfeiffer, R. Bonk</i>	

TU2I: INTEGRATED PHOTONIC SUBSYSTEMS

Photonic Interferometric Imager with Monolithic Silicon CMOS Photonic Integrated Circuits.....	732
<i>Humphry Chen, Mehmet Berkay On, Yun-Jhu Lee, Li Zhang, Roberto Proietti, S. J. Ben Yoo</i>	
Narrow Linewidth Lasers for Low-Energy Coherent Communications.....	735
<i>Grant M. Brodnik, Mark W. Harrington, John H. Dallyn, Debapam Bose, Wei Zhang, Liron Stern, Paul A. Morton, Ryan A. Behunin, Scott B. Papp, Daniel J. Blumenthal</i>	
Photonics-Based 300 GHz Band Wireless Terahertz Link using 10Gbps Directly-Modulated Monolithically-Integrated Novel Dual-Mode Laser as Beating Light Source.....	738
<i>Younghoon Kim, Dong Woo Park, Jinchul Cho, Eui Su Lee, Da-Hye Choi, Jun-Hwan Shin, Mugeon Kim, Seung-Hyun Cho, Sang-Rok Moon, Eon-Sang Kim, Yongsoon Baek, Donghoon Lee, Sang-Ho Park, Young Ahn Leem, Il-Min Lee, Kyung Hyun Park</i>	

TU3A: SYMPOSIA: EMERGING PHOTONIC INTERCONNECTS AND ARCHITECTURES FOR FEMTOJOULE PER BIT INTRA DATA CENTER LINKS SESSION II

Glass Interposer for High-Density Photonic Packaging 741
Lars Brusberg, Jason R. Grenier, Sukru Ekin Kocabas, Aramais R. Zakharian, Lucas W. Yeary, Daniel W. Levesque, Barry J. Paddock, Robert A. Bellman, Robin M. Force, Chad C. Terwilliger, Clifford G. Sutton, Jeffrey S. Clark, Katerina Rousseva

TU3B: OPTICAL SUBSYSTEM IMPLEMENTATIONS

Coherent DSP and System Integration Technologies for 800G 744
Shih-Cheng Wang, Hai Xu, Alejandro Castrillon, Marcos Macchi Konrad, Alfredo Taddei, Damian Morero, Hungchang Chien, Oscar Agazzi

On the Performance of Digital Resolution Enhancement and Waterfilling in Digital Subcarrier Multiplexing Systems with Low-Resolution DACs 747
Trung-Hien Nguyen, Youssef Nasser, Yu Zhao, Sami Mumtaz, Abel Lorences-Riesgo, Celestino S. Martins, Gabriel Charlet, Stefanos Dris

Complementary Polarization-Diversity Self-Coherent Homodyne Receiver with Rapid Polarization Tracking for Remote LO 750
Honglin Ji, Jingchi Li, Xingfeng Li, Shuangyu Dong, Zhaopeng Xu, Yikai Su, William Shieh

Capacity Region Bounds for K-User Optical WDM Channels with Peak Power Constraints 753
Viswanathan Ramachandran, Gabriele Liga, Astrid Barreiro, Alex Alvarado

SDM-TDM Reception Based on MIMO Carrier Phase Recovery Technique for Scalable SDM Transmission 756
Kohki Shibahara, Megumi Hoshi, Yutaka Miyamoto

Weak Carrier Assisted Phase Retrieval Receiver 759
Qi Wu, Yixiao Zhu, Weisheng Hu

Influence of SOA Parameters on the Nonlinear Impairments Experienced by QAM Modulated Signals 762
Djalal F. Bendimerad, Romain Brenot, Dylan Le Gac, Abel Lorences-Riesgo, Marti Sales-Llopis, Yann Frignac, Gabriel Charlet

TU3C: VLC FOR INDOOR APPLICATIONS

High-Speed White Light Visible Light Communication (VLC) Based on Semipolar (20-21) Blue Micro-Light Emitting Diode (μ -LED) 765
Yun-Han Chang, Fang-Jyun Liou, Yu-Ming Huang, Wahyu Hendra Gunawan, Chi-Wai Chow, Hao-Chung Kuo, Yang Liu, Chien-Hung Yeh

8.205-Gbit/s Visible Light Communication Utilizing 4×4 Si-Substrate μ LED-Based Photodetector Array 768
Wenqing Niu, Jianyang Shi, Zengyi Xu, Dong Li, Weihuang Xiao, Guangxu Wang, Jianli Zhang, Zhixue He, Chao Shen, Nan Chi

Wide Field-of-View (FOV) Light-Diffusing Fiber Optical Transmitter for Rolling Shutter Based Optical Camera Communication (OCC) 771
Deng-Cheng Tsai, Yun-Han Chang, Yang Liu, Chi-Wai Chow, Yun-Shen Lin, Chien-Hung Yeh

Evolution of Short-Range Optical Wireless Communications	774
<i>Ke Wang, Tingting Song, Yitong Wang, Chengwei Fang, Ampalavanapillai Nirmalathas, Christina Lim, Elaine Wong, Sithamparanathan Kandeepan</i>	

TU3D: NARROW LINEWIDTH AND TUNABLE LASERS

Integrated Ultra-Narrow Linewidth Stabilized SBS Lasers.....	798
<i>Daniel J. Blumenthal</i>	
Semiconductor Laser Stabilized by a Photonic Integrated 4 Meter Coil-Waveguide Resonator	801
<i>Kaikai Liu, Nitesh Chauhan, Jiawei Wang, Andrei Isichenko, Grant M. Brodnik, Paul A. Morton, Ryan Behunin, Scott B. Papp, Daniel J. Blumenthal</i>	
Hybrid InP-SiN Microring-Resonator Based Tunable Laser with High Output Power and Narrow Linewidth for High Capacity Coherent Systems	804
<i>Cosimo Calo, Kaoutar Benyahya, Haik Mardoyan, Philippe Charbonnier, Davide Sacchetto, Michael Zervas, Karim Mekhazni, Delphine Lanteri, Harry Gariah, Catherine Fortin, Nicolas Vaissiere, Antoine Elias, Olivier Parillaud, Franck Mallecot, Jean Decobert, Frederic Pommereau, Jeremie Renaudier</i>	
A Hybrid-Integrated External Cavity Laser with Ultra-Wide Wavelength Tuning Range and High Side-Mode Suppression.....	807
<i>Yuyao Guo, Xinhang Li, Weihang Xu, Chuxin Liu, Minhui Jin, Liangjun Lu, Jingya Xie, Anton Stroganov, Jianping Chen, Linjie Zhou</i>	
Nanosecond-Scale Hitless λ -Switching of SOA-Integrated Electro-Optically Tunable RTF Laser with +/-2.5-GHz Dynamic Frequency Accuracy	810
<i>Yuta Ueda, Yusuke Saito, Takahiko Shindo, Shigeru Kanazawa, Wataru Kobayashi, Hideaki Matsuzaki, Mitsuteru Ishikawa</i>	
Nano-iTLA Based on Multi-Channel Interference Widely Tunable Laser	813
<i>Zifeng Chen, Kuankuan Wang, Quanan Chen, Chun Jiang, Qiaoyin Lu, Weihua Guo</i>	
Sub-10 kHz Intrinsic Linewidth Extended Cavity DBR Laser on InP Generic Foundry Platform	816
<i>Rakesh Ranjan Kumar, Andreas Hansel, Monica Far Brusatori, Lars Nielsen, Niklas Hedegaard Arent, Nicolas Volet, Martijn J. R. Heck</i>	

TU3E: RAMAN AMPLIFICATION AND FREQUENCY COMB GENERATION

Investigation of Wideband Distributed Raman Amplification in a Few-Mode Fiber Link	819
<i>Georg Rademacher, Ruben S. Luis, Benjamin J. Puttnam, Juan Carlos Alvarado Zacarias, Rodrigo Amezcua-Correa, Kazuhiko Aikawa, Yoshinari Awaji, Hideaki Furukawa</i>	
210 nm E, S, C and L Band Multistage Discrete Raman Amplifier	822
<i>Pratim Hazarika, Mingming Tan, Aleksandr Donodin, Ian Phillips, Paul Harper, Ming-Jun Li, Wladek Forysiak</i>	
Harnessing Multi-Octave Coherent Light using Anti-Resonant Fibers.....	825
<i>David Nova</i>	
Generation of Optical Frequency Comb via Cross-Phase Modulation in an SOI Waveguide.....	828
<i>Yuanfei Zhang, Honghui Zhang, Chester Shu</i>	

Generation of Coherent Multi-Wavelength Lights with Hundreds GHz Frequency Spacing from an Injected Fiber Laser with an Intracavity Tunable Micro-Ring Resonator	831
<i>Yen-Chu Chen, Yi-Jang Hsu, Yinchieh Lai</i>	

TU3F: OPTICAL TRANSPORT FOR 5G APPLICATIONS

A Field Trial of 50G TDM-PON Based 5G Small Cell Backhaul.....	834
<i>Ning Wang, Junwei Li, Dekun Liu, Yu Wu, Jinglong Zhu, Da Liu, Lirong Bai, Dechao Zhang, Han Li, Borui Li</i>	
Stimulated Raman Scattering and Power-Over-Fiber Property of Multi-Core Fiber	837
<i>Kenji Kurokawa, Hiroyuki Iida, Nobutomo Hanzawa, Takaya Oguma, Yoko Yamashita, Takayoshi Mori, Takashi Matsui, Kazuhide Nakajima</i>	
Demonstration and Trial of a new CWDM and Circulator Integrated Semi-Active System for 5G Fronthaul	840
<i>Dezhi Zhang, Zhe Du, Ming Cheng, Ming Jiang, Xinfeng Liu, Xin Li</i>	

TU3G: NOVEL AND EMERGING NETWORKS

Optical Neuromorphic Processor at 11 TeraOPs/s Based on Kerr Soliton Crystal Micro-Combs	843
<i>Mengxi Tan, Xingyuan Xu, Jiayang Wu, Andreas Boes, Bill Corcoran, Thach G. Nguyen, Sai T. Chu, Brent E. Little, Damien G. Hicks, Roberto Morandotti, Arnan Mitchell, David J. Moss</i>	
Ultra-Low Latency Short Packet Transmission Experiments with Optical Bus Platform Based on PCIe.....	846
<i>Toshiya Matsuda, Kota Nishiyama, Kana Masumoto, Masahiro Nakagawa, Takashi Miyamura</i>	
High-Speed Time Series Prediction and Classification on an All-Optical Neural Network.....	849
<i>Aashu Jha, Chaoran Huang, Hsuan-Tung Peng, Weipeng Zhang, Bhavin Shastri, Paul R. Prucnal</i>	
What's the Fuss: The Excitement, Prospects and Software/Hardware Challenges of Distributing Entanglement over a Quantum Network	852
<i>Neil M. Zimmerman</i>	
IOWN for Digital Twin Enabled Societies.....	855
<i>Masahisa Kawashima</i>	

TU3H: ENABLERS AND DISRUPTERS IN DATA CENTER AND HPC

Digital Subcarriers: A Universal Technology for Next Generation Optical Networks	858
<i>Dave Welch, Antonio Napoli, Johan Back, Norman Swenson, Warren Sande, Joao Pedro, Fady Masoud, Aaron Chase, Chris Fludger, Han Sun, Ting-Kuang Chiang, Atul Mathur, Kuang-Tsan Wu</i>	
New Trend of Open and Disaggregated Optical Networks	861
<i>Liang Dou, Sai Chen, Huan Zhang, Jingchi Cheng, Fan Gao, Boyuan Yan, Shuai Zhang, Zhao Sun, Lei Wang, Chongjin Xie</i>	
Monolithically Integrable Optical Single Sideband Transmitters for Inter-Datacenter Applications.....	864
<i>Tianwai Bo, Zhongwei Tan, Hoon Kim, Yi Dong</i>	

