

2024 Optical Fiber Communications Conference and Exhibition (OFC 2024)

**San Diego, California, USA
24-28 March 2024**

Pages 1-625



**IEEE Catalog Number: CFP24OFC-POD
ISBN: 979-8-3503-7758-3**

**Copyright © 2024, 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:	CFP24OFC-POD
ISBN (Print-On-Demand):	979-8-3503-7758-3
ISBN (Online):	978-1-957171-32-6

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: FIBER SENSING DEVICES

Single Frequency Fiber Laser Strain Sensors: Principles and Applications	1
<i>Geoffrey A. Cranch, Logan Richardson, Caitlin Williams, Gary Miller, Ryan Seeley, Evan Hardester</i>	
Optical Fiber Tags Based on Encoded FBG Array	4
<i>Xiangpeng Xiao, Weiliang Zhao, Yibo Liu, Ke Ai, Peng Wang, Lei Deng, Chen Liu, Qi Yang, Qizhen Sun, Zhijun Yan</i>	
Three-Dimensional-Printed Hollow Fabry-Perot Fiber Sensor for Ultra-High Sensitivity Ultrasound Detection	7
<i>Anqi Wang, Xuhao Fan, Dongchen Xu, Geng Chen, Chenhao Dai, Zhi Zhang, Wei Xiong, Qizhen Sun</i>	

M1B: FIBER-BASED NONLINEAR-OPTIC AND OPTOELECTRONIC DEVICES

Demonstration of a Stable, High-Performance Mach-Zehnder Polarization-Insensitive Fiber Optical Parametric Amplifier	10
<i>F. Bessin, V. Gordienko, F. M. Ferreira, N. J. Doran</i>	
Employment of Polarization Diversity Architecture to Mitigate an Impact of Pump Phase Modulation in FOPA	13
<i>Mariia Bastamova, Vladimir Gordienko, Nick J. Doran, Andrew D. Ellis</i>	
All-Fiber Optoelectronics	16
<i>Lei Wei</i>	
Waveband-Shift-Free Optical Phase Conjugation in Fiber Loop Mirror Across 35-Nm Bandwidth	17
<i>Vladimir Gordienko, Sonia Boscolo, Mariia Bastamova, Nick J. Doran, Andrew D. Ellis</i>	
Positive (>0 dB) Wavelength Conversion Efficiency in Temperature-Tuned Five-Segment Highly-Nonlinear Fiber Without Pump Dithering	20
<i>Hamed Rabbani, Cheng Guo, Michael Vasilyev</i>	
Nonlinear Optics in Silicon Core Fibers: Progress and Trends	23
<i>Anna C. Peacock</i>	

M1D: HIGH POWER AND NARROW LINEWIDTH LASERS

CW-WDM MSA Compatible 100-MW (up to 50°C), 400-GHz Spacing Highly-Reliable CW-DFB 8-Channel Laser Array	25
<i>Ryosuke Hatai, Kouji Nakahara, Atsushi Nakamura, Takayuki Nakajima, Yoshihiko Kobayashi, Takeo Kageyama, Shigehisa Tanaka</i>	
High Efficiency High-Power Uncooled CWDM4 Wavelength CW-DFB Lasers.....	28
<i>Milind R. Gokhale, Mark A. Emanuel, Benjamin Li</i>	
Development of High-Power DFB Lasers with High Reliability	31
<i>Yuanfeng Mao, Yuanbing Cheng, Guangcan Chen, Yanbo Li, Bo Wu</i>	

Ten-Channel High Power DFB Laser Array with High Single Mode Stability and Low RIN	34
<i>Yuanhao Zhang, Qianru Lu, Can Liu, Minwen Xiang, Guojiong Li, Juan Xia, Qiaoyin Lu, Weihua Guo</i>	
Reducing the Linewidth of Hybrid Integrated III-V/Silicon Laser by Utilizing High-Q Multimode-Waveguide-Based Silicon Ring Resonator	37
<i>Xinhang Li, Yuyao Guo, Siyu E, Yihao Fan, Minhui Jin, Weihan Xu, Liangjun Lu, Yu Li, Jianping Chen, Linjie Zhou</i>	
Hertz-Linewidth, High-Power, Frequency-Agile Photonic Integrated E-DBR Laser	40
<i>Anat Siddharth, Alaina Attanasio, Grigory Lihachev, Rui N. Wang, Zheru Qiu, Scott Kenning, Sunil A. Bhave, Johann Riemensberger, Tobias J. Kippenberg</i>	
Multi-Wavelength DFB Laser with High Mode Stability and Uniform Spacing Via REC Technique	43
<i>Zhenxing Sun, Jie Zhao, Yue Zhang, Zijiang Yang, Kaifei Tang, Rulei Xiao, Xiangfei Chen</i>	

M1E: DSP AND MULTIPLEXING TECHNIQUES

A Robust Timing Recovery Algorithm for Faster-Than-Nyquist Digital Multi-Band System	46
<i>Hao Deng, Wanzhen Guo, Yi Cai, Jian Zhao</i>	
Clock Recovery of a 180 Gbaud Faster-Than-Nyquist Signal Enabled by a Novel Adaptive Equalizer-Aided Algorithm	49
<i>Yo Nakamura, Guoxiu Huang, Hisao Nakashima, Takeshi Hoshida</i>	
Optimization of Pilot-Aided Joint Phase Recovery for Frequency Comb-Based Wideband Transmission.....	52
<i>Gabriele Di Rosa, Ognjen Jovanovic, M. Ahmed Leghari, Jasper Müller, Benjamin Wohlfeil, Jorg-Peter Elbers</i>	
Carrier Frequency Offset Estimation Using Godard Timing Recovery in Coherent Optical Systems	55
<i>T. H. Nguyen, S. Mumtaz, A. Lorences-Riesgo, M. Sales-Llopis, C. Jauffret, C. S. Martins, Z. Wu, Y. Frignac, G. Charlet, Y. Zhao</i>	

M1F: MULTI BAND TRANSMISSION SYSTEMS

Modeling and Experimental Verification in S+C+L+U Quadrable-Band WDM Transmission System Using C+L-Band Transceivers and Wavelength Converters.....	58
<i>Hidenobu Muranaka, Tomoyuki Kato, Tomohiro Yamauchi, Hiroyuki Irie, Hiroki Ooi, Yu Tanaka, Shimpei Shimizu, Takayuki Kobayashi, Takushi Kazama, Masashi Abe, Takeshi Umeki, Yutaka Miyamoto, Takeshi Hoshida</i>	
Performance Enhancement of Long-Haul C+L+S Systems by Means of CFM-Assisted Optimization.....	61
<i>Yanchao Jiang, Antonino Nespola, Alberto Tanzi, Stefano Piciaccia, Mahdi Ranjbar Zefreh, Fabrizio Forghieri, Pierluigi Poggiolini</i>	
264.7 Tb/s E, S, C + L-Band Transmission Over 200 Km	64
<i>Benjamin J. Puttnam, Ruben S. Luis, Yetian Huang, Ian Phillips, Dicky Chung, Nicolas K. Fontaine, Budsara Boriboon, Georg Rademacher, Mikael Mazur, Lauren Dallachiesa, Haoshuo Chen, Wladek Forysiak, Ray Man, Roland Ryf, David T. Neilson, Hideaki Furukawa</i>	

Accurate SNR Estimation in C+L-Band 10-THz Hybrid Raman-EDFA Amplified Transmission Using Two-Stage Power Profile Calculation Accounting for Pump Depletion	67
<i>Kosuke Kimura, Shimpei Shimizu, Takayuki Kobayashi, Masanori Nakamura, Yutaka Miyamoto</i>	

M1G: OPTICAL NETWORKS FOR DISAGGREGATED AND COMPOSABLE COMPUTING SYSTEMS

Programmable Silicon Photonics for the Implementation of Topological Systems.....	70
<i>Andrea Blanco-Redondo</i>	
Optically Networked Heterogeneous Data-Centric Computing System with Silicon Photonics Transceivers.....	71
<i>Dae-Ub Kim, Jyung Chan Lee, Sanghwa Yoo, Jongtae Song, Kyeong-Eun Han, Jiwook Youn, Bup Joong Kim, Chanho Park, Joon Ki Lee</i>	
Beyond the Beachfront: Integration of Silicon Photonic I/Os Under a High-Power ASIC	74
<i>Subal Sahni, Abhijit Abhyankar, Ankur Aggarwal, Nikos Bamiedakis, Zoltan Bekker, Mohamed Benromdhane, Nadav Bergstein, Ties Bos, Christopher Davies, Andrew Gimlett, Xiaoping Han, Kelin Lee, Kavya Mahadevaiah, Hakki Ozguc, Kevin Park, Jeremy Plunkett, Sujit Ramachandra, Jason Redgrave, Ajmer Singh, Matteo Staffaroni, Angelina Totovic, Saurabh Vats, Phil Winterbottom, Darren Woodhouse, Waleed Younis, Shifeng Yu, David Lazovsky</i>	
First Line-Rate End-To-End Post-Quantum Encrypted Optical Fiber Link Using Data Processing Units (DPUs)	77
<i>A. Cano Aguilera, R. Abu Bakar, F. Alhamed, C. Rubio Garcia, J. L. Imana, I. Tafur Monroy, F. Cugini, J. J. Vegas Olmos</i>	

M1H: MACHINE LEARNING FOR ESTIMATION AND FORECASTING

Machine Learning-Based Polarization Signature Analysis for Detection and Categorization of Eavesdropping and Harmful Events	80
<i>Leyla Sadighi, Stefan Karlsson, Carlos Natalino, Marija Furdek</i>	
Autonomous Capacity Adjustment with Dynamic Margin Allocation for Optical Enterprise Links.....	83
<i>Mihail Balanici, Behnam Shariati, Pooyan Safari, Geronimo Bergk, Johannes Karl Fischer</i>	
Analysis and Mitigation of Unwanted Biases in ML-Based QoT Classification Tasks.....	86
<i>Carlos Natalino, Behnam Shariati, Pooyan Safari, Johannes Karl Fischer, Paolo Monti</i>	
Modeling the Input Power Dependency of Transceiver BER-ONSR for QoT Estimation.....	89
<i>Toru Mano, Yue-Kai Huang, Giacomo Borraccini, Ezra Ip, Andrea D'Amico, Zehao Wang, Hideki Nishizawa, Gil Zussman, Tingjun Chen, Ting Wang, Koji Asahi, Daniel Kilper, Vittorio Curri, Koichi Takasugi</i>	
Topology-Driven Edge Predictions with Graph Machine Learning for Optical Network Growth.....	92
<i>Akanksha Ahuja, Sam Nallaperuma Herzberg, Albert Rafel, Paul Wright, Andrew Lord, Seb J. Savory</i>	
Multi-Span Optical Power Spectrum Prediction Using ML-Based EDFA Models and Cascaded Learning	95
<i>Zehao Wang, Yue-Kai Huang, Shaobo Han, Ting Wang, Dan Kilper, Tingjun Chen</i>	