DSP-Free IM/DD MDM Optical Interconnection Based on Side-Polished Degenerate-Mode-Selective Fiber Couplers.....	867
<i>Jian Cui, Yuyang Gao, Jinyi Yu, Jiixin Liu, Junchi Jia, Yongqi He, Zhangyuan Chen, Juhao Li</i>	

TU3I: QUANTUM COMMUNICATIONS

Introduction to Continuous Variable Quantum Key Distribution.....	870
<i>Takuya Hirano</i>	
Quantum Key Distribution in the Service Provider Network.....	884
<i>Catherine White, Adrian Wonfor, Paul Wright, Emilio Hugues Salas, Andrew Lord</i>	
Entanglement Distribution in Installed Fiber with Coexisting Classical Light for Quantum Network Applications.....	887
<i>Jordan M. Thomas, Gregory S. Kanter, Ely M. Eastman, Kim F. Lee, Prem Kumar</i>	
254.6 Mb/s Secret Key Rate Transmission over 13.5 km SMF using PCS-256QAM Super-Channel Continuous Variable Quantum Key Distribution	890
<i>Francois Roumestan, Amirhossein Ghazisaeidi, Haik Mardoyan, Jeremie Renaudier, Eleni Diamanti, Philippe Grangier</i>	

W1A: SPECIAL SESSION: NETWORK INTELLIGENCE

Modern Applications of Total Network Awareness.....	893
<i>Nate Lindsey, Mark Englund</i>	

W1D: SENSING IN FIBERS AND NETWORKS

Enhanced Backscatter Fibers for Sensing in Telecom Networks	896
<i>Paul Westbrook, Kenneth S. Feder, Tristan Kremp</i>	
Polarization Sensing with Transmission Fibers in Undersea Cables.....	899
<i>Antonio Mecozzi, Mattia Cantono, Jorge C. Castellanos, Valey Kamalov, Zhongwen Zhan</i>	

W1E: PACKAGING AND COPACKAGED OPTICS

MicroLED Array-Based Optical Links using Imaging Fiber for Chip-to-Chip Communications	902
<i>Bardia Pezeshki, Farzad Khoeini, Alex Tselikov, Rob Kalman, Cameron Danesh, Emad Afifi</i>	
84-Fiber MPO Connector Employing Solid Refractive Index Matching Material Formed on Perpendicular Polished MT Ferrule End	905
<i>Yoshiteru Abe, Ryo Koyama, Kazunori Katayama</i>	
GI-Core Multimode and Single-Mode Polymer Waveguides for High-Density Co-Packaging.....	908
<i>Takaaki Ishigure</i>	
Ultra-Compact Multi-Fiber Connector with Magnetic Physical Contact	911
<i>Kota Shikama, Norio Sato, Ryo Nagase, Yoshiyuki Doi, Hiromasa Tanobe, Satoshi Tsunashima, Yuzo Ishii</i>	

W1F: NETWORK AUTOMATION

An SDN Control Plane for Multiband Networks Exploiting a PLI-Aware Routing Engine	914
<i>Ramon Casellas, Evangelos Kosmatos, Andrew Lord, Chris Matrakidis, Ricardo Martinez, Dimitris Uzunidis, Ricard Vilalta, Alexandros Stavdas, Raul Munoz</i>	
Architecture to Deploy and Operate a Digital Twin Optical Network	917
<i>R. Vilalta, R. Casellas, Ll. Gifre, R. Munoz, R. Martinez, A. Pastor, D. Lopez, J. P. Fernandez-Palacios</i>	

W1G: COHERENT DSP FOR DCI APPLICATIONS

Intra-Data Center 120Gbaud/DP-16QAM Self-Homodyne Coherent Links with Simplified Coherent DSP	920
<i>Rui Zhang, You-Wei Chen, Konstantin Kuzmin, Winston I. Way</i>	
Experimental Demonstration of Real-Time 400G Coherent Transmission over 300m OM3 MMF	923
<i>G. Rizzelli, F. Forghieri, R. Gaudino</i>	
Beyond Mrad/s Polarization Tracking Speed of Complementary Polarization-Diversity Coherent Receiver for Remote LO	926
<i>Honglin Ji, Jingchi Li, Xingfeng Li, Shuangyu Dong, Zhaopeng Xu, Yikai Su, William Shieh</i>	
Distributed Acoustic Sensing for Datacenter Optical Interconnects using Self-Homodyne Coherent Detection	929
<i>Ezra Ip, Yue-Kai Huang, Ting Wang, Yoshiaki Aono, Koji Asahi</i>	
Mismatch Length Estimation of Self-Homodyne Coherent Optical Systems by using Carrier-Pilot-Assist Method.....	932
<i>Yuyuan Gao, Xian Zhou, Feiyu Li, Jiahao Huo, Jinhui Yuan, Keping Long</i>	
Experimental Study of Bandwidth Loading with Modulated Signals vs. ASE Noise in 400ZR Single-Span Transmission.....	935
<i>Steven Searcy, Thomas Richter, Sorin Tibuleac</i>	

W1H: MICROWAVE PHOTONICS

Large-Scale Programmable Integrated Photonic Circuits: From Microwave Photonics to Optical Computing.....	938
<i>Daniel Perez-Lopez</i>	
Ultra-Low Noise Microwave Photonic Oscillator using Free Running Kerr Soliton Microcomb with Inhibited Raman Scattering and Dispersive Wave Emission	941
<i>Wenwen Cui, Yong Geng, Zheng Yi, Yanlan Xiao, Kun Qiu, Jing Xu, Qiang Zhou, Heng Zhou</i>	
Elimination of the PMD Related Delay Jitter in an Ultra-Stable Microwave Signal Distribution System.....	944
<i>Xi Wang, Wei Wei, Xiyi Weng, Danyang Wang, Jiawang Wei, Weilin Xie, Yi Dong</i>	
Terahertz Band Data Communications using Dielectric Rod Waveguide.....	947
<i>Muhsin Ali, Jonas Tebart, Alejandro Rivera-Lavado, Dmitri Lioubtchenko, Luis Enrique Garcia-Munoz, Andreas Stohr, Guillermo Carpintero</i>	

4-Antenna Distributed Receiving System for Broadband Signal Transmission and Combination	950
<i>Kai Wang, Wei Wei, Pengyu Wang, Danyang Wang, Weilin Xie, Yi Dong</i>	

W2A: POSTER SESSION I

3D-Printed Optical Elements for Coupling of VCSEL and Photodiode Arrays to Multi-Core Fibers in an SFP Transceiver Assembly	953
<i>Pascal Maier, Yilin Xu, Matthias Lauermann, Alexandra Henniger-Ludwig, Hermann Kapim, Mareike Trappen, Torben Kind, Achim Weber, Matthias Blaicher, Philipp-Immanuel Dietrich, Clemens Wurster, Sebastian Randel, Wolfgang Freude, Christian Koos</i>	
Streamlined Architecture for Thermal Control and Stabilization of Cascaded DWDM Micro-Ring Filters Bus	956
<i>Maarten Hattink, Liang Yuan Dai, Ziyi Zhu, Keren Bergman</i>	
A 10-Gb/s, -32.6dBm Receiver with 3.5Gbps APD for XGPON/XGSPON Mass Production.....	959
<i>Rui Wang, Xin Zhao, Yingfan Ling, Gaoyong Fan, Zhijun Cai, Rui Tao</i>	
Reduce Footprints of Multiport Interferometers by Cosine-Sine-Decomposition Unfolding	962
<i>Yinyi Liu, Jiaxu Zhang, Jun Feng, Shixi Chen, Jiang Xu</i>	
Design of Asymptotically Perfect Linear Feedforward Photonic Circuits	965
<i>Ryan Hamerly, Saumil Bandyopadhyay, Alexander Sludds, Dirk Englund</i>	
Dimensional Variation Tolerant Inverse Designed Broadband Mode Converter	968
<i>Md Mahadi Masnad, Guowu Zhang, Dan-Xia Xu, Yuri Grinberg, Odile Liboiron-Ladouceur</i>	
Single-Mode 850nm VCSELs Demonstrate 96 Gb/s PAM4 OM4 Fiber Link for Extended Reach to 1km.....	971
<i>Dufei Wu, Xin Yu, Haonan Wu, Wenning Fu, Milton Feng</i>	
Highly-Reflective Facet-Coated 16-Wavelength DFB Laser Array with Exact Wavelength Spacings	974
<i>Gen Lv, Rulei Xiao, Zijiang Yang, Zhenxing Sun, Yating Zhou, Yi-Jen Chiu, Xiangfei Chen</i>	
63 fJ/Bit Heterogeneous III-V on Si Modulator for the C Band.....	977
<i>Rosalyn Koscica, Paolo Pintus, Minh A. Tran, M. J. Kennedy, Chao Xiang, John Bowers</i>	
Design Analysis of a High-Speed Directly Modulated Laser with Push-Pull Silicon Ring Modulators.....	980
<i>Chenlei Li, Min Teng, Hao Wu, Ning Cheng, Xuezhe Zheng</i>	
32 GHz High-Power MUTC Waveguide Photodiode for 1310 nm.....	983
<i>Fengxin Yu, Keye Sun, Junyi Gao, Andreas Beling</i>	
Spatio-Temporal Statistical Model of Free-Space-to-Fiber Coupling under Atmospheric Turbulence	986
<i>Jonas Krimmer, Lennart Schmitz, Wolfgang Freude, Christian Koos, Sebastian Randel</i>	
Kerr-Induced Rotation of Mixed Orbital Angular Momentum States in Hollow Ring-Core Fibers	989
<i>Sai Kanth Dacha, Wenqi Zhu, Amit Agrawal, Thomas E. Murphy</i>	
Wearable Smartwatch Based on Optical Fiber for Continuous Blood Pressure Monitoring.....	992
<i>Liangye Li, Yunfei Liu, Shunfeng Sheng, Changying Song, Wei Fan, Qizhen Sun</i>	
Groundwater Level Remote Monitoring using Optical Power Measurement in Fiber Bragg Grating	995
<i>Steven Binder, Mei Yang, Victor Qiu, Alexander Bucksch, Mable Fok</i>	