Network-Wide QoT Estimation Using SGD with Gradient Transfer Between Wavelengths	98
<i>Kayol S. Mayer, Jonathan A. Soares, Marcos P. A. Dal Maso, Christian E. Rothenberg, Dalton S. Arantes, Darli A. A. Mello</i>	
Demonstration of ROADM Status Visualization Based on Receiver DSP and Digital Twin Modeling	101
<i>Meng Cai, Xiaomin Liu, Mengfan Fu, Xiaobo Zeng, Yichen Liu, Yihao Zhang, Lilin Yi, Weisheng Hu, Qunbi Zhuge</i>	

M1I: NEXT GENERATION COHERENT PON

Preamble Design for Joint Frame Synchronization, Frequency Offset Estimation and Channel Estimation in Burst Mode Coherent PONs.....	104
<i>Yongxin Sun, Hexun Jiang, Lilin Yi, Weisheng Hu, Qunbi Zhuge</i>	
Symmetric Bidirectional 200 Gb/s/λ PON Solution Demonstrated Over Field Installed Fiber	107
<i>Istvan Bence Kovacs, Md Saifuddin Faruk, Adrian Wonfor, Seb J. Savory</i>	
Demonstration of Auxiliary Management and Control Channel Transmission and Data-Channel Signal Compensation for Beyond 100G FDM Coherent PON.....	110
<i>Wangwei Shen, Jiaye Wang, Sizhe Xing, Guoqiang Li, Zhongya Li, An Yan, Ziwei Li, Chao Shen, Jianyang Shi, Nan Chi, Junwen Zhang</i>	
Hybrid, Multi-Format, Flexible-Rate Coherent PON Supporting Ultimate-Simplified Coherent and Full-Coherent Receivers with Compatible OLT in Downstream.....	113
<i>An Yan, Guoqiang Li, Sizhe Xing, Yongzhu Hu, Wangwei Shen, Junhao Zhao, Ziwei Li, Chao Shen, Jianyang Shi, Nan Chi, Junwen Zhang</i>	

M1J: WAVEGUIDE MODE CONVERTERS AND FIBER-TO-CHIP COUPLERS

3D Self-Aligning, Polarization-Independent Fiber-To-Chip Couplers	116
<i>Ramesh Kudalippallyalil, Trisha Chakraborty, Thomas E. Murphy, Karen E. Grutter</i>	
Broadband and Low-Loss Metamaterial Silicon Nitride Edge Coupler	119
<i>An He, Jinlong Xiang, Yaotian Zhao, Yuchen Yin, Yjia Zhang, Xuhan Guo, Yikai Su</i>	
A Partially Etched Silicon Spot-Size-Converter for O Band High NA Fibers.....	122
<i>Min Teng, Hao Wu, Feng Wang, Jiangpeng Chen, Ning Cheng, Xuezhe Zheng</i>	
Towards Polarization Insensitive Photonic Integrated Circuits: Polarization Dependent Loss Reduction of CMOS-Integrated Monolithic SiPh Components	125
<i>Yusheng Bian, Won Suk Lee, Sujith Chandran, Takako Hirokawa, Massimo Sorbara, Abdelsalam Aboketaf, Kevin K. Dezfulian, Arman Najafi, Salman Mosleh, Fahimeh Banihashemian, Ryan Sporer, Michelle Zhang, Shenghua Song, Helen Wong, Chris Ritchie, Yarong Lin, Thomas Houghton, Hanyi Ding, Qidi Liu, Ming Gong, Jae Kyu Cho, Arpan Dasgupta, Zahidur Chowdhury, Farid Barakat, Jason Kim, Janet Tinkler, Jae Gon Lee, Norman Robson, Teck Jung Tang, Frederick G. Anderson, Ian Melville, George Gifford, Vikas Gupta, Anthony Yu, Ken Giewont, Ted Letavic</i>	
Low-Loss and Broadband Adiabatic Polarization Splitter Rotator on a CMOS-Integrated Silicon Photonics Platform	128
<i>Won Suk Lee, Sujith Chandran, Yusheng Bian, Zahidur Chowdhury, Abdelsalam Aboketaf, Arman Najafi, Salman Mosleh, Kevin Dezfulian, Ryan Sporer, Michelle Zhang, Shenghua Song, Helen Wong, Arpan Dasgupta, Yangyang Liu, Tymon Barwicz, Janet Tinkler, Frederick G. Anderson, Jae Gon Lee, Vikas Gupta, Anthony Yu, Ken Giewont, Ted Letavic</i>	

Broadband Polarization Beam Splitter Rotator Using Only Silicon Nitride.....	131
<i>Fatemeh Ghaedi Vanani, Alireza Fardoost, Guifang Li, Christopher Doerr</i>	
Dual-Band Polarization Beam Splitter Based on Cascaded Multimode Anti-Symmetric Apodized Bragg Gratings	134
<i>Guanglian Cheng, Qiyuan Yi, Zengfan Shen, Zhiwei Yan, Qiyuan Li, Xinzhe Xiong, Fanglu Xu, Shuang Zheng, Shuai Cui, Yuan Yu, Yi Zou, Chaotan Sima, Li Shen</i>	
A High-Speed Compact Polarization Controller in Silicon Photonics	137
<i>Juan E. Villegas, Srinivasa R. Tamalampudi, Mahmoud S. Rasras</i>	

M1K: DISTRIBUTED SENSING I

Distributed Acoustic Sensing Over Passive Optical Networks Using Enhanced Scatter Fiber	140
<i>B. Zhu, P. Westbrook, K. Feder, Z. Shi, P. Lu, R. Dyer, X. Sun, J. Li, D. Peterson, D. J. Di Giovanni</i>	
Correlation-Based OTDR for High-Resolution Monitoring in Passive Optical Networks.....	143
<i>Zhiyi Zhong, Wu Liu, Min Luo, Min Li, Xi Xiao</i>	
Forward-Transmission Based Distributed Fiber Sensing Compatible with C+L Unidirectional Communication Systems	146
<i>Jianwei Tang, Xueyang Li, Chen Cheng, Yaguang Hao, Bang Yang, Jiali Li, Zhixue He, Yanfu Yang, Weisheng Hu</i>	
Multimodal Traffic Monitoring Using Two Co-Routed Field Deployed Fibers in Metropolitan Environments.....	149
<i>Yaxi Yan, Kausthubh Chandramouli, Jingming Zhang, Chao Lu, Alan Pak Tao Lau</i>	
Inline Fiber Type Identification Using In-Service Brillouin Optical Time Domain Analysis	152
<i>Ezra Ip, Yue-Kai Huang, Giacomo Borraccini, Toru Mano, Tatsuya Matsumura, Hideki Nishizawa, Andrea D'Amico, Vittorio Curri, Daniel Kilper, Zehao Wang, Gil Zussman, Tingjun Chen, Koji Asahi</i>	
Real-Time Urban Sensing by In-Fiber Interferometric System Over Field-Deployed Uncoupled 4-Core Fiber Cable	155
<i>Marco Fasano, Tetsuya Hayashi, Takuji Nagashima, Antonio Mecozzi, Cristian Antonelli, Pierpaolo Boffi</i>	

M2A: MULTI-MODE PROPAGATION IN OPTICAL FIBERS

Scaling to 100 Modes by Exploiting Topological Confinement.....	158
<i>V. Ashok, A. P. Greenberg, Z. Ma, I. L. Boegholm, C. Peng, P. Kristensen, S. Ramachandran</i>	
Differential Modal Delay Controlling of 4-LP Mode Optical Fiber by High-Density Cable with Low Cabling Loss	161
<i>Masashi Kikuchi, Takayoshi Mori, Yusuke Yamada</i>	
Comparison of Polarization Rotations Caused by Fiber Bending in Single- And Multi-Mode-Fibers.....	164
<i>Christian M. Spenner, Klaus Petermann, Peter M. Krummrich</i>	
Broadband Characterization of Randomly Coupled 19-Core Multicore Fiber	167
<i>Lauren Dallachiesa, Nicolas K. Fontaine, Roland Ryf, Mikael Mazur, Haoshuo Chen, Georg Rademacher, Ruben S. Luis, Ben J. Puttnam, Hideaki Furukawa, Ayumi Inoue, Takuji Nagashima, Tetsuya Hayashi</i>	

Mode Coupling in Optical Fibers	170
<i>Luca Palmieri</i>	

M2B: DATACOM: CODING AND EQUALIZATION

Trellis Shaping-Based Sequence Selection for Inter-Datacenter Single-Span Links.....	173
<i>Junyang Tang, Zepeng Gong, Pengpeng Wei, Xuemeng Hu, Xiao Xiao, Tianye Huang, Xiang Li</i>	
4-Lambda LAN-WDM 1.6-Tb/s 2-Km Transmission with Nonlinear Maximum Likelihood Sequence Estimation	176
<i>H. Taniguchi, M. Nakamura, F. Hamaoka, S. Yamamoto, Y. Miyamoto, E. Yamazaki</i>	
912-Gbits/s/Channel PDM-PS-256QAM NANF Transmission Using IQ-Crosstalk Robust MIMO Equalizer Integrated with Decision-Directed CPE	179
<i>Chen Wang, Jianyu Long, Kaihui Wang, Wen Zhou, Lei Shen, Peng Li, Jianjun Yu</i>	
Investigation of Concatenated KP4 FEC with Single-Parity-Check Codes for Short-Reach IM/DD Systems.....	182
<i>Tom Wettlin, Stefano Calabrò, Nebojša Stojanovic, Youxi Lin, Talha Rahman</i>	

M2C: GREEN TRANSFORMATION: WHERE DO WE STAND? II

Solutions to Increase Energy Efficiency of Optical Networks	185
<i>N. Sambo, F. Cugini, L. De Marinis, P. Castoldi</i>	
Can Photonics Help in Reducing the Power Consumption in Radio Access Networks?.....	188
<i>Fabio Cavaliere, Alessandra Bigongiari, Antonio Tartaglia</i>	

M2D: VCSELS AND MODULATOR TECHNOLOGIES

Lithographic Aperture VCSELS Enabling Beyond 100G Datacom Applications.....	191
<i>S. Tirelli, E. Corti, E. Duda, A. Pissis, S. Hönl, M. Hoser, M. Paul, E. Zibik</i>	
Cryogenic Oxide-VCSEL at 2.8 K Demonstrates Record Bandwidth $f_{-3dB} > 50$ GHz, $P_{out} > 14$ mW and PAM-4 Data Rate Up to 128 Gb/s	194
<i>Haonan Wu, Wenning Fu, Zetai Liu, Yulin He, Milton Feng</i>	
Toward 200G Per Lane VCSEL-Based Multimode Links.....	197
<i>M. V. Ramana Murty, Jingyi Wang, Sizhu Jiang, David Dolfi, T. K. Wang, Derek Vaughan, Zheng-Wen Feng, Nelvin Leong, Aadi Sridhara, Sumitro T. Joyo, Jason Chu, Laura Giovane</i>	
Single-Mode VCSEL with Zn-Diffusion Apertures and Strong Immunity Against Optical Feedback for Improved Data Transmission	200
<i>Min-Long Wu, Cheng-Wei Lin, Jin-Wei Shi</i>	
59-FJ/Bit Si Photonic Crystal Slow-Light Modulator with FinFET-Compatible Driving Voltage	203
<i>Keisuke Kawahara, Tai Tsuchizawa, Noritsugu Yamamoto, Yuriko Maegami, Koji Yamada, Toshihiko Baba</i>	
112 Gbaud Optical PAM8 Modulation Based on Segmented Thin Film Lithium Niobate Modulator.....	206
<i>Yang Liu, Qiansheng Wang, Changqing Wang, Dingyi Wu, Peiqi Zhou, Ye Liu, Hongguang Zhang, Daigao Chen, Xi Xiao</i>	

An Ultimate-High Linear Silicon Modulator Based on All-Optical Linearization Method.....	209
<i>Jingyang Fan, Qiang Zhang, Shengyu Fang, Xingyi Jiang, Shuyue Zhang, Hui Yu</i>	

M2E: SDM AMPLIFIERS AND MULTIPLEXERS

Advancements in Fanout Technology for SDM Applications	212
<i>V. I. Kopp, J. Park, J. Zhang, J. Singer, D. Neugroschl</i>	
Fiber Bundle Fan-In/Fan-Out (FIFO) for Coupled MCF with High- Δ 4-Core Fiber Pitch Converter	215
<i>Masanori Takahashi, Tsubasa Sasaki, Ryuichi Sugizaki</i>	
Energy-Efficient Cladding-Pumped Amplifier for Coupled Multi-Core Fiber Transmission.....	218
<i>Taiji Sakamoto, Masaki Wada, Ryota Imada, Kazuhide Nakajima</i>	
Ultra-Wideband Mode Selective Couplers for Weakly-Coupled WDM-MDM Transmission	221
<i>Chengbin Long, Jian Cui, Yuyang Gao, Gang Qiao, Baolong Zhu, Jiarui Zhang, Yu Yang, Lei Shen, Jie Luo, Yongqi He, Zhangyuan Chen, Juhao Li</i>	
Characterization of Ten-Mode EDFA Using Swept Wavelength Interferometer and Digital Holography.....	224
<i>Yetian Huang, Hanzi Huang, Yan Wu, Haoshuo Chen, Jianxiang Wen, Lauren Dallachiesa, Nicolas K. Fontaine, Cheng Guo, Mikael Mazur, René-Jean Essiambre, Yingxiong Song, Tingyun Wang, Roland Ryf</i>	

M2F: SUB-MILLIMETER WAVE AND THZ COMMUNICATION

300 GHz Photonic-Wireless Transmission with Aggregated 1.034 Tbit/s Data Rate Over 100 M Wireless Distance	227
<i>Hongqi Zhang, Zuomin Yang, Zhidong Lyu, Hang Yang, Lu Zhang, Oskars Ozolins, Xiaodan Pang, Xianmin Zhang, Xianbin Yu</i>	
Dual-Sideband Receiver Enabling 160 Gbps Direct Sub Thz-To-Optical Conversion Over 1400 M.....	230
<i>Tobias Blatter, Laurenz Kulmer, Boris Vukovic, Yannik Horst, Marcel Destrax, Jasmin Smajic, Juerg Leuthold</i>	
Demonstration of 200 Gbps D-Band Wireless Delivery in a 4.6 Km 2 \times 2 MIMO System.....	233
<i>Yi Wei, Jianjun Yu, Mingxu Wang, Xianmin Zhao, Xiongwei Yang, Weiping Li, Peng Tian, Yang Han, Qitong Zhang, Jingwen Tan, Bing Zhang, Feng Zhao, Wen Zhou, Kaihui Wang</i>	
Demonstration of W-Band 2 \times 2 MIMO Millimeter Delivery Employing CMA and MRC Technology with Over 7dB Gain.....	236
<i>Qitong Zhang, Jianjun Yu, Weiping Li, Min Zhu, Jiao Zhang, Junjie Ding, Xianming Zhao, Jiaxuan Liu, Yi Wei, Kaihui Wang, Wen Zhou, Bo Liu, Feng Zhao, Jianguo Yu</i>	
Expanded Gain-Switched Comb Source for 180–260 GHz Sub-THz Analog Radio-Over-Fiber 6G Wireless System	239
<i>Amol Delmade, Cristian Vargas, Alison Kearney, Simon Nellen, Robert B. Kohlhaas, Martin Schell, David Coffey, Frank Smyth, Liam P. Barry</i>	
Dual Band Wireless Transmission Over 75–150GHz Millimeter Wave Carriers Using Frequency-Locked Laser Pairs	242
<i>Zichuan Zhou, Amany Kassem, James Seddon, Eric Sillekens, Izzat Darwazeh, Polina Bayvel, Zhixin Liu</i>	

M2G: PHOTONIC SWITCHED DATA CENTER NETWORKS

Photonic Switched Networking for Data Centers and Advanced Computing Systems	245
<i>Paraskevas Bakopoulos, Giannis Patronas, Nikos Terzenidis, Zsolt-Alon Wertheimer, Prethvi Kashinkunti, Dimitris Syrivelis, Eitan Zahavi, Louis Capps, Nikos Argyris, Luke Yeager, Julie Bernauer, Elad Mentovich</i>	
Mode-Selective Reconfigurable Optical Add-Drop Multiplexers Experimentally Validated with 40 Gbps NRZ/PAM4	248
<i>Kaveh Hassan Rahbardar Mojaver, Sunami Sajjanam Morrison, S. Mohammad Reza Safaee, Odile Liboiron-Ladouceur</i>	
Intra-Datacenter Optical Circuit Switch Architecture with Multi-Band Transmission Technologies.....	251
<i>Takuma Kuno, Reiji Higuchi, Kazato Satake, Hayato Yuasa, Yojiro Mori, Hiroshi Hasegawa</i>	
Demonstration of Hitless OCS Provision for Multi-Modal Traffic in a Centralized Scheduling Hybrid Optical/Electrical Datacenter Network.....	254
<i>Shi Feng, Jiawei Zhang, Jun Dai, Yashe Liu, Xiaorun Wang, Yuefeng Ji</i>	
Converged Inter/Intra All-Optical DC Network Externally Distributing Optical Carriers to Coherent Transceivers.....	257
<i>Ritsuki Hamagami, Masamichi Fujiwara, Naotaka Shibata, Shin Kaneko, Jun-Ichi Kani, Tomoaki Yoshida</i>	
Performance of Radix Sort Using All-To-All Optical Interconnection Network in an Eight-FPGA Cluster	260
<i>Kenji Mizutani, Yutaka Urino, Takanori Shimizu, Hiroshi Yamaguchi, Shigeru Nakamura, Tatsuya Usuki, Kiyo Ishii, Ryosuke Matsumoto, Takashi Inoue, Shu Namiki, Michihiro Koibuchi</i>	

M2H: HIGH-SPEED TRANSCEIVERS AND TRANSMISSION

Toward 1.6T Low-Power Coherent DSP: Challenges, and Lessons Learned from Preceding Generations.....	263
<i>Shu Hao Fan, Ray L. Nguyen, Jose Luis Correa Lust, Hungchang Chien, Shih-Cheng Wang</i>	
240GBd-16QAM Single-Carrier Coherent Transmission Over 120km SSMF for a Bandwidth Limited System with 1sp/s Speed and Simple DSP.....	266
<i>Guoxiu Huang, Yo Nakamura, Hisao Nakashima, Takeshi Hoshida</i>	
AMUX-Based Bandwidth Tripler with Time-Interleaved Nonlinear Digital Pre-Distortion Enabling 216-GBd PS-PAM8 Signal.....	269
<i>Masanori Nakamura, Munehiko Nagatani, Hiroshi Yamazaki, Teruo Jyo, Miwa Mutoh, Yuta Shiratori, Hitoshi Wakita, Hiroki Taniguchi, Shuto Yamamoto, Fukutaro Hamaoka, Takayuki Kobayashi, Hiroyuki Takahashi, Yutaka Miyamoto</i>	
467 Gbit/s Net Bitrate IM/DD Transmission Using 176 GBd PAM-8 Enabled by SiGe AMUX with Excellent Linearity	272
<i>Qian Hu, Tobias Tannert, Markus Grözing, Gregory Raybon, Robert Borkowski, Fred Buchali, Xi Chen, Pat Iannone, Georg Rademacher, Roland Ryf</i>	
Reach Extension of Net-200G/λ IM-DD PAM4 Links to Beyond-100km with Low-Complexity Using OE-EQ	275
<i>Paikun Zhu, Yuki Yoshida, Kouichi Akahane, Ken-Ichi Kitayama</i>	

M2J: QUANTUM PROTOCOLS, SIMULATIONS AND ANALYSIS

Secure Architecture for Quantum Key Distribution Networks.....	278
<i>Bruno Huttner</i>	
A Machine Learning-Assisted Quantum and Classical Co-Existence System	281
<i>R. Yang, R. Wang, A. Seferidis, T. Omigbodun, S. Bahrani, R. D. Oliveira, R. Nejabati, D. Simeonidou</i>	
Relayed-QKD and Switched-QKD Networks Performance Comparison Considering Physical Layer QKD Limitations.....	284
<i>N. Makris, A. Papageorgopoulos, P. Konteli, I. Tsoni, K. Tsimvradakis, I. Papastamatiou, K. Christodoulopoulos, G. T. Kanellos, D. Syvridis</i>	
Quantum Networks: Exploring Scalability, Topology, and Error Correction	287
<i>Hyeongrak Choi, Marc G. Davis, Alvaro G. Iñesta, Dirk Englund</i>	