Performance Enhanced BOTDA Sensor using Differential Golay Coding and Deconvolution Algorithm	998
<i>Weilun Wei, Li Shen, Zhiyong Zhao, Can Zhao, Ming Tang</i>	
Techno-Economics of Terrestrial Extensions of Subsea Routes	1001
<i>Sergejs Makovejs, John Downie, Hatem Abdelwahab, Walaa Abdrabo</i>	
Multi-Cluster Reconfiguration with Traffic Prediction in Hyper-Flex-LION Architecture	1004
<i>Sandeep Kumar Singh, Roberto Proietti, Che-Yu Liu, S. J. Ben Yoo</i>	
Bandwidth Reconfigurable Optical Switching Architecture for CPU-GPU Computing Systems with Shared Memory	1007
<i>Arastu Sharma, Qixiang Cheng, Nikolaos Bamiedakis, Madeleine Glick, Fotini Karinou, Keren Bergman, Richard Penty</i>	
To Cooperate or Not to Cooperate: Service Function Chaining in Multi-Domain Edge-Cloud Elastic Optical Networks	1010
<i>Sijia Li, Baojia Li, Zuqing Zhu</i>	
Traffic Monitoring System for 100-Gbps Virtualized Optical Networks	1013
<i>Yusuke Sekihara, Namiko Ikeda, Hiroyuki Uzawa, Shoko Ohteru, Saki Hatta, Shuhei Yoshida, Kimikazu Sano</i>	
Load-Balancing Routing Algorithm against Inter-Satellite Link Congestion in LEO Satellite Optical Networks	1016
<i>Yunxiao Ning, Yongli Zhao, Xin Li, Sabidur Rahman, Huibin Zhang, Jie Zhang</i>	
Datacenter-Carrier Cooperation over Optical Networks during Disaster Recovery	1019
<i>Subhadeep Sahoo, Sugang Xu, Sifat Ferdousi, Yusuke Hirota, Massimo Tornatore, Yoshinari Awaji, Biswanath Mukherjee</i>	
Techno-Economic Potential of Wavelength-Selective Band-Switchable OXC in S+C+L Band Optical Networks	1022
<i>Masahiro Nakagawa, Takeshi Seki, Takashi Miyamura</i>	
Demonstration of 128×100-Gb/s Real-Time Coherent UDWDM-PON with >35-dB Power Budget	1025
<i>Jie Li, Ming Luo, Zhixue He, Xi Xiao, Shaohua Yu</i>	
Computationally-Efficient Sparsely-Connected Multi-Output Neural Networks for IM/DD System Equalization	1028
<i>Zhaopeng Xu, Shuangyu Dong, Honglin Ji, Jonathan H. Manton, William Shieh</i>	
Optical Multi-Path Interference Noise Mitigation for 56 Gb/s PAM4 IMDD Transmission System	1031
<i>Chuanming Huang, Haiping Song, Mengfan Cheng, Qi Yang, Ming Tang, Deming Liu, Lei Deng</i>	
Modulation Format Aggregation of Nyquist Channels by Spectral Superposition with Electro-Optic Modulators	1034
<i>Arijit Misra, Stefan Preussler, Karanveer Singh, Janosch Meier, Thomas Schneider</i>	
Comparison of Transmitter Nonlinearity Impairments in Externally Modulated Sigma-Delta-Over Fiber vs Analog Radio-Over-Fiber Links	1037
<i>Frida Olofsson, Lise Abel, Magnus Karlsson, Christian Fager</i>	
Design and Prototype of Auto-Track Long-Range Free-Space Optical Communication	1040
<i>Xun Li, Mustafa Mert Bayer, George Nikolaev Guentchev, Ozdal Boyraz</i>	

Coherent Combining at Ultra-Low Optical Signal Powers Based on Optically Amplified Error Feedback.....	1043
<i>Rasmus Larsson, Jochen Schroder, Magnus Karlsson, Peter Andrekson</i>	
Passive Nonlinear Compensation Circuits for Photovoltaic Visible Light Communications under Low Illuminance.....	1046
<i>Shuyan Chen, Liqiong Liu, Lian-Kuan Chen</i>	
Experimental Demonstration of Learned Pulse Shaping Filter for Superchannels.....	1049
<i>Zonglong He, Jinxiang Song, Christian Hager, Alexandre Graell I Amat, Henk Wymeersch, Peter A. Andrekson, Magnus Karlsson, Jochen Schroder</i>	
A Simple and Accurate Method to Estimate the Nonlinear Performance of VCSEL IM-DD System.....	1052
<i>Chengwu Yang, Tong Ye, Ke Zhang, Zhenning Tao, Hisao Nakashima, Takeshi Hoshida</i>	
Perturbation-Aided Deep Neural Network for Dual-Polarization Optical Communication Systems.....	1055
<i>Xiang Lin, Shenghang Luo, Octavia A. Dobre, Lutz Lampe, Deyuan Chang, Chuandong Li</i>	
Volterra Equalization to Compensate for Transceiver Nonlinearity: Performance and Pitfalls	1058
<i>Junho Cho, Son Thai Le</i>	
Symbiotic Joint Operation of Quantum and Classical Coherent Communications	1061
<i>Raphael Aymeric, Yves Jaouen, Cedric Ware, Romain Alleaume</i>	
Neural Network-Enhanced Optical Phase Conjugation for Nonlinearity Mitigation	1064
<i>Morteza Kamalian-Kopae, Abdallah A. Ali, Karina Nurlybayeva, A. Ellis, S. Turitsyn</i>	
Experimental Validation of Nonlinear Fourier Transform-Based Kerr-Nonlinearity Identification over a 1600 km SSMF Link	1067
<i>Pascal De Koster, Jonas Koch, Olaf Schulz, Stephan Pachnicke, Sander Wahls</i>	
Widely Tunable 1030 nm Gallium Arsenide Sampled Grating Distributed Bragg Reflector Lasers and Photonic Integrated Circuits	1070
<i>Paul Verrinder, Lei Wang, Fengqiao Sang, Victoria Rosborough, Guangning Yang, Mark Stephen, Larry Coldren, Jonathan Klamkin</i>	

W3A: SPECIAL SESSION: NETWORK EVOLUTION AND ADAPTATION TO ENVIRONMENTAL CHANGE SESSION I

Growth and Sustainability Aspects of WDM	1073
<i>Klaus Grobe</i>	
The Interdependency of Telco- and Non-Telco Networks with a Focus on Increasing Risk and Resilience, a New Use Case for Network Convergence.....	1076
<i>Andreas Gladisch, Michael Duser</i>	

W3C: HIGH SYMBOL RATE AND WIDEBAND TRANSMISSION

1.0-Tb/s/λ 3840-km and 1.2-Tb/s/λ 1280-km Transmissions with 168-GBaud PCS-QAM Signals Based on AMUX Integrated Frontend Module	1079
<i>M. Nakamura, T. Sasai, K. Saito, F. Hamaoka, T. Kobayashi, H. Yamazaki, M. Nagatani, Y. Ogiso, H. Wakita, Y. Kisaka, Y. Miyamoto</i>	

Impact of Local Oscillator Phase Noise on Long-Haul Transmission of 120-Gbaud Digital Sub-Carrier Signals.....	1082
<i>Kohei Saito, Masanori Nakamura, Takeo Sasai, Takeshi Kakizaki, Fukutaro Hamaoka, Takayuki Kobayashi, Etsushi Yamazaki, Yoshiaki Kisaka</i>	
High Capacity Innovations Enabling Scalable Optical Transmission Networks.....	1085
<i>Yu Rong Zhou, John Keens, Walid Wakim</i>	
72.64 Tb/s DWDM Transmission over 100 km G.654D Fiber using Super C-Band Erbium-Doped Fiber Amplification	1088
<i>Fabio Pittala, Georg Bocherer, Patrick Schulte, Maximilian Schaedler, Stefano Calabro, Bofang Zheng, Changsong Xie, Maxim Kuschnerov</i>	
Investigation of Long-Haul S-, C- + L-Band Transmission	1091
<i>Benjamin J. Puttnam, Ruben S. Luis, Georg Rademacher, Yoshinari Awaji, Hideaki Furukawa</i>	
Modeling of Fiber Nonlinearity in Wideband Transmission	1094
<i>Daniel Semrau</i>	

W3D: PHOTODETECTORS, SENSING AND MICROWAVE PHOTONICS

High Performance Avalanche Photodiode in a Monolithic Silicon Photonics Technology	1097
<i>Asif Chowdhury, Subramanian Krishnamurthy, Abdelsalam Aboketaf, Jacquelyn Phang, Ludmila Popova, Michelle Zhang, Javier Ayala, Yusheng Bian, Michal Rakowski, Francis Afzal, Takako Hirokawa, Won Suk Lee, Judson Holt, Massimo Sorbara, Vishal Dhrugude, Crystal Hedges, Frank Pavlik, Stan Senger, Kate McLean, Andy Stricker, Ryan Sporer, Karen Nummy, Dave Riggs, Rod Augur, Wenhe Lin, Jae Gon Lee, Vikas Gupta, Eng Hua Lim, Ken Giewont, Ted Letavic, John Pellerin</i>	
106-Gb/s Waveguide AlInAs/GaInAs Avalanche Photodiode with Butt-Joint Coupling Structure.....	1100
<i>Takuya Okimoto, Ken Ashizawa, Hiroki Mori, Koji Ebihara, Kouichiro Yamazaki, Satoru Okamoto, Kazuhiko Horino, Yusuke Ohkura, Hideki Yagi, Mitsuru Ekawa, Yoshihiro Yoneda</i>	
Degradation Mechanisms and Lifetime Assessment of Ge Vertical PIN Photodetectors	1103
<i>Kristof Croes, Veerle Simons, Brecht Truijten, Philippe Roussel, Koen Van Sever, Artemisia Tsiara, Jacopo Franco, Philippe Absil</i>	
Development and Modeling of Ge-Free Microring Avalanche Photodiode in Optical Communication Band.....	1106
<i>Yuan Yuan, Wayne V. Sorin, Di Liang, Stanley Cheung, Yiwei Peng, Mudit Jain, Zhihong Huang, Marco Fiorentino, Raymond G. Beausoleil</i>	
Ultra-Low Loss Silicon Nitride Ring Modulator with Low Power PZT Actuation for Photonic Control.....	1109
<i>Jiawei Wang, Kaikai Liu, Mark W. Harrington, Ryan Q. Rudy, Daniel J. Blumenthal</i>	
Hybrid Polymer THz Receiver PIC with Waveguide Integrated Photoconductive Antenna: Concept and 1 st Characterization Results	1112
<i>Tianwen Qian, Milan Deumer, Y. Durvasa Gupta, Simon Nellen, Ben Schuler, Hauke Conradi, Martin Kresse, Jakob Reck, Klara Mihov, Moritz Kleinert, Madeleine Weigel, Crispin Zawadzki, David De Felipe, Bjorn Globisch, Moritz Baier, Norbert Keil, Martin Schell</i>	

InP-Si ₃ N ₄ Hybrid Integrated Optical Source for High-Purity Mm-Wave Communications	1115
<i>Luis Gonzalez-Guerrero, Robinson Guzman, Muhsin Ali, Jessica Cesar Cuello, Devika Dass, Colm Browning, Liam Barry, Ilka Visscher, Robert Grootjans, Chris G. H. Roeloffzen, Guillermo Carpintero</i>	

W3E: FIBER NONLINEARITY

Impact of GAWBS in Communication Systems	1118
<i>Maxim Bolshtyansky, Jin-Xing Cai</i>	
Alignment of Zero-Dispersion Wavelength along Highly-Nonlinear Fiber Length with Simultaneous Increase in the Stimulated Brillouin Scattering Threshold	1121
<i>Cheng Guo, Michael Vasilyev, Youichi Akasaka, Paparao Palacharla</i>	
Random Number Generation by Brillouin-Enhanced Four-Wave-Mixing in Polarization Maintaining Fiber	1124
<i>Pedro Tovar, Xiaoyi Bao</i>	
Effective Area Tilt Impact in S+C+L Band Long-Haul Fiber Optic Transmission Systems	1127
<i>Viacheslav V. Ivanov, Petr M. Sterlingov, Snigdharaj K. Mishra, John D. Downie, Sergejs Makovejs</i>	
Modal Loss Characterisation of Thick Ring Core Fiber using Perfect Vortex Beams	1130
<i>Mai Banawan, Satyendra K. Mishra, Sophie Larochelle, Leslie A. Rusch</i>	