M2K: DISTRIBUTED SENSING II

Distributed Vibration Sensing and Simultaneous Self-Homodyne Transmission of Single-Carrier Net 5.36 Tb/s Signal Using 7-Core Fiber	290
<i>Jianwei Tang, Xueyang Li, Chen Cheng, Linsheng Fan, Yaguang Hao, Bing Yue, Jiali Li, Zhixue He, Yanfu Yang, Weisheng Hu</i>	
Comparison Between Phase and Polarization Sensing Using Coherent Transceivers Over Deployed Metro Fibers	293
<i>Lorenzo Andrenacci, Dario Pileri, Saverio Pellegrini, Leonardo Minelli, Gabriella Bosco, Claudio Crognale, Stefano Piciaccia, Roberto Gaudino</i>	
Pressure Wave Detection and Localization in Deployed Underground Fiber Using Coherent Correlation OTDR.....	296
<i>Florian Azendorf, André Sandmann, Michael Eiselt</i>	
Homebrew: Optical Polarization Change Detection for Ground Motion Sensing.....	299
<i>Joseph Catudal, Zhenhao Zhou, Weijun Pan, Paul Barford, Dante Fratta, Herb Wang</i>	
Distributed Strain Sensing by Optical Frequency Domain Reflectometry with Longest Common Substring Algorithm	302
<i>Xiang Zheng, Weilin Xie, Qiang Yang, Jiang Yang, Congfan Wang, Wei Wei, Yi Dong</i>	
Repeaterless Brillouin OTDR Sensing Over 250 Km Using Erbium Doped Fiber Amplifier.....	305
<i>Neethu Mariam Mathew, Mads Holmark Vandborg, Jesper Bjerger Christensen, Zepeng Wang, Lars Griiner-Nielsen, Lars Sogaard Rishøj, Benjamin Marx, M. Ali Allousch, Tommy Geisler, Mikael Lassen, Karsten Rottwitt</i>	

M3A: HYBRID INTEGRATION AND PACKAGING

304 Channel MicroLED Based CMOS Transceiver IC with Aggregate 1 Tbps and Sub-PJ Per Bit Capability	308
<i>Bardia Pezeshki, Suresh Rangarajan, Alex Tselikov, Emad Afifi, Ivan Huang, Jeff Pepper, Sarah Zou, Howard Rourke, Rowan Pocock, Alasdair Fikouras, Farzad Khoeini, Vahid Mirkhani, Steve Novak, Rob Kalman</i>	

High-Power Micro-Ring Modulator and Multi-Channel Coupled Ring Resonator for WDM Design on a 300-Mm Monolithic Foundry Platform	311
<i>Qidi Liu, Abdelsalam Aboketaf, Shantanu Pal, Salman Mosleh, Seyedeh Fahimeh Banihashemian, Sakthivel Pavadai, Jui-Chu Lee, Yusheng Bian, Ming Gong, Bradley Orner, Colleen Wemple, Petar Ivanov Todorov, Kevin K. Dezfulian, Michal Rakowski, Won Suk Lee, Takako Hirokawa, Sujith Chandran, Crystal Hedges, Frank Pavlik, Pike Charles, Avijit Chatterjee, Riddhi Nandi, Ken Giewont, Massimo Sorbara, Karen Nummy, Jignesh Patel, Clifford Morgan, Gregory O'Malley, Frederick G. Anderson</i>	

Dust Insensitive, Low Loss, and Low Mating Force Multi-Fiber Expanded Beam Optical Ferrule and Connectors	314
<i>Changbao Ma, Kevin Chaloupka, Edward Hernandez, Nathan Hagen, Bing Hao, Barry Koch, Boon Lee, Joseph Miller, James Nelson, Nelson Sewall, Nathaniel Shonkwiler, Xiaoguang Sun, Dan Treadwell, Paul Leblanc, Paul Baude</i>	

M3B: SDM DEVICES AND MODE MANIPULATION

Towards Tbps Single- λ Interconnect by a Multimode Integrated Optical I/O on Silicon for Few-Mode Fibers.....	317
<i>Hao Chen, Wu Zhou, Yeyu Tong</i>	

Ultra-Compact and Ultra-Broadband Mode (De)Multiplexer Utilizing an Asymmetrical Coupler with SWG and Cascaded Tapered Waveguide.....	320
<i>Zakriya Mohammed, Bruna Paredes, Mahmoud Rasras</i>	

Multi-Dimensional Light Field Manipulation on Diverse Integrated Photonic Platforms	323
<i>Jian Wang</i>	

M3C: QUANTUM DOTS LASERS AND COMB GENERATION

Feedback Tolerant Quantum Dot Lasers Integrated with 300mm Silicon Photonics	326
<i>Duanni Huang, Shane Yerkes, Guan-Lin Su, Karan Mehta, Marcus Cramer, William O'Brien, Razi Dehghannasiri, Stan Dobek, Chelsea Mackos, Timothy Ward, Pari Patel, Ranjeet Kumar, Songtao Liu, Xinru Wu, Xiaoxi Wang, Junyi Gao, Mark Isenberger, Harel Frish, Haisheng Rong</i>	

Tbps IM/DD Transmission Over 10 Km SMF with O-Band Quantum Dot Laser Comb for DCIs	329
<i>Lakshmi Narayanan Venkatasubramani, Ahmed Galib Reza, Anil Raj Gautam, Haixuan Xu, Mikhail Buyalo, Alexey Gubenko, Yonglin Yu, Liam Barry</i>	

Low Threshold and 10kHz-Class Narrow Linewidth 1.55 μ m-Band Quantum Dot Laser Diode on InP(311)B Substrate	332
<i>A. Matsumoto, R. Yabuki, S. Nakajima, T. Umezawa, S. Heinsalu, Y. Matsushima, K. Akahane, N. Yamamoto, K. Utaka</i>	

On-Chip InP/LiNbO ₃ Microcomb Laser	335
<i>Jingwei Ling, Zhengdong Gao, Shixin Xue, Qili Hu, Kaibo Zhang, Usman Javid, Raymond Lopez-Rios, Jeremy Staffa, Qiang Lin</i>	

Silicon Carbide Soliton Microcomb Generation for Narrow-Grid Optical Communications	338
<i>Jingwei Li, Haipeng Zhang, Ruixuan Wang, Zhensheng Jia, Qing Li</i>	

6.48 Tb/s Transmissions Using 50 GHz Integrated Lithium Niobate Flat-Top Electro-Optic Combs	341
<i>Chuang Xu, Yikun Chen, Kangping Zhong, Ke Zhang, Chao Lu, Cheng Wang, Alan Pak Tao Lau</i>	

M3E: COHERENT AND DIRECT DETECT DATACENTER TRANSMISSION

Bidirectional 100G-PAM4 Transceiver for 60-Km O-Band Transmission.....	344
<i>Fabio Bottoni, Alessandro Cavaciuti, Dirk Lutz</i>	
8.5 Tbps Net SiP O-Band Coherent Transmission Over 10 Km Using a Quantum-Dot Mode-Locked Comb Laser	347
<i>Santiago Bernal, Mario Dumont, Essam Berikaa, Charles St-Arnault, Yixiang Hu, Ramon Gutierrez Castrejon, Zixian Wei, Antonio D'Errico, Alessandra Bigongiari, Luca Giorgi, Stefano Stracca, Robert Brunner, Stephane Lessard, Fabio Cavaliere, John Bowers, David V. Plant</i>	
Technologies Enabling Ultrafast Short-Reach Transmission.....	350
<i>Qian Hu</i>	
Experimental Demonstration of Amplifier-Less 82GBaud PAM4 Transmission Over 40 Km Using APD at O Band.....	353
<i>Haiqiang Wei, Kemo Ran, Kangping Zhong, Alan Pak Tao Lau, Changyuan Yu, Chao Lu</i>	
Performance Comparison of QD-SOA, QW-SOA, Bulk-SOA and PDFA for Multi-Tbps O-Band WDM Links.....	356
<i>Charles St-Arnault, Santiago Bernal, Ramón Gutiérrez-Castrejón, Essam Berikaa, Zixian Wei, Janina Rautert, Sergey V. Poltavtsev, Alexey E. Gubenko, Vasilii V. Belykh, Vladimir S. Mikhrin, Alexey R. Kovsh, David V. Plant</i>	
Design Tradeoffs for Coherent Pluggable Optics at 800G and Beyond	359
<i>Eric Maniloff</i>	

M3F: RADIO-OVER-FIBER AND 6G ACCESS

VCSEL-Based Optical Wireless Transmission: New Research Prospects	362
<i>Ernesto Ciaramella, Giulio Cossu, Lorenzo Gilli</i>	
First Demonstration of 4×4 Distributed MIMO Communication with 3GPP-Compliant 5G Smartphone Utilizing SCM/WDM-Based IF-Over-Fiber MFH Link	365
<i>Shinji Nimura, Kazuki Tanaka, Kamyā Yekeh Yazdandoost, Ryo Inohara, Masatoshi Suzuki, Takehiro Tsuritani</i>	
Mitigation of Dispersion-Induced Power Fading in Broadband Intermediate-Frequency-Over-Fiber Transmission Using Space-Time Block Coding.....	368
<i>Jinwoo Park, Joungmoon Lee, Inho Ha, Sang-Kook Han</i>	

M3H: ADVANCEMENT IN QUANTUM KEY DISTRIBUTION SYSTEMS I

Wavelength-Versatile Quantum Key Distribution for Reconfigurable Classical-Quantum Networks	371
<i>Robert I. Woodward, Benjamin Griffiths, Yuen San Lo, James F. Dynes, Andrew J. Shields</i>	
No-Guard-Band Integration of Digital Coherent CV-QKD System into 400 Gbit/s 75 GHz Grid DWDM Systems.....	374
<i>Tetsuo Kawakami, Hiroki Kawahara, Toshihiko Okamura, Ken-Ichiro Yoshino, Wakako Maeda</i>	

Composable Finite Size Key Generation in a Polarization Diverse Continuous Variable Quantum Key Distribution System	377
<i>Hou-Man Chin, Ulrik L. Andersen, Tobias Gehring</i>	

Quantum Cryptography with Injection-Locked Dual-Wavelength Diode Laser	380
<i>Yung-Hsuan Lee, Szu-En Lai, Gong-Ru Lin</i>	

M3I: TRANSMISSION OPTIMIZATION

Closed-Form Coherent Gaussian Noise Model Applicable to Arbitrary Flexible Grid and Heterogeneous Links	383
<i>Fangyuan Zhang, Alex W. Mackay</i>	

Recalibration Learning: Enabling Universal Transfer of ML Model of Gain and NF for Remote Optically Pumped Amplifiers	386
<i>Arthur Minakhmetov, Benjamin Prieur, Maël Le Monnier, Delphine Rouvillain, Bruno Lavigne</i>	

Optical Network Design with High Symbol Rate Flexible Coherent Transceivers	389
<i>Thomas Richter, Steven Searcy, Philippe Jennevé, Valeria Arlunno, Sorin Tibuleac</i>	

Monitoring Data Augmentation of Spectral Information Using VAE and GAN for Soft-Failure Identification	392
<i>Lars E. Kruse, Sebastian Köhl, Annika Dochhan, Stephan Pachnicke</i>	

Optical Line Physical Parameters Calibration in Presence of EDFA Total Power Monitors	395
<i>Giacomo Borraccini, Yue-Kai Huang, Andrea D'Amico, Thomas Ferreira De Lima, Ezra Ip, Vittorio Curri, Ting Wang, Koji Asahi</i>	

Spectrum Resolved SNR Monitoring of In-Service Channel	398
<i>Qingyi Guo, Xuefeng Tang, Yang Lan, Zhiping Jiang</i>	

M3J: HOLLOW-CORE FIBERS

10.9km Hollow Core Double Nested Antiresonant Nodeless Fiber (DNANF) with 0.33dB/km Loss at 850nm	401
<i>Abubakar I. Adamu, Muhammad. R. A. Hassan, Yong Chen, Eric Numkam Fokoua, Marcelo Alonso, Hesham Sakr, David J. Richardson, Francesco Poletti, Marco N. Petrovich</i>	

First Penalty-Free Real-Time Co-Frequency Co-Time Full-Duplex Optical Fiber Transmission with 202.1Tb/s Net Capacity Enabled by Hollow-Core 5-Element NANF	404
<i>Dawei Ge, Yifan Xiong, Yan Wu, Yizhi Sun, Yancai Luan, Dong Wang, Shoufei Gao, Dechao Zhang, Liang Mei, Yingying Wang, Wei Ding, Han Li, Zhangyuan Chen</i>	

Fast, Reliable and Portable Low-Loss Antiresonant Hollow-Core Fiber Fusion Splicing	407
<i>Tristan Kremp, Yue Liang, Alan H. McCurdy, Shoichi Yoshinaga, Brian J. Mangan</i>	

Non-Destructive Characterization of Hollow Core Fiber	410
<i>Leonard Budd, Austin Taranta, Eric Numkam Fokoua, Francesco Poletti</i>	

Bend Insensitive Hollow Core DNANF with SMF-Matching Mode Field Diameter and 125 μ m Outer Diameter for Low Loss Direct Interconnection in Short Reach Applications	413
<i>Ghafour Amouzad Mahdiraji, Jaroslaw Rzegocki, Ian A. Davidson, Gianluca Guerra, Gregory T. Jasion, Seyed Mohammad Abokhamis Mousavi, Yongmin Jung, Austin Taranta, Kyle Bottrill, Periklis Petropoulos, Francesco Poletti</i>	

M3K: EMERGING MODULATOR TECHNOLOGIES

High-Performance Thin-Film Lithium Niobate Mach-Zehnder Modulator on 8-Inch Silicon Substrate	416
<i>Jingjie Zhou, Qingyu Cong, Liming Lv, Zhanshi Yao, Shiyang Zhu, Yuxi Wang, Zhaoyi Li, Zuowen Fan, Xianfeng Zeng, Ting Hu, Lianxi Jia</i>	
High Efficiency Single-Sideband Modulator Using Coupled Bragg Grating Resonators on Thin-Film Lithium Niobate	419
<i>Nuo Chen, Bo Xiong, Hengsong Yue, Kangping Lou, Tao Chu</i>	
Thin-Film Lithium Niobate Modulator for a Flat Frequency-Response Over 110 GHz Bandwidth with Integrated Electro-Optic Frequency-Domain Equalizer	422
<i>Yuya Yamaguchi, Pham Tien Dat, Naokatsu Yamamoto, Kouichi Akahane, Atsushi Kanno, Tetsuya Kawanishi</i>	
256 GBd Barium-Titanate-On-SiN Mach-Zehnder Modulator	425
<i>Manuel Kohli, Daniel Chelladurai, Laurenz Kulmer, Killian Keller, Yannik Horst, Tobias Blatter, Joel Winiger, David Moor, Tatiana Buriakova, Michael Zervas, Clarissa Convertino, Felix Eltes, Yuriy Fedoryshyn, Ueli Koch, Juerg Leuthold</i>	
Linear-Drive Amplifier-Less 112 Gbit/s PAM4 Operation of a Silicon-Organic Hybrid (SOH) Mach-Zehnder Modulator at 265 mV _{pp}	428
<i>A. Schwarzenberger, S. Singer, C. Eschenbaum, M. Martens, A. Mertens, G. Dagher, L. Valenziano, S. Sarwar, H. Kholeif, A. Kotz, T. Zwick, S. Bräse, W. Freude, S. Randel, C. Koos</i>	
110 GHz Plasmonic Lithium Niobate Phase Modulator	431
<i>Yilun Wang, Jihao Zhao, Xiaoyan Gao, Qiansheng Wang, Xi Xiao, Jian Cheng, Dingshan Gao, Wentao Gu, Wenchan Dong, Qizhi Yan, Liao Chen, Yu Yu, Chi Zhang, Xinliang Zhang</i>	

M3Z: DEMO ZONE, ROOM 6B

Demonstration of Cooperative Transport Interface Using Open-Source 5G OpenRAN and Virtualised PON Network	434
<i>Frank Slyne, Kevin O'Sullivan, Merim Dzaferagic, Bruce Richardson, Marcin Wrzeszcz, Brendan Ryan, Niall Power, Robin Giller, Marco Ruffini</i>	
Demonstration of Robust Mobile Free Space Optical System Using High-Speed Beam Tracking and 2D-PDA-Based Spatial-Diversity Reception	437
<i>Zu-Kai Weng, Yuki Yoshida, Toshimasa Umezawa, Abdelmoula Bekkali, Michikazu Hattori, Atsushi Matsumoto, Atsushi Kanno, Naokatsu Yamamoto, Tetsuya Kawanishi, Kouichi Akahane</i>	
Live Demonstration of Autonomous Link-Capacity Adjustment in Optical Metro-Aggregation Networks	440
<i>Mihail Balanici, Pooyan Safari, Behnam Shariati, Aydin Jafari, Johannes Karl Fischer, Ronald Freund</i>	
Orchestration of Entanglement Distribution Over a Q-LAN Using the IEQNET Controller	443
<i>Joaquín Chung, Anirudh Ramesh, Shariful Islam, Gregory S. Kanter, Cristián Peña, Si Xie, Raju Valivarthi, Neil Sinclair, Panagiotis Spentzouris, Maria Spiropulu, Prem Kumar, Raj Kettimuthu</i>	

Real-Time Demonstration of Anomalous Vibrations Detection in a Metro-Like Environment Using a SOP-Based Algorithm	446
<i>Saverio Pellegrini, Leonardo Minelli, Lorenzo Andrenacci, Dario Pileri, Gabriella Bosco, Benjamin Koch, Reinhold Noé, Claudio Crognale, Stefano Piciaccia, Roberto Gaudino</i>	
Quantum-Assisted Digital Signature in an SDN-Controlled Optical Network	449
<i>A. Giorgetti, N. Andriolli, E. Storelli, M. Ferrari, G. Paduanelli, A. Caciccia, R. Paganelli, A. Tarable, E. Paolini, G. Sajeve, M. Brunero, A. Gagliano, P. Martelli, P. Noviello, G. Schmid, A. Gatto</i>	
Quantum Key Management System with Dynamic Routing for Meshed QKD Networks.....	452
<i>Mario Wenning, Jonas Berl, Tobias Fehenberger, Ciarán Mullan, Helmut Griebner, Piotr Rydlichowski, Laurent Schmalen, Carmen Mas-Machuca</i>	
Deployment of Secure Machine Learning Pipelines for Near-Real-Time Control of 6G Network Services	455
<i>Pol González, Adam Zahir, Chiara Grasselli, Alejandro Muñoz, Milan Groshev, Sima Barzegar, Franco Callegati, Davide Careglio, Marc Ruiz, Luis Velasco</i>	
TAPI-Based Telemetry Streaming in Multi-Domain Optical Transport Network	458
<i>Vignesh Karunakaran, Carlos Natalino, Behnam Shariati, Piotr Lechowicz, Johannes Karl Fischer, Achim Autenrieth, Paolo Monti, Thomas Bauschert</i>	
Demonstration of a Compositional Learning Framework for Open and Disaggregated Optical Network Control.....	461
<i>Huy Quang Tran, Javier Errea, Huu Trung Thieu, Quan Pham Van, Nakjung Choi, Dominique Verchere, Adlen Ksentini, Djamel Zeghlache</i>	
Artificial Intelligence (AI)-Powered Robot for Optical Network Operation Automation	464
<i>Xiaonan Xu, Haoshuo Chen, Michael Scheutzw, Jesse E. Simsarian, Roland Ryf, Gin Qua, Amey Hande, Rob Dinoff, Mijail Szczerban, Mikael Mazur, Lauren Dallachiesa, Nicolas K. Fontaine, Jim Sandoz, Mike Coss, David T. Neilson</i>	
Distributed Multi-Agent System Fed with Telemetry Data for Near-Real-Time Service Operation.....	467
<i>Pol González, Faris Alhamed, Sima Barzegar, Francesco Paolucci, Juan Jose Vegas Olmos, Marc Ruiz, Luis Velasco</i>	
Experimental Demonstration of Optical Encryption Using Quantum Keys: Two Scenarios	470
<i>Morteza Ahmadian, Rafael J. Vicente, Juan P. Brito, Álvaro López-García, Antonio Pastor, Jose M. Rivas, Jaume Comellas, Marc Ruiz, Vicente Martin, Luis Velasco</i>	

M4A: SILICON PHOTONICS

AIM Photonics Design Enablement: A Design-Assembly-Test Platform Advancing the Silicon-Photonics Ecosystem	473
<i>Amit Dikshit, Jin Wallner, M. Jobayer Hossain, M. Rakib Uddin, Javery Mann, Anthony Aiello, Lewis G. Carpenter, Yukta Timalsina, Colin McDonough, Nick Fahrenkopf, Gerald Leake, Christopher Baiocco, Christopher Striemer, Maria Halepis, Daniel Coleman, Amir Begovic, Hao Yang, Michael Zylstra, Jerome Jahn, Jordan Goldstein, Christopher V. Poulton, Todd Stievater, Nathan Tyndall, Michael Fanto, David Haramé</i>	

Low-Loss, Multi-Reticle Stitched SiN Waveguides for 300mm Wafer-Level Optical Interconnects	476
<i>Pengfei Xu, Chiara Marchese, Guy Lepage, Negin Golshani, Ruben Van Eenaeme, Andrea Mingardi, Joost Van Ongeval, Rafal Magdziak, Luc Halipre, Darko Trivkovic, Peter Verheyen, Maumita Chakrabarti, Dimitrios Velenis, Andy Miller, Filippo Ferraro, Yoojin Ban, Joris Van Campenhout</i>	
Toward Large-Scale Nonvolatile Electrical Programmable Photonics with Deterministic Multilevel Operation.....	479
<i>Rui Chen, Virat Tara, Jayita Duta, Minhoo Choi, Justin Sim, Julian Ye, Jiajiu Zheng, Zhuoran Fang, Arka Majumdar</i>	
Hybrid Integrated Multi-Lane Erbium-Doped Si ₃ N ₄ Waveguide Amplifiers	482
<i>Zheru Qiu, Xinru Ji, Yang Liu, Martin Hafermann, Taegon Kim, Joseph C. Olson, Wang Rui Ning, Carsten Ronning, Tobias Kippenberg</i>	