W3F: HIGH-CAPACITY AND FLEXIBLE NETWORKS

Raman Amplification for Simplified Channel Provisioning in Wide-Band Optical Networks	1133
<i>Andre Souza, Nelson Costa, Joao Pedro, Joao Pires</i>	
Optimized Physical Design of Metro Aggregation Networks using Point to Multipoint Transceivers	1136
<i>Mohammad M. Hosseini, Joao Pedro, Nelson Costa, Antonio Napoli, Jaroslav E. Prilepsky, Sergei K. Turitsyn</i>	
Core Selective Switch Based Branching Unit Architectures and Efficient Bidirectional Core Assignment Scheme for Regional SDM Submarine System	1139
<i>Kako Matsumoto, Masahiko Jinno</i>	
Optimal Pay-As-You-Grow Deployment on S+C+L Multi-Band Systems.....	1142
<i>Andre Souza, Rasoul Sadeghi, Bruno Correia, Nelson Costa, Antonio Napoli, Vittorio Curri, Joao Pedro, Joao Pires</i>	
Enabling Router Bypass and Saving Cost using Point-to-Multipoint Transceivers for Traffic Aggregation	1145
<i>Antonio Napoli, Zdravko Stevkovski, Jose D. M. Jimenez, Edward J. E. Zuleta, Johan Back, Joao Pedro, Julia Rodriguez, Rafael Diaz, Jose Carrallo, Atul Mathur, Juan P. F. P. Gimenez, Fady Masoud, Dave Welch</i>	
Design and Dynamic Control of Fiber-Granular Routing Networks with Next-Generation Optical Paths	1148
<i>Takeshi Matsuo, Ryuta Shiraki, Yojiro Mori, Hiroshi Hasegawa</i>	
Optimal Spectral Usage and Energy Efficient S-to-U Multiband Optical Networking	1151
<i>Rasoul Sadeghi, Bruno Correia, Emanuele Virgillito, Antonio Napoli, Nelson Costa, Joao Pedro, Vittorio Curri</i>	

Transport Network Upgrade Exploiting Multi-Band Systems: S-Versus E-Band.....	1154
<i>Nicola Sambo, Bruno Correia, Antonio Napoli, Joao Pedro, Piero Castoldi, Vittorio Curri</i>	

W3G: MACHINE LEARNING AND VIRTUALIZATION IN OPTICAL ACCESS

Tutorial: Evolution of Machine Learning in Optical Access Networks	1157
<i>Elaine Wong, Lihua Ruan, Sourav Mondai</i>	
ANN-Based Optimization of Probabilistic and Geometric Shaping for Flexible Rate 50G and beyond PON	1183
<i>Shuang Yao, Amitkumar Mahadevan, Yannick Lefevre, Noriaki Kaneda, Vincent Houtsma, Doutje Van Veen</i>	
PON Virtualization Including PHY Softwarization	1186
<i>Takahiro Suzuki, Sang-Yuep Kim, Kota Asaka, Jun-Ichi Kani, Tomoaki Yoshida</i>	
Demonstration of In-Service Protocol-Independent End-to-End Optical Path Control and Restoration in All-Photonics Network.....	1189
<i>Yumiko Senoo, Shin Kaneko, Takuya Kanai, Naotaka Shibata, Jun-Ichi Kani, Tomoaki Yoshida</i>	
Any-Double-Link Failure Tolerant Bypass/Backup Switchable WDM-PON Employing Path-Pair Shared Protection and Bidirectional Wavelength Pre-Assignment	1192
<i>Takahiro Kodama, Tomoya Nakagawa, Ryosuke Matsumoto</i>	

W3H: FORWARD ERROR CORRECTION

Investigation of Potential FEC Schemes for 800G-ZR Forward Error Correction.....	1195
<i>Weiming Wang, Weifeng Qian, Kai Tao, Zitao Wei, Shihua Zhang, Yan Xia, Yong Chen</i>	
Improved Soft-Aided Error-and-Erasure Decoding of Product Codes with Dynamic Reliability Scores	1198
<i>Sisi Miao, Lukas Rapp, Laurent Schmalen</i>	
Fiber-on-Chip: Digital FPGA Emulation of Channel Impairments for Real-Time Evaluation of DSP	1201
<i>Per Larsson-Edefors, Erik Borjeson</i>	
Low-Complexity Channel-Polarized Multilevel Coding for Probabilistic Amplitude Shaping	1204
<i>Takeshi Kakizaki, Masanori Nakamura, Fukutaro Hamaoka, Yoshiaki Kisaka</i>	
Practical Entropy Loading Enabled by Enumerative Sphere Shaping with Short Block Lengths.....	1207
<i>Yizhao Chen, Weihao Li, Junda Chen, Yating Xiang, Mingming Zhang, Deming Liu, Ming Tang</i>	

W3I: ARTIFICIAL INTELLIGENCE ENHANCED OPTICAL WIRELESS SYSTEMS

Intelligent End-to-End Nonlinear Constellation Auto-Optimization in W-Band Fiber-MMW Integrated Transmission for 6G Access.....	1210
<i>Junlian Jia, Jiang Chen, Boyu Dong, Guoqiang Li, Jianyang Shi, Chao Shen, Ziwei Li, Li Tao, Junwen Zhang, Nan Chi</i>	
Implementation of Machine Learning-Based Emergency Communication using RoFSO-VLC/RF Convergence Link	1213
<i>Song Song, Xiangyu Liu, Yejun Liu, Junxian Wu, Tingwei Wu, Lei Guo</i>	

Computationally Efficient Pre-Distortion Based on Adaptive Partitioning Neural Network in Underwater Visible Light Communication	1216
<i>Hui Chen, Wenqing Niu, Guoqiang Li, Zhixue He, Junwen Zhang, Nan Chi, Ziwei Li</i>	
Highly Reliable Outdoor 400G FSO Transmission Enabled by ANN Channel Estimation	1219
<i>Marco A. Fernandes, J. Leonardo Nascimento, Paulo P. Monteiro, Fernando P. Guiomar</i>	
Long Short-Term Memory Neural Network to Enhance the Data Rate and Performance for Rolling Shutter Camera Based Visible Light Communication (VLC)	1222
<i>Ching-Wei Peng, Deng-Cheng Tsai, Yun-Shen Lin, Chi-Wai Chow, Yang Liu, Chien-Hung Yeh</i>	
Using Received-Signal-Strength (RSS) Pre-Processing and Convolutional Neural Network (CNN) to Enhance Position Accuracy in Visible Light Positioning (VLP).....	1225
<i>Li-Sheng Hsu, Deng-Cheng Tsai, Hei Man Chen, Yun-Han Chang, Yang Liu, Chi-Wai Chow, Shao-Hua Song, Chien-Hung Yeh</i>	
Towards AI-Enhanced VLC Systems.....	1228
<i>Wesley Costa, Higor Camporez, Marcelo Segatto, Helder Rocha, Jair Silva</i>	

W3J: DOPED AMPLIFIERS IN FIBERS AND WAVEGUIDES

Amplification of Structured Light in Optical Fibers	1231
<i>Kazi Abedin</i>	
Mode-Dependent Gain Reduction in Coupled Multi-Core EDF with Smaller Core Pitch	1233
<i>Ryota Imada, Taiji Sakamoto, Shinichi Aozasa, Kazuhide Nakajima</i>	
Temperature Dependent Characteristics of L-Band EDFA using Phosphorus- and High Aluminum-Co-Doped Silica Fibers	1236
<i>Z. Zhai, A. Halder, Y. Wang, M. Nunez-Velazquez, J. K. Sahu</i>	
Low Cost Solution for Super L-Band Fiber Amplifier Based on Single-Mode and Multi-Mode Hybrid Pumping Scheme.....	1239
<i>Lixian Wang, Manish Sharma, Frederic Maes, Saber Jalilpiran, Firat Ertac Durak, Younes Messaddeq, Sophie Larochelle, Zhiping Jiang</i>	
50 Gbaud QPSK E-Band Transmission using Bismuth Doped Fiber Amplifiers	1242
<i>Aleksandr Donodin, Mingming Tan, Ian Phillips, Abdallah A. I. Ali, Pratim Hazarika, Mohammed Patel, Paul Harper, Vladislav Dvoyrin, Wladek Forysiak, Sergei Turitsyn</i>	
3D Printed and Spiral Lithographically Patterned Erbium-Doped Polymer Micro-Waveguide Amplifiers.....	1245
<i>Hongwei Gao, Huimin Li, George F. R. Chen, Peng Xing, Mei Chee Tan, Dawn T. H. Tan</i>	

W4B: ADVANCES IN OPTICAL SWITCHING

Multiband Optical Switch Technology.....	1248
<i>Takashi Goh, Keita Yamaguchi, Ai Yanagihara</i>	
Edge Wavelength Selective Switch for Optical Access Networks	1251
<i>Evan D. Chansky, Viviana Arrunategui-Norvick, Takako Hirokawa, L. Alberto Campos, Haipeng Zhang, Mu Xu, Zhensheng Jia, Clint L. Schow</i>	

Path-Independent Insertion-Loss (PILOSS) 8×8 Silicon Photonics Switch with <8 Nsec Switching Time	1254
<i>Ryotaro Konoike, Keijiro Suzuki, Kazuhiro Ikeda</i>	
Broadband, Low-Crosstalk and Power-Efficient 32×32 Optical Switch on a Dual-Layer Si_3N_4 -on-SOI Platform.....	1257
<i>Wei Gao, Xin Li, Liangjun Lu, Jianping Chen, Linjie Zhou</i>	
Digitally Controlled Silicon Nitride Optical Switch.....	1260
<i>Suraj Sharma, Niharika Kohli, Jonathan Briere, Frederic Nabki, Michael Menard</i>	
Recent Advances in Large-Scale Optical Switches Based on Silicon Photonics	1263
<i>Keijiro Suzuki, Ryotaro Konoike, Hiroyuki Matsuura, Ryosuke Matsumoto, Takashi Inoue, Shu Namiki, Hitoshi Kawashima, Kazuhiro Ikeda</i>	

W4C: ROF SYSTEMS

First Demonstration of a Single- λ , Full-Duplex RRH Transceiver with Single RF Carrier for Bidirectional Radio.....	1266
<i>Bernhard Schrenk, Fotini Karinou</i>	
1.314-Tbit/s (576×380.16 -MHz 5G NR OFDM Signals) SDM/WDM/SCM-Based IF-over-Fiber Transmission for Analog Mobile Fronthaul	1269
<i>Kazuki Tanaka, Shinji Nimura, Shota Ishimura, Kosuke Nishimura, Ryo Inohara, Takehiro Tsuritani, Masatoshi Suzuki</i>	
>100 Gbps 3×3 MIMO V-Band RoF System for up to 100 m Wireless Transmission Enabled by NN-Based Equalization	1272
<i>Chia-Chien Wei, Yu-Jen Huang, Zhen-Xiong Xie, Ping-Yao Huang, Pin-Hsuan Ting, Chun-Ting Lin</i>	
Radio Beamsteering for a 2×5 Remote Radio Head Assisted by a Shared Wideband Etalon Cascade.....	1275
<i>Aina Val Marti, David Loschenbrand, Thomas Zemen, Bernhard Schrenk</i>	
Transmission of Tb/s CPRI-Equivalent Rate using Coherent Digital-Analog Radio-over-Fiber (DA-RoF) System.....	1278
<i>Qunbi Zhuge, Yicheng Xu, Yunyun Fan, Xiaobo Zeng, Mengfan Fu, Lilin Yi, Weisheng Hu, Xiang Liu</i>	
A Dynamically Reconfigurable Optical Switching Node for Hybrid Analog/Digital RoF Transport.....	1281
<i>Panagiotis Toumasis, Konstantina Kanta, Kostas Tokas, Giannis Giannoulis, Dimitris Apostolopoulos, Hercules Avramopoulos</i>	
5G Millimeter-Wave Analog RoF System Employing Optical Injection Locking and Direct Modulation of DFB Laser	1284
<i>Amol Delmade, Eamonn Martin, Colm Browning, Liam P. Barry</i>	

W4D: FIBER SENSORS

Photoacoustic Spectroscopy of Gas Filled Hollow Core Fiber	1287
<i>Wei Jin, Yan Zhao, Yun Qi, Hoi Lut Ho, Shoufei Gao, Yingying Wang</i>	
Kalman Filter Assisted Tracking of Microparticles in Hollow-Core Photonic Crystal Fibers for Sensor Applications.....	1290
<i>Max Koeppel, Jasper Podschus, Nicolas Y. Joly, Philip St. J. Russell, Bernhard Schmauss</i>	