M4B: INTEGRATED DEVICES FOR SENSING AND METROLOGY

Large-Scale Optical Phased Array Based on a Multi-Layer Silicon-Nitride-On-Silicon Photonic Platform.....	485
<i>Liangjun Lu, Weihai Xu, Yuyao Guo, Chuxin Liu, Jianping Chen, Linjie Zhou</i>	
Single-Shot Ultra-Broadband Spectrometer with Cascaded Nanobeam Mirrors.....	488
<i>Chunhui Yao, Chumeng Yao, Peng Bao, Jie Ma, Ting Yan, Richard Penty, Qixiang Cheng</i>	
Waveguide Raman Sensing for Chemical Detection in Industrial Processes	491
<i>Dorian Sanchez, Christopher Lieutaud, Priscille Bonnassies, Yasmine Ibrahimi, Chardel Ompala, Nabila Imatoukene, Jérôme Michon</i>	
Common Cavity Waveguide Coil-Resonator Stabilized Hybrid Integrated WDM Laser with 89 Hz Integral Linewidth	494
<i>Kaikai Liu, Mohamad Hossein Idjadi, Stefano Grillanda, Kwangwoong Kim, Cristian Bolle, Mark Cappuzzo, Rose Kopf, Nicolas Fontaine, Mikael Mazur, Roland Ryf, Daniel J. Blumenthal</i>	
Wafer-Level Fabrication of Vacuum-Gap Fabry-Pérot Resonators with Quality Factors Exceeding One Billion	497
<i>Naijun Jin, Yifan Liu, Dahyeon Lee, Haotian Cheng, Charles A. McLemore, Samuel Halladay, Yizhi Luo, David Mason, Scott A. Diddams, Franklyn Quinlan, Peter Rakich</i>	
Co-Packaged Micro Reference Cavity with Photonic Integrated Circuits.....	500
<i>Haotian Cheng, Naijun Jin, Zhaowei Dai, Chao Xiang, Joel Guo, Yishu Zhou, Scott A. Diddams, Franklyn Quinlan, John Bowers, Owen Miller, Peter Rakich</i>	

M4C: MACHINE LEARNING AND NEURAL NETWORKS

Experimental Demonstration of Imperfection-Agnostic Local Learning Rules on Photonic Neural Networks with Mach-Zehnder Interferometric Meshes.....	503
<i>Luis El Srouji, Mehmet Berkay On, Yun-Jhu Lee, Mahmoud Abdelghany, S. J. Ben Yoo</i>	
Neural Network with Optical Frequency-Coded ReLU	506
<i>Margareta V. Stephanie, Lam Pham, Alexander Schindler, Michael Walzl, Tibor Grasser, Bernhard Schrenk</i>	

Sub-PJ/MAC Silicon Photonic GeMM for Optical Neural Networks Using a Time-Space Multiplexed Coherent Xbar	509
<i>S. Kovaïos, I. Roumpos, A. Tsakyridis, G. Giamougiannis, M. Moralis-Pegios, M. Berciano, F. Ferraro, D. Bode, A. Srinivasan, M. Pantouvaki, N. Pleros</i>	
Integrated Neuromorphic Information Processing with Electrically-Injected Microring Spiking Neuron	512
<i>Jinlong Xiang, Yaotian Zhao, Xuhan Guo, Yikai Su</i>	
Reconfigurable All-Optical Integrated Nonlinear Activator with Switchable Response Functions for Photonic Neural Networks	515
<i>Bei Chen, Jian Wang, Zichao Zhao, Xiaowen Xiong, Jianyi Yang, Ming Li, Ninghua Zhu</i>	
Device Dependent Distortion Correction in Time-Stretch Photonic Analog to Digital Converters Using Deep Neural Networks	518
<i>Mandeep Singh, Joydip Dutta, S. J. Sreeraj, Viswanathan Sankar, Balaji Srinivasan, Lakshmi Narasimhan Theagarajan, Deepa Venkitesh</i>	

M4D: RESILIENCE IN ACCESS NETWORKS

A Physical-Layer Rogue ONU Identification Method Based on Hardware Fingerprint Technology	521
<i>Kaiyu Liu, Danming Huang, Chengzhe Tang, Lei Deng, Qi Yang, Xiaoxiao Dai, Deming Liu, Mengfan Cheng</i>	
Can the PON Legacy Infrastructure Host Quantum Key Distribution Services?	524
<i>Paola Parolari, Alessandro Gagliano, Alberto Gatto, Pierpaolo Boffi, Paolo Martelli</i>	
Proactive Congestion Control Within 1-Ms Delay at Mobile Midhaul Utilizing Parallel Traffic Prediction and Fast Switchover of CU and Optical Path	527
<i>Yuka Okamoto, Hirotaka Ujikawa, Kota Asaka, Tatsuya Shimada, Tomoaki Yoshida</i>	
2.5 Gbps Error-Free Physical Layer Key Distribution Based on Signal Hiding Over 80-Km SSMF	530
<i>Kongni Zhu, Yuang Li, Mingrui Zhang, Yajie Li, Yongli Zhao, Jie Zhang</i>	

M4E: DATA CENTRE AND SUBMARINE

Novel In-Line Triage Methodology for High-Speed Optical Transceivers in Hyperscale Datacenters	533
<i>Elaine S. Chou, Arun Mohan, Chris Berry, Chet Powers, Mario Morales</i>	
Non-Intrusive DAS Coexisting in Telecom Networks	536
<i>Jan Kristoffer Brenne, Anthony Sladen, Pascal Pecci, Jan Petter Morten, Julian Pelaez, Joacim Jacobsen, Alain Calsat, Philippe Plantady, Jean-Paul Ampuero, Diane Rivet, Herve Février</i>	
First Impact Movement Characterization of Shallow Buried Live Subsea-Cable	539
<i>Steinar Bjørnstad, Kristina Shizuka Yamase Skarvang, Dag Roar Hjelme, Asbjørn Tunheim, Frode Fjermestad, Eivind Østerli</i>	
Delay-Minimized Distributed Sequence Routing for Satellite Optical Networks	542
<i>Qiancheng Zhao, Ruijie Zhu, Yudong Zhang, Wenchao Zhang, Chao Xi, Bo Yang</i>	

M4F: ADVANCED OPTICAL COMMUNICATION TECHNOLOGIES

Photonic Layer Encryption in High Speed Optical Communications	545
<i>Dan Sadot, Eyal Wohlgemuth, Ido Attia, Ohad Balasiano, Isaak Jonas, Elimelech Keller, Hamutal Shalom</i>	
Probabilistically Shaped 64-QAM Transmission Via Distortion-Aware Phase Retrieval.....	548
<i>Hanzi Huang, Haoshuo Chen, Peiji Song, Cheng Guo, Qi Gao, Yetian Huang, Nicolas K. Fontaine, Mikael Mazur, Lauren Dallachiesa, Roland Ryf, Zhengxuan Li, Yingxiong Song</i>	
Double-Stage Carrier Frequency Offset Estimation Using the Eigenvalue and Scattering Coefficient b in the Nonlinear Fourier Transform.....	551
<i>Taisuke Chino, Takumi Motomura, Akihiro Maruta, Ken Mishina</i>	
Detector-On-Demand for Flexible Homodyne Transmission.....	554
<i>Bernhard Schrenk, Fotini Karinou</i>	
Opportunities and Challenges of Optical Communications in Autonomous Driving Vehicles.....	557
<i>Gordon Ning Liu</i>	

M4H: ADVANCEMENT IN QUANTUM KEY DISTRIBUTION SYSTEMS II

Squeezing Recovery After Detection with a Completely Free-Running Local Oscillator.....	560
<i>Huy Q. Nguyen, Hou-Man Chin, Adnan A. E. Hajomer, Ulrik L. Andersen, Tobias Gehring</i>	
Savitzky-Golay-Filter-Based Phase Recovery for CV-QKD.....	563
<i>D. Llanos, P. Adillon, S. Sarmiento, J. Tabares, S. Etcheverry</i>	
Assessing the Impact of Patterning Effect on Quantum Key Distribution	566
<i>Tao Wang, Yixin Wang, Yanwen Zhu, Sheng Liu, Jie Zhang</i>	
First Demonstration of a Group-IV Emitter on Photonic BiCMOS Supplying a Quantum Communication Link.....	569
<i>Florian Honz, Michael Hentschel, Stefan Jessenig, Jochen Kraft, Philip Walther, Bernhard Schrenk</i>	

M4J: INTEGRATED OPTICS FOR COMMUNICATION AND SENSING

Silicon Photonic Four-Channel Dual-Polarization Coherent Receiver Module for FMCW LiDAR Application.....	572
<i>Chang Liu, Fan Qi, Pengfei Cai, Su Li, Jiaying Zhao, Yanhui Duan, Chingyin Hong, Dong Pan</i>	
Photon-Counting Laser Ranging with Dual-Comb Asynchronous Optical Sampling.....	575
<i>Yun Meng, Yanqing Shi, Kai Zou, Youjian Song, Xiaolong Hu</i>	
Integrated Photonic Processors for Optical Free-Space Links	578
<i>Seyed Mohammad Seyedin Navadeh, Andres Ivan Martinez Rojas, Alessandro Di Tria, Emanuele Sacchi, Francesco Zanetto, Giorgio Ferrari, Marco Sampietro, David A. B. Miller, Andrea Melloni, Francesco Morichetti</i>	
Fabrication-Tolerant High-Speed 5-Bit Silicon Optical True Time Delay Line in the O-Band.....	581
<i>Ziheng Ni, Yixuan Wang, Liangjun Lu, Yuanbin Liu, Jianping Chen, Linjie Zhou</i>	

Power Monitoring and Thermal Crosstalk Compensation for ORR-Based Optical Beamformer	584
<i>Bin Shi, Ripalta Stabile, Eduward Tangdiongga</i>	
W-Band Wireless Transmission Based on 98 GHz Packaged Silicon Photonics Optical Clock Generator	587
<i>Antonio Malacarne, Alberto Montanaro, Fawad Ahmad, Gaurav Pandey, Antonio D'Errico, Marco Romagnoli, Antonella Bogoni, Claudio Porzi</i>	
Beamforming Demonstration of Hybrid Photonic Integrated Circuit Based on a Blass Matrix for Radar Receivers.....	590
<i>Federico Camponeschi, Valentina Gemmato, Filippo Scotti, Luca Rinaldi, Ahmad W. Mohammad, Chris G. Roeloffzen, Paul W. Van Dijk, Paolo Ghelfi</i>	

M4K: NONLINER TRANSMISSION

Enhancing Generalization in Neural Channel Model for Optical Fiber WDM Transmission Through Learned Encoding of System Parameters	593
<i>Chuyan Zeng, Zekun Niu, Hang Yang, Minghui Shi, Weisheng Hu, Lilin Yi</i>	
Pruning Attention in Transformers for Nonlinear Channel Compensation in Optical Systems.....	596
<i>Behnam Behinaein Hamgini, Hossein Najafi, Ali Bakhshali, Zhuhong Zhang</i>	
The Information Capacity of the Fiber-Optic Channel: Bounds and Prospects.....	599
<i>Mark Shtaif, Cristian Antonelli, Antonio Mecozzi, Xi Chen</i>	
Improved Physics-Based Raman Amplifier Model in C+L Networks Through Input Parameter Refinement	602
<i>Yihao Zhang, Xiaomin Liu, Qizhi Qiu, Yichen Liu, Lilin Yi, Weisheng Hu, Qunbi Zhuge</i>	
Autoencoder Learning of Constellation Shaping Robust to Semiconductor Laser Noise and Nonlinearity in Fiber-THz System	605
<i>Xiang Liu, Jiao Zhang, Min Zhu, Zhigang Xin, Weidong Tong, Yunwu Wang, Bingchang Hua, Yuancheng Cai, Mingzheng Lei, Junjie Ding, Xingyu Chen, Bo Liu, Jianjun Yu</i>	
Fast and Accurate DNN-Based Approach in Maximizing Ultra-Wideband Fiber-Optic Systems Throughput	608
<i>Zelin Gan, Mykyta Shevchenko, Sam Nallaperuma Herzberg, Seb J. Savory</i>	
1200-Km Transmission of 4096-Ary Eigenvalue-Modulated Signal Using a Neural Network-Based Demodulator and SD-FEC	611
<i>Ryotaro Harada, Tsuyoshi Yoshida, Daisuke Hisano, Akihiro Maruta, Ken Mishina</i>	

TU2A: OPTICAL TRANSMISSION TECHNIQUES

Optical and THz Broadband Integrated Circuits for Mode-Dependent Free-Space Communications	614
<i>Alan E. Willner</i>	
Liquid Cooling for Optical Networking Equipment.....	617
<i>Behzad Mohajer, Peter Ajersch, Michael Bishop, Simon Shearman, Peter Saturley, Marko Nicolici</i>	

Spectrally Sliced Optical Arbitrary Waveform Measurement (OAWM) Using a Photonic Multi-Chip Receiver Assembly	620
<i>Dengyang Fang, Daniel Drayss, Yung Chen, Matthias Lauermann, Huanfa Peng, Grigory Lihachev, Alexander Quint, Luca Valenziano, Sebastian Randel, Thomas Zwick, Wolfgang Freude, Tobias J. Kippenberg, Christian Koos</i>	

TU2B: NONLINEAR PHOTONIC DEVICES AND MATERIAL PLATFORMS

IMDD Data Transmission with Microresonator Soliton Crystals.....	623
<i>K. Y. K. Ong, X. X. Chia, A. A. Rahim, G. F. R. Chen, D. T. H. Tan</i>	
Foundry Compatible, Efficient Wafer-Scale Manufacturing of Ultra-Low Loss, High-Density Si ₃ N ₄ Photonic Integrated Circuits	626
<i>Xinru Ji, Rui Ning Wang, Yang Liu, Johann Riemensberger, Zheru Qiu, Tobias J. Kippenberg</i>	
1 Million Intrinsic Q-Factor Microring Resonators from PVD Aluminum Nitride on SiO ₂ -On-Si Substrate	629
<i>Amy S. K. Tong, Wing Wai Chung, Charmaine Goh, Landobasa Y. M. Tobing, Leh Woon Lim, Yuriy A. Akimov, Zhan Jiang Quek, Aravind P. Anthur, Jia Sheng Goh, Huamao Lin, Navab Singh, Qingxin Zhang, Doris K. T. Ng</i>	
Low-Loss and Thermal-Stable Ta ₂ O ₅ Photonic Platform with Low-Temperature Process	632
<i>Zhaoting Geng, Weiren Cheng, Zhenyu Liu, Mingjian You, Xiaolun Yu, Pengzhuo Wu, Ning Ding, Xingyu Tang, Yihan Liu, Li Shen, Qiancheng Zhao</i>	
Monolithically Integrated Magneto-Optical Isolators, Circulators and Phase Shifters on SiN Photonics	635
<i>Lei Bi, Wei Yan, Yucong Yang, Zixuan Wei, Di Wu, Zijian Zhang, Xiaoyi Song, Jun Qin</i>	

TU2C: QUANTUM COMPONENTS AND QUANTUM PICS

An Integrated Photonic-Electronic Quantum Coherent Receiver for Sub-Shot-Noise-Limited Optical Links	638
<i>Volkan Gurses, Debjit Sarkar, Samantha Davis, Ali Hajimiri</i>	
Photon-Number-Resolving and Ultra-Fast Multipixel SNSPD Arrays for Quantum Photonic Platforms	641
<i>G. V. Resta, L. Stasi, M. Perrenoud, R. Thew, H. Zbinden, F. Bussièeres</i>	
Stand-Alone 3C-SiC-Based Single-Photon Source Modules for Quantum Key Distribution	644
<i>Byung-Seok Choi, Ju Hee Baek, Kap-Joong Kim, Joong-Seon Choe, Kyongchun Lim, Minchul Kim, Chun Ju Youn</i>	
Multi-Channel System with High-Performance Fractal Superconducting Nanowire Single-Photon Detectors.....	647
<i>Zifan Hao, Kai Zou, Yun Meng, Thomas Descamps, Adrian Iovan, Val Zwiller, Xiaolong Hu</i>	

TU2D: HIGH SPEED TRANSMITTERS

Demonstration of 155 Gbaud PAM4 and PAM6 EML with Narrow High-Mesa EA Modulator for 400 Gbps Per Lane Transmission	650
<i>Asami Uchiyama, Shinya Okuda, Toshiya Tsuji, Yohei Hokama, Mizuki Shirao, Kenichi Abe, Takeshi Yamatoya, Yasuhiro Yamauchi</i>	

Process-Tolerant III-V/Si Membrane Distributed Reflector Lasers and 50-Gb/s Direct Modulation at 80°C.....	653
<i>Koji Takeda, Takuro Fujii, Yoshiho Maeda, Toru Segawa, Shinji Matsuo</i>	
Uncooled Operation of Directly Modulated Membrane Laser with Buried Sapphire Layer on Si Substrate	656
<i>Tatsuro Hiraki, Yoshiho Maeda, Takuro Fujii, Koji Takeda, Takuma Aihara, Toru Segawa, Yasutomo Ota, Satoshi Iwamoto, Yasuhiko Arakawa, Shinji Matsuo</i>	
A Co-Planar Stripline Mach-Zehnder Modulator Enabling 160 GBd PAM-4 on an Indium Phosphide Platform	659
<i>James Arthur Hillier, Qian Hu, Haoshuo Chen, Arezou Meighan, Luc Augustin, Michael Wale, Kevin Williams, Weiming Yao</i>	
A 64 Gb/s NRZ O-Band Ring Modulator with 3.2 THz FSR for DWDM Applications	662
<i>Chuan Xie, Mayank Raj, Anish Joshi, Zakriya Mohammed, Gareeyasee Saha, Zhaowen Wang, Parag Upadhyaya, Yohan Frans</i>	
SOA-Integrated High-Power EML-CAN for 50G-PON Downstream	665
<i>Satoshi Nishikawa, Ryoko Suzuki, Masahiro Matsuura, Yusuke Azuma, Kairi Atsugi, Yu Uwadoi, Hironori Nakahara, Yosuke Suzuki</i>	
High Speed InP Modulator for Beyond 200 Gbaud.....	668
<i>Yoshihiro Ogiso, Josuke Ozaki, Kenta Sugiura, Yusuke Saito, Mitsuteru Ishikawa</i>	

TU2E: ADVANCED OPTICAL FIBERS

Record Low Loss Optical Fiber with 0.1397 dB/km.....	671
<i>Shin Sato, Yuki Kawaguchi, Hirotaka Sakuma, Tetsuya Haruna, Takemi Hasegawa</i>	
Advanced Low-Loss Fibers for High-Capacity Transmission: From Data Center to Undersea.....	674
<i>B. Zhu, T. Geisler, P. I. Borel, R. Jensen, M. Stegmaier, B. Palsdottir, D. W. Peckham, D. J. Digiovanni</i>	
Reduced Single-Coating Diameter Fiber.....	677
<i>P. Sillard, C. Mentzler, A. Amezcua</i>	
Record Length of 2000 Km Weakly-Coupled 7-Core MCF Produced from a Single Large-Scale MCF Preform	680
<i>Tobias Tiess, Michael Lorenz, Jong-Won Lee, Maximilian Schmitt, Jimmy E. Beavers, Evan P. Green, Nicolaj L. Andersen, Andreas C. Samson, Frederik N. Andersen, Sarah Cwalina, Kai Habel, Qiulin Ma, Martin Böttcher, Kay Schuster</i>	
Optofluidic Microstructured Fibers: A Nanoparticle Tracking Analysis Platform for Understanding Nanoscale Objects Such as SARS-CoV-2	683
<i>Markus A. Schmidt</i>	
Power Resilient, Air-Gap Multi-Core Fiber with >20 W Fiber Fuse Propagation Threshold Per Core.....	686
<i>Aditi Mehta, Kazunori Mukasa, Takeshi Takagi, Mujtaba Zahidy, Yaixin Liu, Kjeld Dalgaard, Karsten Rottwitt, Michael Galili, Leif Katsuo Oxenløwe, Toshio Morioka</i>	

TU2F: MOORE'S LAW: A PHOTONICS PERSPECTIVE FOR THE NEXT DECADE

Moore's Law Redefined for AI/HPC	689
<i>Katharine Schmidtke, Hans-Juergen Schmidtke</i>	

TU2H: TRANSCEIVER AND TRANSMISSION IMPAIRMENTS MITIGATION

In-Service Transmitter Calibration Via Offloaded 4×2 WL MIMO Equalizer with Compensating IQ Imbalance	692
<i>Masaki Sato, Hidemi Noguchi, Junichiro Matsui, Jun'Ichi Abe, Emmanuel Le Taillandier De Gabory</i>	
Transmitter Impairment Mitigation by 8 × 2 Widely Linear MIMO Equalizer with Improved Frequency Offset Tolerance.....	695
<i>Xuemeng Hu, Zepeng Gong, Pengpeng Wei, Fan Shi, Xiao Xiao, Tianye Huang, Xiang Li</i>	
Distortion Characterization and Performance Estimation of Time-Interleaved DAC and ADC Based on the Measurement of Nonlinear Noise Spectrum.....	698
<i>Tong Ye, Ke Zhang, Xiaofei Su, Jingnan Li, Hisao Nakashima, Takeshi Hoshida, Zhenning Tao</i>	
Frequency-Band Analysis of Equalization Enhanced Phase Noise Jointly with DSP Impact	701
<i>C. S. Martins, A. Lorences-Riesgo, S. Mumtaz, T. H. Nguyen, A. Hraghi, Z. Wu, Y. Frignac, G. Charlet, Y. Zhao</i>	