Remote Drone Detection and Localization with FiberOptic Microphones and Distributed Acoustic Sensing	1293
<i>Jian Fang, Yaowen Li, Philip N. Ji, Ting Wang</i>	
246km Long Distance Fiber Optic DAS System Based on Multi-Span Bidirectional EDFAs and Cascaded AOMs.....	1296
<i>Fan Cunzheng, Li Hao, Yan Baoqiang, Yan Zhijun, Sun Qizhen</i>	
Method of Widening Dynamic Range of Measurable Vibration in FDM-Based Sampling-Rate-Enhanced Φ -OTDR	1299
<i>Yoshifumi Wakisaka, Daisuke Iida, Hiroshi Takahashi, Yusuke Koshikiya</i>	

W4E: HOLLOW-CORE FIBERS

Hollow Core Fibers: Key Properties, Technology Status and Telecommunication Opportunities.....	1302
<i>David Richardson</i>	
Coupling NANF to Silicon Photonics Circuits.....	1339
<i>C. Scarcella, R. Soos, J. Troska, D. Ricci, I. Toccafondo, S. Medaer, A. Taranta, F. Poletti</i>	
Comparison between the Optical Performance of Photonic Bandgap and Antiresonant Hollow Core Fibers after Long-Term Exposure to the Atmosphere	1342
<i>Shuichiro Rikimi, Yong Chen, Thomas D. Bradley, Ian A. Davidson, Hesham Sakr, Austin A. Taranta, Kerrienne Harrington, Francesco Poletti, Marco N. Petrovich, David J. Richardson, Natalie V. Wheeler</i>	
Ultralow-Loss, Plug-and-Play Hollow-Core Fiber Interconnection.....	1345
<i>Zhe Zhang, Anqing Jia, Yifeng Hong, Wei Ding, Shoufei Gao, Yingying Wang</i>	

W4F: EMERGING NETWORK ARCHITECTURES AND SERVICES

The Future of Optical Transport: Architectures and Technologies from an Operator Perspective.....	1348
<i>Andrew Lord</i>	
Delay Advantage of Optical Satellite Networks (OSN) in Long-Distance Transoceanic Communication	1366
<i>Jipu Li, Nan Hua, Yanhe Li, Xiaoping Zheng</i>	
Hitless Transmission Baud Rate Switching in a Real-Time Transponder Assisted by an Auto-Negotiation Protocol.....	1369
<i>Eric Dutisseuil, Arnaud Dupas, Alexandre Gouin, Fabien Boitier, Patricia Layec</i>	
An Error Compensation Method of Time Synchronization for Cross-Domain Interconnection in SD-TSN.....	1372
<i>Xiaodong Zhang, Guochu Shou, Junli Xue, Hongxing Li</i>	
Fiber-to-Application: Optical Slicing to Enhance Application Performance over a Metro Transport Network.....	1375
<i>Cen Wang, Xiao Xue, Noboru Yoshikane, Filippos Balasis, Hongxiang Guo, Takehiro Tsuritani</i>	

W4G: NETWORK PERFORMANCE

- Field Learnings of Deploying Model Assisted Network Feedback Systems..... 1378
Alex W. Mackay, David W. Boertjes
- Experimental Assessment of Capacity Prediction from G-SNR Measurements for Submarine Systems..... 1381
Alexis Carbo Meseguer, Jean-Christophe Antona, Juan Uriel Esparza, Alain Calsat, Philippe Plantady, Andrea Quintana, Vincent Letellier
- Concatenated GSNR Profiles for End-to-End Performance Estimations in Disaggregated Networks..... 1384
Kaida Kaeval, Jani Myyry, Klaus Grobe, Helmut Grießer, Gert Jervan

W4H: HIGH BANDWIDTH DENSITY TECHNOLOGIES TO XPU

- Temperature Tolerant On-Chip WDM Silicon Photonic Transmitter and AWGR-Based Routing Interconnects 1387
I. Roumpos, T. Chrysostomidis, V. Grimaldi, F. Zanetto, F. Toso, P. De Heyn, Y. Ban, J. Van Campenhout, G. Ferrari, M. Sampietro, F. Morichetti, A. Melloni, K. Vysokinos, T. Alexoudi, N. Pleros, M. Moralis-Pegios

W4I: MACHINE LEARNING/ARTIFICIAL INTELLIGENCE METHODS IN TRANSMISSION SYSTEMS

- Modified Weighted Learned Digital Backpropagation with Pre-Optimization in High-Symbol-Rate Coherent Systems 1390
Du Tang, Zhen Wu, Xizi Tang, Jiating Luo, Ji Luo, Bofang Zheng, Yaojun Qiao
- Machine Learning Based EDFA Channel In-Band Gain Ripple Modeling..... 1393
Zhiping Jiang, Jiachuan Lin, Hangting Hu
- End-to-End Learning of Joint Geometric and Probabilistic Constellation Shaping 1396
Vahid Aref, Mathieu Chagnon
- Digital Twin-Assisted Optical Power Allocation for Flexible and Customizable SNR Optimization 1399
Xuhao Pang, Shengnan Li, Qirui Fan, Min Zhang, Chao Lu, Alan Pak Tao Lau, Danshi Wang
- Link Power Optimization for S+C+L Multi-Band WDM Coherent Transmission Systems 1402
Salma Escobar Landero, Ivan Fernandez De Jauregui Ruiz, Alessio Ferrari, Dylan Le Gac, Yann Frignac, Gabriel Charlet

W4J: OPTICAL PARAMETRIC AMPLIFICATION AND ITS APPLICATIONS

- Polarization Insensitive Fiber Optic Parametric Amplifier with a Gain Bandwidth of 22 nm in S-Band 1405
Chandra B. Gaur, Vladimir Gordienko, Pratim Hazarika, Nick J. Doran
- Suppression of Spurious Mixing in FWM-Based Systems through Mid-Span Pump Phase Shift 1408
K. R. H. Bottrill, N. Taengnoi, H. Liu, R. Kakarla, Y. Hong, P. Petropoulos
- Ultralow-Loss Silicon Nitride Waveguides for Parametric Amplification..... 1411
Victor Torres-Company, Zhichao Ye, Ping Zhao, Magnus Karlsson, Peter A. Andrekson

Hybrid Amplification Approach to Communications beyond C- and L-Bands 1414
Youichi Akasaka

Power Consumption and FWM Crosstalk Analysis of a Hybrid S-Band Amplifier Based on Two
Parametric Wavelength Converters and an EDFA 1417
Cheng Guo, Michael Vasilyev, Youichi Akasaka, Paparao Palacharla

TH1C: OPTICAL PERFORMANCE MONITORING AND SIGNAL CHARACTERIZATION

Exact Component Parameter Agnostic QoT Estimation using Spectral Data-Driven LSTM in
Optical Networks..... 1420
Lars E. Kruse, Sebastian Kuhl, Stephan Pachnicke

Location-Resolved PDL Monitoring with Rx-Side Digital Signal Processing in Multi-Span Optical
Transmission System..... 1423
Motohiko Eto, Kazuyuki Tajima, Setsuo Yoshida, Shoichiro Oda, Takeshi Hoshida

Localization of Reflection Induced Multi-Path-Interference over Multi-Span Transmission Link by
Receiver-Side Digital Signal Processing 1426
Choloong Hahn, Junho Chang, Zhiping Jiang

Precise Longitudinal Power Monitoring over 2,080 km Enabled by Step Size Selection of Split
Step Fourier Method..... 1429
Takeo Sasai, Masanori Nakamura, Etsushi Yamazaki, Yoshiaki Kisaka

How to Connect Device Nonlinear Specification and System Nonlinear Penalty..... 1432
*Zhenning Tao, Ke Zhang, Chengwu Yang, Xiaofei Su, Tong Ye, Hisao Nakashima, Takeshi
Hoshida*

Demonstration of Enhanced Power Losses Characterization in Optical Networks..... 1435
Alix May, Fabien Boitier, Aymeric Courilleau, Bichr Al Ayoubi, Patricia Layec

Simple and Ultrafast Automatic Bias Control for Optical IQ Modulators Enabled by Dither Vector
Mapping Monitoring 1438
*Hongyu Li, Chuanming Huang, Yuanxiang Wang, Rui Deng, Mengfan Cheng, Qi Yang,
Deming Liu, Ming Tang, Lei Deng*

TH1D: OPTICAL SIGNAL PROCESSING DEVICES

Exploiting Ultra-Low Loss Silicon Nitride Platform for Various Applications (Invited) 1441
Xingchen Ji, Michal Lipson

Optical Binary Switched Delay Line Based on Low Loss Multimode Waveguide..... 1444
Samer Idres, Hossein Hashemi

Group-Velocity Dispersion Compensation of Telecom Data Signals using Compact Discrete Phase
Filters in Silicon 1447
Saket Kaushal, Jose Azana

Dispersion Compensation of 30GBaud/s NRZ and PAM4 Data using Integrated Silicon Nitride
Gratings 1450
*George Fengrong Chen, Kenny Yong Keng Ong, Xavier Xujie Chia, Yanmei Cao, Dawn T. H.
Tan*

High-Performance and Ultra-Compact Endless Automatic Polarization Controller Based on Thin-Film Lithium Niobate 1453
Zhongjin Lin, Yanmei Lin, Hao Li, Mengyue Xu, Mingbo He, Wei Ke, X. Steve Yao, Siyuan Yu, Xinlun Cai

Automated Tuning for Silicon Photonic Filters..... 1456
Kamran Entesari, Samuel Palermo, Christi Madsen, Gihoon Choo, Ramy Rady, Shengchang Cai, Binhao Wang

TH1E: FIBER AND INTEGRATED-PHOTONICS DEVICES

Photonic Lanterns as Wavefront Sensors 1459
Sergio G. Leon-Saval

Ultra-Low-Loss MCF Fanouts for Submarine SDM Applications..... 1462
V. I. Kopp, J. Park, J. Singer, D. Neugroschl, T. Suganuma, T. Hasegawa, T. Ohtsuka, H. Tazawa

Optical Fiber Micro Spectrometer Employing Self-Focusing Radiated Tilted Fiber Grating 1465
Qingguo Song, Yuze Dai, Chengjun Huang, Xiangpeng Xiao, Haoshuo Chen, Kaiming Zhou, Lin Zhang, Qizhen Sun, Zhijun Yan

Fully Integrated Solid-State LiDAR Transmitter on a Multi-Layer Silicon-Nitride-on-Silicon Photonic Platform..... 1468
Weihan Xu, Yuyao Guo, Xinhang Li, Chuxin Liu, Liangjun Lu, Jianping Chen, Linjie Zhou

Optical Phased Array for 905-nm LIDAR Applications Integrated on 300mm Si-Photonic Platform..... 1471
S. Monfray, S. Guerber, A. Montagne, D. Fowler, P. Grosse, J. Planchot, D. Ristoiu, F. Baron, M. Brihoum, L. Babaud, A. Taute, E. Kempf, K. Rovayaz, P. Chantraine, S. Delmedico, F. Leverd, L. Balme, D. Pellissier, K. Haxaire, M. Guillermet, S. Mermoz, M. Hello, S. Jan, P. Chevalier, F. Boeuf

850 nm Hybrid-Integrated Tunable Laser with Si₃N₄ Micro-Ring Resonator Feedback Circuits 1474
N. A. Schilder, A. S. Everhardt, T. R. Horner, D. Geskus, E. J. Klein, M. Benedictus, S. Kriswandhi, F. Schreuder, R. G. Heideman

TH1F: NETWORK PLANNING AND TECHNO-ECONOMICS

Optimal Deployments of 400 Gb/s Multihaul CFP2-DCO Transponders in Transparent IPoWDM Core Networks..... 1477
Thierry Zami, Bruno Lavigne

Hardware Comparison of Xponders and ZR+ in Metro and Core Networks with Mixed IP and OTN Traffic..... 1480
Ashwin Gumaste, Joao Pedro, Paul Momtahan, Harald Bock

Long-Term Capacity Planning in Flexible Optical Transport Networks..... 1483
Carmen Mas Machuca, Sai Kireet Patri, Saquib Amjad

Spectrum and Cost Savings from Beyond-100Gbaud Optical Transponders..... 1486
Oleg Karandin, Francesco Musumeci, Alessio Ferrari, Gabriel Charlet, Yvan Pointurier, Massimo Tornatore

Message Passing: Towards Low-Complexity, Global Optimal Routing and Wavelength Assignment Solutions for Optical Networks	1489
<i>Ruijie Luo, Yi-Zhi Xu, Robin Matzner, Georgios Zervas, David Saad, Polina Bayvel</i>	

TH1G: INTELLIGENT AND ARTIFICIAL INTELLIGENCE NETWORK ARCHITECTURES

Emerging Optical Interconnects for AI Systems	1492
<i>Manya Ghobadi</i>	
Accelerating Distributed Machine Learning in Disaggregated Architectures with Flexible Optically Interconnected Computing Resources	1495
<i>Shijia Yan, Ziyi Zhu, Madeleine S. Glick, Zhenguo Wu, Keren Bergman</i>	
When Task Scheduling Meets Flexible-Bandwidth Optical Interconnects: A Cross-Layer Resource Orchestration Design	1498
<i>Xiaoliang Chen, Che-Yu Liu, Roberto Proietti, Shaoyi Chen, Zhaohui Li, S. J. Ben Yoo</i>	
Data Plane Technology-Agnostic Control and Orchestration Architecture for Optical Disaggregated Data Centers	1501
<i>Fernando Agraz, Albert Pages, Salvatore Spadaro</i>	
Which Can Accelerate Distributed Machine Learning Faster: Hybrid Optical/Electrical or Optical Reconfigurable DCN?	1504
<i>Hao Yang, Zuqing Zhu, Roberto Proietti, S. J. Ben Yoo</i>	
“Digitalizing” Optical Layer for the Green Computing Continuum as the Future Digital Infrastructure	1507
<i>Shu Namiki, Kiyu Ishii</i>	

TH1H: ADVANCED MODULATION AND SIGNAL PROCESSING

Link Tomography for Amplifier Gain Profile Estimation and Failure Detection in C+L-Band Open Line Systems	1510
<i>Matheus Sena, Robert Emmerich, Behnam Shariati, Johannes K. Fischer, Ronald Freund</i>	
A Fast Amplifier Gain and Tilt Configuration Algorithm for Dynamic C+L-Band Networks	1513
<i>Yuchen Song, Qirui Fan, Danshi Wang, Chao Lu, Alan Pak Tao Lau</i>	
Model-Aided Geometrical Shaping of Dual-Polarization 4D Formats in the Nonlinear Fiber Channel.....	1516
<i>Gabriele Liga, Bin Chen, Alex Alvarado</i>	
Mutual Shaping and Pre-Emphasis Gain Magnification in the Throughput Maximisation for Ultrawideband Transmission	1519
<i>Anastasiia Vasylichenkova, Eric Sillekens, Robert I. Killey, Polina Bayvel</i>	
Probabilistic vs. Geometric Constellation Shaping in Commercial Applications	1522
<i>Olga Vassilieva, Inwoong Kim, Hiroyuki Irie, Yohei Koganei, Hisao Nakashima, Yuichi Akiyama, Takeshi Hoshida, Paparao Palacharla</i>	
An Optimized Full-Spectrum Modulated NFDM System by Combining Geometric Shaping and Linear Minimum Mean Square Error Estimator.....	1525
<i>Jiacheng Wei, Lixia Xi, Xulun Zhang, Jiayun Deng, Ruofan Zhang, Shucheng Du, Wenbo Zhang, Xiaoguang Zhang</i>	

Nonlinear Pre-Distortion in DML-Based OFDM Transmission Enabled by Low-Complexity Sparse Volterra Filtering	1528
<i>Kuang-Yu Ku, Yu-Cheng Yu, Shiuan-Mao Chi, Chia-Chien Wei</i>	

TH1I: 6G SYSTEMS AND TECHNOLOGIES

Role of Analogue Radio-over-Fibre Technology beyond 5G.....	1531
<i>Liam P. Barry, Amol Delmade, Devika Dass, Colm Browning</i>	

Spectrally Efficient Non-Orthogonal Multi-Band CAP UDWDM Fiber-MMW Integration for 6G RAN Employing NN-Based Direct Waveform to Symbol Conversion.....	1534
<i>Jiang Chen, Boyu Dong, Junlian Jia, Jianyang Shi, Tao Li, Chen Shen, Junwen Zhang, Nan Chi</i>	

Hybrid CAP / mm-Wave OFDM Vector Modulation for Photonic Frequency Conversion in a Single-Sideband Feeder	1537
<i>Aina Val Marti, Nemanja Vokic, Thomas Zemen, Bernhard Schrenk</i>	

TH1J: THIN FILM AND ORGANIC MODULATORS

BTO-Enhanced Silicon Photonics — A Scalable PIC Platform with Ultra-Efficient Electro-Optical Modulation	1540
<i>Lukas Czornomaz, Stefan Abel</i>	

Thin-Film Lithium Niobate DP-IQ Modulator for Driverless 130 Gbaud 64 QAM Transmission.....	1543
<i>Mengyue Xu, Fabio Pittala, Jin Tang, Yuntao Zhu, Mingbo He, Wing Chau Ng, Ziliang Ruan, Xuefeng Tang, Maxim Kuschnerov, Liu Liu, Siyuan Yu, Bofang Zheng, Xinlun Cai</i>	

CMOS-Level-Voltage Substrate-Removed Thin-Film Lithium Niobate Modulator.....	1546
<i>Mengyue Xu, Shengqian Gao, Heyun Tan, Xinlun Cai</i>	

Highly Reliable Organic Polymer Optical Modulators	1549
<i>Shiyoshi Yokoyama, Guo-Wei Lu, Hiromu Sato, Jiawei Mao, Alisa Bannaron</i>	

Generation and Transmission of 160-Gbaud QPSK Coherent Signals using a Dual-Drive Plasmonic-Organic Hybrid I/Q Modulator on Silicon Photonics	1552
<i>Haik Mardoyan, Filipe Jorge, Marcel Destraz, Bernadette Duval, Bertold Bitachon, Yannik Horst, Kaoutar Benyahya, Fabrice Blache, Michel Goix, Eva De Leo, Patrick Habegger, Norbert Meier, Nino Del Medico, Valentino Tedaldi, Christian Funck, Nicholas Gusken, Juerg Leuthold, Jeremie Renaudier, Claudia Hoessbacher, Wolfgang Heni, Benedikt Baeuerle</i>	

A Highly Compact Thin-Film Lithium Niobate Modulator with Low Half-Wave Voltage.....	1555
<i>Xuecheng Liu, Hao Liu, Bing Xiong, Changzheng Sun, Zhibiao Hao, Lai Wang, Jian Wang, YanJun Han, Hongtao Li, Yi Luo</i>	

TH2A: POSTER SESSION II

Characteristics of Field Operation Data for Optical Transceivers in Hyperscale Data Centers	1558
<i>Chongjin Xie, Chunxiao Wang, Qin Chen, Zhicheng Wang, Peng Wang, Rui Lu, Lei Wang</i>	

Realization of EML Submodule for 100-Gbaud Operation using LC Resonance with Optimization of Load Resistance	1561
<i>Seok-Jun Yun, Young-Tak Han, Dong-Hoon Lee, Seok-Tae Kim, Min-Jun Kwak, Jang-Uk Shin, Sang-Ho Park, Seo-Young Lee, Yongsoon Baek</i>	

Liquid Waveguide Cladding for 2D Beam Steering of an Optical Phased Array at a Single Wavelength.....	1564
<i>Binghui Li, Caiming Sun, Aidong Zhang</i>	
Free-Space Coupling Type Fan-in/Fan-Out Device for 4-Core Fiber with Low Insertion Loss	1567
<i>T. Kiriya, K. Iwasaki, K. Kito, T. Kato</i>	
O-Band Fiber-to-Chip Edge Coupler for High NA Fiber Based on a CMOS Compatible SOI Platform.....	1570
<i>Min Teng, Hao Wu, Chenlei Li, Feng Wang, Yinchao Du, Xuezhe Zheng</i>	
Microscale Mode-Selective Photonic Lantern Multiplexer Compatible with 3D Nanoprinting Technology.....	1573
<i>Yoav Dana, Dan M. Marom</i>	
Ultrahigh Extinction Ratio Silicon Micro-Ring Modulator by MDM Resonance for High Speed PAM Modulation.....	1576
<i>Jiacheng Liu, Jiangbing Du, Weihong Shen, Gangqiang Zhou, Linjie Zhou, Ke Xu, Zuyuan He</i>	
Federated Learning Approach for Lifetime Prediction of Semiconductor Lasers.....	1579
<i>Khoulood Abdelli, Helmut Griebner, Stephan Pachnicke</i>	
High Output Power DBR Laser for FMCW LiDAR System	1582
<i>Gong Zhang, Zhihuan Ding, Kuankuan Wang, Qianyin Lu, Weihua Guo</i>	
Multi-Fiber Cylindrical Ferrule for Remote Rotary Optical Fiber Switching	1585
<i>Chisato Fukai, Yoshiteru Abe, Kazunori Katayama</i>	
Lightning-Related ELF Transients as a Potential Source of Rapid State of Polarization Changes in Shielded OPGW	1588
<i>J. A. Santos, R. C. Moore, W. C. Snider, D. Doucet, D. Charlton</i>	
Long-Distance Random Fiber Laser Sensing System with Ultra-Fast Signal Demodulation	1591
<i>Shengtao Lin, Zinan Wang, Yifei Qi, Yunjiang Rao</i>	
Non-Intrusive and Highly Sensitive Gas Flow Monitoring Based on Distributed Acoustic Sensing.....	1594
<i>Baoqiang Yan, Hao Li, Ming Li, Cunzheng Fan, Keqing Zhang, Hao Qian, Fei Xiao, Zhijun Yan, Qizhen Sun</i>	
Single-Shot Hybrid CP- ϕ OTDR/CP-BOTDA System for Simultaneous Distributed Temperature/Strain Sensing	1597
<i>Yuan Wang, Xiaoyi Bao</i>	
Transmission of 400GBASE-LR8 over 15 km Deployed Step-Index 4-Core fiber for Data Centre Interconnects	1600
<i>Daniel J. Elson, Yuta Wakayama, Shohei Beppu, Daiki Soma, Noboru Yoshikane</i>	
Traffic Tolerance of Nanosecond Scheduling on Optical Circuit Switched Data Center Network.....	1603
<i>Joshua L. Benjamin, Alessandro Ottino, Christopher W. F. Parsonson, Georgios Zervas</i>	
Graph Sequence Attention Network-Enabled Reinforcement Learning for Time-Aware Robust Routing in OSU-Based OTN.....	1606
<i>Huangxu Ma, Jiawei Zhang, Yuefeng Ji</i>	
Evaluation of Deep Reinforcement Learning for Restoration in Optical Networks.....	1609
<i>C. Hernandez-Chulde, R. Casellas, R. Martinez, R. Vilalta, R. Munoz</i>	

Non-Linear Effects of WDM Transmission versus Optical Routing Impairments: Does One Prevail at Network Level?	1612
<i>Thierry Zami, Matteo Lonardi, Nicola Rossi, Bruno Lavigne</i>	
High Degree ROADM Cluster Node.....	1615
<i>Hamid Mehrvar, Xiang Hui, Sun Jun, Eric Bernier</i>	
Dynamic and Efficient Point-to-Point and Point-to-Multipoint Communications by Slicing the Optical Constellation	1618
<i>M. Iqbal, M. Ruiz, N. Costa, A. Napoli, J. Pedro, L. Velasco</i>	
First 100Gb/s Fine-Granularity Flexible-Rate PON Based on Discrete Multi-Tone and PAPR Optimization.....	1621
<i>Ji Zhou, Jiale He, Xiaofeng Lu, Guanyu Wang, Yu Bo, Gengchen Liu, Yuanda Huang, Liangchuan Li, Haide Wang, Wenxuan Mo, Weiping Liu, Changyuan Yu, Zhaohui Li</i>	
High Speed RGB Visible Light Communication (VLC) using Digital Power-Domain Multiplexing (DPDM) of Orthogonal Frequency Division Multiplexed (OFDM) Signals.....	1624
<i>Wahyu Hendra Gunawan, Yun-Han Chang, Chi-Wai Chow, Yang Liu, Chien-Hung Yeh</i>	
800-Gbps PAM-2 km Transmission using 4- λ LAN-WDM TOSA with MLSE Based on Deep Neural Network	1627
<i>Hiroki Taniguchi, Shuto Yamamoto, Akira Masuda, Yoshiaki Kisaka, Shigeru Kanazawa</i>	
100 Gbit/s THz Data Transmission and Beyond using Multicore Fiber Combined with UTC Photodiode Array	1630
<i>Bewindin A. Sawadogo, Aritrio Bandyopadhyay, Malek Zegaoui, Mohammed Zaknoune, Pascal Szriftgiser, Karen Baudelle, Monika Bouet, Geraud Bouwmans, Davy P. Gaillot, Esben Andresen, Guillaume Ducournau, Laurent Bigot</i>	
Simultaneous Noise Mitigation of Wavelength-Multiplexed Signals by Self-Tracking Passive Amplification.....	1633
<i>Benjamin Crockett, Luis Romero Cortes, Reza Maram, Jose Azana</i>	
Seven-Aperture Direct-Detection Receiver for Free-Space Optical Communication Systems	1636
<i>Mat Nguyen Thi, Vuong Mai, Hoon Kim</i>	
Polarization Crosstalk Reduction by Successive Interference Cancellation for Polarization-Tracking-Free PDM Radio over Fiber Mobile Fronthaul System	1639
<i>Chang-Ying Lin, Jih-Heng Yan, Kuan-Heng Chen, Kai-Ming Feng</i>	
A Rotated QAM-Based Probabilistically Shaped OFDM with ANN Scheme for W-Band RoF System	1642
<i>Jing He, Zhihua Zhou, Jing He</i>	
Optical Performance Monitoring for Commercial Transceivers using Constellations: Practical Considerations.....	1645
<i>Daniel Lippiatt, Hyung Joon Cho, Alex Kaylor, Varghese A. Thomas, Steven Searcy, Thomas Richter, Sorin Tibuleac, Stephen E. Ralph</i>	
Geometric Constellation Shaping for Phase-Noise Channels using a Differentiable Blind Phase Search	1648
<i>Andrej Rode, Benedikt Geiger, Laurent Schmalen</i>	
Ultra-Low-Complexity MAP Demapper for Bandwidth-Limited Pluggable Coherent Optics beyond 800G	1651
<i>Di Che</i>	

Reduced Complexity Adaptive Background Compensation of Electro-Optic Tx Impairments in Coherent Optical Transceivers	1654
<i>James Kunst, Juan Bonetti, Benjamin Reyes, Damian Morero, Mario Hueda</i>	
Domain Adaptation: The Key Enabler of Neural Network Equalizers in Coherent Optical Systems	1657
<i>Pedro J. Freire, Bernhard Spinnler, Daniel Abode, Jaroslaw E. Prilepsky, Abdallah Ali, Nelson Costa, Wolfgang Schairer, Antonio Napoli, Andrew D. Ellis, Sergei K. Turitsyn</i>	
Double-Effect DNN-Based DBP Scheme for Integrated Sensing and Communications (ISAC)	1660
<i>Feiyu Li, Xian Zhou, Qirui Fan, Yuyuan Gao, Jiahao Huo, Jinhui Yuan, Keping Long</i>	
Core and Wavelength Allocation of Sending-or-Not-Sending Quantum Key Distribution for Future Metropolitan Networks over Multicore Fiber.....	1663
<i>Weiwen Kong, Yongmei Sun, Yaoxian Gao, Yuefeng Ji</i>	
Full Spectrum b-Modulation of Time-Limited Signals using Linear Programming	1666
<i>Sander Wahls</i>	
Optical Damage Threshold Screening Methodology for 28 Gbd, Long Wavelength Avalanche Photodiodes	1669
<i>Alberto Ciarrocchi, Wei Quan, Markus Blaser, Maria Hammerli, Hektor Meier</i>	

TH3A: ENERGY EFFICIENT SUBSYSTEMS FOR THE DATA CENTER

Demonstration of High-Throughput Intra-Datacenter Switches using Interleaved AWGs for Nyquist WDM	1672
<i>Takuma Kuno, Takumi Mitsuya, Yojiro Mori, Hiroshi Hasegawa, Ken-Ichi Sato</i>	
Demonstration of WDM-Enabled Ultralow-Energy Photonic Edge Computing	1675
<i>Alexander Shudds, Ryan Hamerly, Saumil Bandyopadhyay, Zhizhen Zhong, Zaijun Chen, Liane Bernstein, Manya Ghobadi, Dirk Englund</i>	
Energy Efficient OEO Conversion and its Applications to Photonic Integrated Systems.....	1678
<i>Akihiko Shinya, Kengo Nozaki, Shota Kita, Tohru Ishihara, Shinji Matsuo, Masaya Notomi</i>	
Driving down Link Energy and Driving up Link Density in GPU Networks	1681
<i>Benjamin G. Lee</i>	

TH3B: PHOTONIC SIGNAL PROCESSING

Biomimicry in Microwave Photonic and Fiber Optic Sensors Embedded Soft Robotics	1684
<i>Mable Fok, Qidi Liu, Mei Yang</i>	
All-Fiber Noise-Mitigating Sampling of Temporal Waveforms Enabling Broadband Operation and High Passive Amplification.....	1687
<i>Manuel P. Fernandez, Saket Kaushal, Laureano A. Bulus-Rossini, Pablo A. Costanzo-Caso, Jose Azana</i>	

TH3C: SI PHOTONICS

Segmented Silicon Photonic Modulator with a 67-GHz Bandwidth for High-Speed Signaling	1690
<i>Abdolkhalegh Mohammadi, Zibo Zheng, Jiachuan Lin, Mohammad M. Rad, Xiaoguang Zhang, Leslie A. Rusch, Wei Shi</i>	

40GBaud PAM4 Silicon Mach-Zehnder Modulator Boosted by a Heterogeneously Integrated SOA with 10dB-Gain	1693
<i>S. Menezo, Z. Yong, K. Froberger, T. Thiessen, J. C. C. Mak, F. Denis-Le Coarer, M. Peyrou, L. Milord, J. Da Fonseca, C. Jany, P. Grosse, F. Mazur, J. K. S. Poon</i>	
Enhanced Stability of Resonant Racetrack Plasmonic-Organic-Hybrid Modulators	1696
<i>Marco Eppenberger, Bertold Ian Bitachon, Andreas Messner, Wolfgang Heni, David Moor, Laurenz Kulmer, Patrick Habegger, Marcel Destraz, Eva De Leo, Norbert Meier, Nino Del Medico, Claudia Hoessbacher, Benedikt Baeuerle, Juerg Leuthold</i>	
110 Gbit/s NRZ and 160 Gbit/s PAM-4 GeSi Electro-Absorption Modulator.....	1699
<i>Xiao Hu, Dingyi Wu, Yuguang Zhang, Hongguang Zhang, Daigao Chen, Min Liu, Jia Liu, Lei Wang, Xi Xiao, Shaohua Yu</i>	
Considerations for Silicon Photonics Process Technologies in a Commercial Foundry Environment	1702
<i>Edward Preisler, Farnood Rezaie, Yasir Qamar, Minoli Pathirane, Sina Soltanmohammad, Ron Tang, Oleg Martynov</i>	
Highlights of 10-Years of Research in a Japanese Si Photonics Project	1705
<i>Yasuhiko Arakawa, Takahiro Nakamura, Kazuhiko Kurata</i>	

TH3D: QUANTUM NETWORKING AND RESILIENCY

Dynamic Quantum Network: From Quantum Data Centre to Quantum Cloud Computing.....	1709
<i>Reza Nejabati, Rui Wang, Dimitra Simeonidou</i>	
Auxiliary Graph Based QKD Key Provisioning for End-to-End Security Service in Optical Networks	1712
<i>Qingcheng Zhu, Xiaosong Yu, Yongli Zhao, Avishek Nag, Hua Wang, Liquan Chen, Jie Zhang</i>	
A Dynamic Multi-Protocol Entanglement Distribution Quantum Network.....	1715
<i>R. Wang, O. Alia, M. J. Clark, S. Bahrani, S. K. Joshi, D. Aktas, G. T. Kanellos, M. Peranic, M. Loncaric, M. Stipcevic, J. Rarity, R. Nejabati, D. Simeonidou</i>	
Microservice-Based Unsupervised Anomaly Detection Loop for Optical Networks.....	1718
<i>Carlos Natalino, Carlos Manso, Lluís Gifre, Raul Munoz, Ricard Vilalta, Marija Furdek, Paolo Monti</i>	
Autonomous and Generalized Soft Failure Detection Based on Digital Residual Spectrum in Optical Networks.....	1721
<i>Kaixuan Sun, Zhenming Yu, Hongyu Huang, Jing Zhang, Kun Xu</i>	

TH3E: COHERENT OPTICAL ACCESS NETWORKS

Coherent Optics for Access from P2P to P2MP	1724
<i>L. Alberto Campos, Zhensheng Jia, Mu Xu, Haipeng Zhang</i>	
Intelligent Burst Receiving Control in 100G Coherent PON with 4×25G TFDm Upstream Transmission	1727
<i>Mu Xu, Zhensheng Jia, Haipeng Zhang, Luis Alberto Campos, Curtis Knittle</i>	
200-Gb/s/λ Coherent TDM-PON with Wide Dynamic Range of >30-dB Based on Local Oscillator Power Adjustment	1730
<i>Guoqiang Li, Sizhe Xing, Zhongya Li, Junwen Zhang, Nan Chi</i>	

Experimental Demonstration of 200 Gb/s/λ Coherent PON with a Low-Complexity Receiver and a Multi-Purpose Neural Network	1733
<i>Dongxu Zhang, Xiaofeng Hu, Xiaoan Huang, Kaibin Zhang</i>	
Experimental Demonstration of 100/200-Gb/s/λ PON Downstream Transmission using Simplified Coherent Receivers.....	1736
<i>Md Saifuddin Faruk, Xiang Li, Seb J. Savory</i>	
Low-Cost Asymmetric Point-to-Multipoint Coherent Architecture for Access Networks.....	1739
<i>Yunyun Fan, Mengfan Fu, Xiaomin Liu, Yicheng Xu, Lilin Yi, Weisheng Hu, Qunbi Zhuge</i>	

TH3F: ADVANCED MODULATION FORMATS

Nokia Bell Labs: Probabilistic Constellation Shaping: An Implementation Perspective	1742
<i>Junho Cho</i>	
Mitigating Nonlinear Interference by Limiting Energy Variations in Sphere Shaping	1781
<i>Yunus Can Gultekin, Alex Alvarado, Olga Vassilieva, Inwoong Kim, Paparao Palacharla, Chigo M. Okonkwo, Frans M. J. Willems</i>	
Eigenvalue-Domain Neural Network Receiver for 4096-Ary Eigenvalue-Modulated Signal.....	1784
<i>Hiroyuki Takeuchi, Ken Mishina, Yuhei Terashi, Daisuke Hisano, Yuki Yoshida, Akihiro Maruta</i>	
Shaped Four-Dimensional Modulation Formats for Optical Fiber Communication Systems	1787
<i>Bin Chen, Gabriele Liga, Yi Lei, Wei Ling, Zhengyan Huan, Xuwei Xue, Alex Alvarado</i>	

TH3G: SENSING AND RADAR APPLICATIONS

Employing Fiber Sensing and On-Premise AI Solutions for Cable Safety Protection over Telecom Infrastructure	1790
<i>Ting Wang, Ming-Fang Huang, Shaobo Han, Chaitanya Narisetty</i>	
Photonics-Based Multiband Radar Fusion with Millimeter-Level Range Resolution.....	1793
<i>Xin Zhu, Guanqun Sun, Fangzheng Zhang</i>	
LIDAR-Assisted Channel Modelling for LiFi.....	1796
<i>Sreelal Maravanchery Mana, Kerolos Gabra Kamel Gabra, Sepideh Mohammadi Kouhini, Malte Hinrichs, Dominic Schulz, Ronald Freund, Volker Jungnickel</i>	
Integrated 1.58 cm Range Resolution Radar and 60 Gbit/s 50m Wireless Communication Based-on Photonics Technology in Terahertz Band.....	1799
<i>Yanyi Wang, Weiping Li, Junjie Ding, Jiao Zhang, Feng Wang, Chen Wang, Li Zhao, Cuiwei Liu, Wen Zhou, Jianguo Yu, Mingzheng Lei, Min Zhu, Feng Zhao, Jianjun Yu</i>	

POST-DEADLINE PAPERS

Real-Time Transmission over 2×55 km All 7-Core Coupled-Core Multi-Core Fiber Link.....	1802
<i>Mikael Mazur, Lauren Dallachiesa, Nicolas K. Fontaine, Roland Ryf, Erik Borjeson, Haoshuo Chen, Hirotaka Sakuma, Takafumi Ohtsuka, Tetsuya Hayashi, Takemi Hasegawa, Hidehisa Tazawa, David T. Neilson, Per Larsson-Edefors</i>	

DAS over 1,007-km Hybrid Link with 10-Tb/s DP-16QAM Co-Propagation using Frequency-Diverse Chirped Pulses.....	1805
<i>Ezra Ip, Yue-Kai Huang, Ming-Fang Huang, Fatih Yaman, Glenn Wellbrock, Tiejun Xia, Ting Wang, Koji Asahi, Yoshiaki Aono</i>	
927-km End-to-End Interoperable 400-GbEthernet Optical Communications through 2-km 400GBASE-FR4, 8×100-km 400G-OpenROADM and 125-km 400-ZR Fiber Lines	1808
<i>E. Pincemin, Y. Loussouarn, A. Sotomayor, G. Losio, M. McCarthy, L. Nelson, A. Malik, I. Riggs, T. Nielsen, T. Williams, A. Gaibazzi, L. Zhang, W. Way, F. Courchesne, M. Vasconcellos</i>	
First Demonstration of PS-QAM Based Flexible Coherent PON in Burst-Mode with 300G Peak-Rate and Record Dynamic-Range and Net-Rate Product up to 7,104 dB·Gbps.....	1811
<i>Sizhe Xing, Guoqiang Li, Jiang Chen, Junwen Zhang, Nan Chi, Zhixue He, Shaohua Yu</i>	
Net 1 Tbps/λ Transmission over 80 km of SSMF using a Single Segment SiP IQM with All-Electronic Equalization	1814
<i>Essam Berikaa, Md Samiul Alam, Alireza Samani, Stephane Lessard, David V. Plant</i>	
Optical Amplification-Free 200 Gbaud On-Off Keying Link for Intra-Data Center Communications.....	1817
<i>Oskars Ozolins, Toms Salgals, Hadrien Louchet, Mahdieh Joharifar, Richard Schatz, Markus Gruen, Thomas Dippon, Benjamin Kruger, Di Che, Yasuhiro Matsui, Yuchuan Fan, Aleksejs Udalcovs, Lu Zhang, Xianbin Yu, Sandis Spolitis, Vjaceslavs Bobrovs, Sergei Popov, Xiaodan Pang</i>	
End-to-End Real-Time Service Provisioning over a SDN-Controllable 60 GHz analog FiWi X-Haul for 5G Hot-Spot Networks.....	1820
<i>C. Vagionas, R. Maximidis, I. Stratakos, A. Margaris, A. Mesodiakaki, M. Gatzianas, K. Kanta, P. Toumasis, G. Giannoulis, D. Apostolopoulos, E. A. Papatheofanous, G. Lentaris, D. Reisis, D. Soudris, K. Tsagkaris, N. Argyris, D. Syrivelis, P. Bakopoulos, R. M. Oldenbeuving, C. G. H. Roeloffzen, P. W. L. Van Dijk, I. Dimogiannis, A. Kontogiannis, H. Avramopoulos, A. Miliou, N. Pleros, G. Kalfas</i>	
50-Tb/s (1 Tb/s × 50 ch) WDM Transmission on Two 6.25-THz Bands using Hybrid Inline Repeater of PPLN-Based OPAs and Incoherent-Forward-Pumped DRA	1823
<i>Takayuki Kobayashi, Shimpei Shimizu, Masanori Nakamura, Takeshi Umeki, Takushi Kazama, Junji Yoshida, Shigehiro Takasaka, Yasuto Tatamida, Hiroto Kawakami, Fukutaro Hamaoka, Munehiko Nagatani, Hiroshi Yamazaki, Kei Watanabe, Takashi Saida, Yutaka Miyamoto</i>	
Complex Lasing Based Decentralized key Distribution Controlled by Photothermal Effect.....	1826
<i>Hong Yang Zhu, Jin Chuan Zhang, Wei Li Zhang</i>	
Telecom-Band Hyperentangled Photon Pairs from a Fiber-Based Source	1829
<i>Changjia Chen, Calvin Xu, Arash Riazi, Eric Y. Zhu, Alexander Greenwood, Alexey V. Gladyshev, Peter G. Kazansky, Brian T. Kirby, Li Qian</i>	
Caching with Light: First Demonstration of an Optical Cache Memory Prototype	1831
<i>Christos Pappas, Theodoros Moschos, Theoni Alexoudi, Christos Vagionas, Nikos Pleros</i>	
THz Integrated Circuit with a Pixel Array to Multiplex Two 10-Gbit/s QPSK Channels Each on a Different OAM Beam for Mode-Division-Multiplexing	1834
<i>Xinzhou Su, Hao Song, Huibin Zhou, Kaiheng Zou, Yuxiang Duan, Narek Karapetyan, Runzhou Zhang, Amir Minoofar, Haoqian Song, Kai Pang, Shlomo Zach, Andreas F. Molisch, Moshe Tur, Alan E. Willner</i>	

11 Gb/s LWIR FSO Transmission at 9.6 μm using a Directly-Modulated Quantum Cascade Laser and an Uncooled Quantum Cascade Detector	1837
<i>Xiaodan Pang, Hamza Dely, Richard Schatz, Djamal Gacemi, Mahdieh Joharifar, Toms Salgals, Aleksejs Udalcovs, Yan-Ting Sun, Yuchuan Fan, Lu Zhang, Etienne Rodriguez, Sandis Spolitis, Vjaceslavs Bobrovs, Xianbin Yu, Sebastian Lourdudoss, Sergei Popov, Oskars Ozolins, Angela Vasanelli, Carlo Sirtori</i>	
High Electrical Spectral Efficiency Silicon Photonic Receiver with Carrier-Assisted Differential Detection	1840
<i>Jingchi Li, Zhen Wang, Honglin Ji, Xingfeng Li, Haoshuo Chen, Ranjith Rajasekharan Unnithan, William Shieh, Yikai Su</i>	
Silicon Photonics 630-Gb/s Complementary Polarization-Diversity Coherent Receiver with 9-Mrad/s Polarization Tracking Speed for Self-Coherent Homodyne Detection	1843
<i>Honglin Ji, Zhen Wang, Xingfeng Li, Jingchi Li, Ranjith Rajasekharan Unnithan, Weisheng Hu, Yikai Su, William Shieh</i>	
Real-Time MIMO Transmission over Field-Deployed Coupled-Core Multi-Core Fibers	1846
<i>M. Mazur, R. Ryf, N. K. Fontaine, A. Marotta, E. Borjeson, L. Dallachiesa, H. Chen, T. Hayashi, T. Nagashima, T. Nakanishi, T. Morishima, F. Graziosi, L. Palmieri, D. T. Neilson, P. Larsson-Edefors, A. Mecozzi, C. Antonelli</i>	
Real Time 6.4 Tbps (8 \times 800G) SHCD Transmission through 1+8 Multicore Fiber for Co-Packaged Optical-IO Switch Applications	1849
<i>Tao Gui, Haoze Du, Keshuang Zheng, Juntao Cao, Shuai Yuan, Chen Yang, Ming Tang, Liangchuan Li</i>	
First Demonstration of Crosstalk-Free (< -38.5 dB) 32-ch DWDM Demultiplexer on Standard Si PIC Platform.....	1852
<i>Tomoyuki Akiyama, Motoyuki Nishizawa, Akio Sugama, Yasuhiro Nakasha, Shinsuke Tanaka, Yu Tanaka, Takeshi Hoshida</i>	
Compact Adiabatic Silicon Photonic Filters with Arbitrary and Ultra-Broadband Response	1855
<i>Kazim Gorgulu, Emir Salih Magden</i>	
384-Gb/s/lane PAM8 Operation using 76-GHz Bandwidth EA-DFB Laser at 50°C with 1.0-V _{pp} Swing over 2-km Transmission.....	1858
<i>Hideaki Asakura, Kazuki Nishimura, Syunya Yamauchi, Koichiro Iwamoto, Yoshihiro Nakai, Yoriyoshi Yamaguchi, Kentaro Tani, Ryosuke Nakajima, Kazuhiko Naoe</i>	
Ultra-Compact Silicon Modulator with 110 GHz Bandwidth	1861
<i>Changhao Han, Ming Jin, Yuansheng Tao, Bitao Shen, Haowen Shu, Xingjun Wang</i>	
Scalable On-Chip Single-Photon Cross-Bar Switching.....	1864
<i>Xiaoxi Wang, Shayan Mookherjea</i>	
0.174 dB/km Hollow Core Double Nested Antiresonant Nodeless Fiber (DNANF).....	1867
<i>Gregory T. Jasion, Hesham Sakr, John R. Hayes, Seyed Reza Sandoghchi, Lucy Hooper, Eric Numkam Fokoua, Arsalan Saljoghei, Hans Christian Mulvad, Marcelo Alonso, Austin Taranta, Thomas D. Bradley, Ian A. Davidson, Yong Chen, David J. Richardson, Francesco Poletti</i>	
High Power BDF/EDF Hybrid Amplifier Providing 27 dB Gain over 90 nm in the E+S Band	1870
<i>Frederic Maes, Manish Sharma, Lixian Wang, Zhiping Jiang</i>	

Author Index