TU2J: FIBER SENSING APPLICATIONS I

Digital Coherent Sensing Over Deployed Fibers for Advanced Network Telemetry	704
<i>Sterenn Guerrier, Christian Dorize, Henrique Pavani, Haik Mardoyan, Élie Awwad, Jérémie Renaudier</i>	
Enabling Endogenous DAS in P2MP Digital Subcarrier Coherent Transmission System with Enhanced Frequency Response	707
<i>Zihe Hu, Can Zhao, Yizhao Chen, Mingming Zhang, Junda Chen, Weihao Li, Luming Zhao, Ming Tang</i>	
High-Efficiency ISAC to Enable Sub-Meter Level Vibration Sensing for Coherent Fiber Networks.....	710
<i>Jingchuan Wang, Liwang Lu, Li Wang, Yaxi Yan, Alan Pak Tao Lau, Chao Lu</i>	
Anomaly Detection and Localization in Optical Networks Using Vision Transformer and SOP Monitoring.....	713
<i>K. Abdelli, M. Lonardi, J. Gripp, D. Correa, S. Olsson, F. Boitier, P. Layec</i>	
Local Wind Impact Sensing Using State of Polarization Measurement on a Live Short-Haul Aerial Fibre Cable	716
<i>Kristina Shizuka Yamase Skarvang, Steinar Bjørnstad, Erik Sæthre, Dag Roar Hjelm</i>	
Field Detection and Localization of Digging Excavator Events Using MIMO Digital Fiber Sensing Over a Deployed Optical Network for Proactive Fiber Break Prevention.....	719
<i>S. Guerrier, H. Mardoyan, C. Dorize, H. Pavani, K. Darwish, M. Biyahi, L. Re, A. Koubaa, H. Galal, S. Chenard, J. Renaudier</i>	
Field Test of Communication Cable for Environmental Monitoring.....	722
<i>Chuanbiao Zhang, Xiongyan Tang, Guangquan Wang, Shikui Shen, He Zhang, Yanbiao Chang, Junzhong Cao</i>	

TU2K: INDOOR OPTICAL WIRELESS COMMUNICATION

519.21Gbps Optical Interconnect Using 50-Channel Pre-Equalized WDM Visible Light Laser Communication System.....	725
<i>Xianhao Lin, Haoyu Zhang, Zhilan Lu, Zhiteng Luo, Chao Shen, Jianyang Shi, Junwen Zhang, Ziwei Li, Hui Chen, Zhixue He, Shaohua Yu, Nan Chi</i>	
All-In-One TO-Can-Packed RGB-LD Lamp Enables 40-Gbit/s White-Lighting Wireless DMT Link.....	728
<i>Gong-Ru Lin, Chih-Hsien Cheng, Po-Lun Chen, Pin-Wei Ho, Szu-En Lai, Yi-Chien Wu, Yu-Sheng Liao, Yu-Chieh Chi, Atsushi Matsumoto, Kouichi Akahane</i>	
Flexible WDM VLC System with LEDs as Multi-Gb/s Receivers and Beacon Emitters for Integrated Localization.....	731
<i>Bernhard Schrenk</i>	
Optical Beam Steerable and Beam Dividable of Non-Orthogonal Multiple Access (NOMA) Signal with Low-Density Parity-Check (LDPC) for Multi-User Optical Wireless Communication System	734
<i>Yin-He Jian, Chih-Chun Wang, Jian-Wen Chen, Tzu-Chieh Wei, Chi-Wai Chow, Chien-Hung Yeh</i>	
30 Gbit/s Visible Light Communication System with Optimized Color Temperature	737
<i>Pedro A. Loureiro, Gil M. Fernandes, Sandra F. H. Correia, Rute A. S. Ferreira, Fernando P. Guiomar, Paulo P. Monteiro</i>	
40-Gbit/s Mobile FSO with High-Speed Beam Stabilizer and 2D-PDA-Based Diversity Receiver for Support Robots	740
<i>Zu-Kai Weng, Yuki Yoshida, Toshimasa Umezawa, Abdelmoula Bekkali, Michikazu Hattori, Atsushi Matsumoto, Atsushi Kanno, Naokatsu Yamamoto, Tetsuya Kawanishi, Kouichi Akahane</i>	
High-Bandwidth GaN Substrate Single-Pixel Blue Micro-LED Toward 10 Gbps Visible Light Communication	743
<i>Zhiwei Rao, Xinyi Shan, Yue Liao, Zuxin Jin, Runze Lin, Xugao Cui, Ran Liu, Pengfei Tian</i>	
Wavelength-Multiplexed Beam Steering in Fiber and Visible Light Communication Integrated Indoor Access Network	746
<i>Wenqing Niu, Fujie Li, Zengyi Xu, Chao Shen, Ziwei Li, Jianyang Shi, Junwen Zhang, Nan Chi</i>	

TU3A: CPO AND ECOSYSTEMS

1.6 Tbps (224 Gbps/ λ) Silicon Photonic Engine Fabricated with Advanced Electronic-Photonic FOWLP for Co-Packaged Optics and Linear Drive Applications	749
<i>Xin Li, Sajay B. N. Gourikutty, Jiaqi Wu, Teck Guan Lim, Pengfei Guo, Jaye C. Davies, Edward Sing Chee Koh, Lau Boon Long, Ming Ching Jong, Chao Li, Guo-Qiang Lo, Surya Bhattacharya, Jason Tsung-Yang Liow</i>	
Collective Die-To-Wafer Bonding Enabling Low-Loss Evanescent Coupling for Optically Interconnected System-On-Wafer	752
<i>Pengfei Xu, Junwen He, Koen Kennes, Anton Dvoretzkii, Arnita Podpod, Guy Lepage, Negin Golshani, Rafal Magdziak, Swetanshu Bipul, Dieter Bode, Peter Verheyen, Maumita Chakrabarti, Dimitrios Velenis, Andy Miller, Yoojin Ban, Filippo Ferraro, Joris Van Campenhout</i>	

TU3B: 6G AND EMERGING APPLICATIONS

The Role of Optical Networking in the 6G Era.....	755
<i>I. Tomkos, D. Uzunidis, K. Moschopoulos, C. Christofodis, Ch. Papapavlou, K. Paximadis, R. Muñoz, D. M. Marom, M. Nazarathy</i>	
Hollow-Core-Fiber Placement in Latency-Constrained Metro Networks with edgeDCs.....	758
<i>Giovanni Simone Sticca, Memedhe Ibrahim, Nicola Di Cicco, Francesco Musumeci, Massimo Tornatore</i>	
Network for AI: Communication-Efficient Federated Learning with MST-Based Scheduling and Multi-Aggregation Over Optical Networks.....	761
<i>Ruikun Wang, Jiawei Zhang, Memedhe Ibrahim, Zhiqun Gu, Yuming Xiao, Francesco Musumeci, Massimo Tornatore, Yuefeng Ji</i>	
Programmable Packet-Optical Networks Using Data Processing Units (DPUs) with Embedded GPU.....	764
<i>Piero Castoldi, Rana Abu Bakar, Andrea Sgambelluri, Juan Jose Vegas Olmos, Francesco Paolucci, Filippo Cugini</i>	
Availability-Guaranteed Differentiated Provisioning in Integrated Satellite-Terrestrial Optical Networks.....	767
<i>Lu Zhang, Xin Li, Massimo Tornatore, Jingjie Xin, Shanguo Huang</i>	

TU3C: QUANTUM INFORMATION GENERATION, DISTRIBUTION AND PROCESSING

Highly Pure 4-Qubit States Fully Integrated in a Programmable Silicon-Photonic Chip.....	770
<i>Jong-Moo Lee, Jiho Park, Jeongho Bang, Young-Ik Sohn, Alessio Baldazzi, Matteo Sanna, Stefano Azzini, Lorenzo Pavesi</i>	
A Gaussian Boson Sampling Based Ising Solver.....	773
<i>H. H. Zhu, H. S. Chen, H. Cai, T. Chen, L. P. Chin, X. D. Zhang, A. Q. Liu</i>	
A Roadmap Towards Entanglement Distribution Over Useful Telecom Distances.....	776
<i>Mehul Malik</i>	
Remote Entanglement of Quantum Memories Over a Metropolitan Network.....	778
<i>D. R. Assumpcao, C. M. Knauf, A. Suleymanzade, Y. C. Wei, P. J. Stas, Y. Q. Huan, B. Machielse, E. N. Knall, M. Sutula, G. Baranes, N. Sinclair, C. De-Eknamkul, D. S. Levonian, M. K. Bhaskar, H. Park, M. Loncar, M. D. Lukin</i>	
CMOS Photonic Integrated Circuit for Flex-Grid Polarization Entanglement.....	781
<i>Alexander Miloshevsky, Hsuan-Hao Lu, Lucas M. Cohen, Karthik V. Myilswamy, Saleha Fatema, Muneer Alshowkan, Andrew M. Weiner, Joseph M. Lukens</i>	

TU3D: HIGH SPEED PHOTODETECTORS

Ultra-Fast Ge-On-Si Photodetectors.....	784
<i>Stefan Lischke, Daniel Steckler, Anna Peczek, Jesse Morgan, Andreas Deling, Lars Zimmermann</i>	

DC-226 GHz Well-Impedance-Matched High-Speed Photoreceiver for Multi-Band Signal Detection	787
<i>T. Umezawa, P. T. Dat, Y. Yoshida, S. Nakajima, A. Matsumoto, K. Akahane, A. Kanno, N. Yamamoto</i>	
Ultrafast 67 GHz Waveguide-Coupled Silicon-Germanium Avalanche Photodiode	790
<i>Yang Shi, Mingjie Zou, Zuhang Li, Xinliang Zhang, Yu Yu</i>	
Ultra-Wide Bandwidth and High Saturation Power Uni-Traveling Carrier Photodiodes	793
<i>Bing Xiong, Yuxin Tian, Changzheng Sun, Zhibiao Hao, Jian Wang, Lai Wang, Yanjun Han, Hongtao Li, Lin Gan, Yi Luo</i>	
Type-II GaInAsSb/InP Modified Uni-Traveling Carrier Photodiodes Under Zero-Bias Operation	796
<i>Rimjhim Chaudhary, Akshay M. Arabhavi, Sara Hamzeloui, Martin Leich, Olivier Ostinelli, Colombo R. Bolognesi</i>	
Polarization-Independent Photodetector with Integrated Optical Preamplifier and 60 GHz 3 dB Bandwidth	799
<i>Hendrik Boerma, Tom Kieckhefel, Thanh T. Tran, Patrick Runge, Martin Schell</i>	

TU3E: HIGH BIT RATE HIGH CAPACITY TRANSMISSION

Real-Time Transmission of 34.9 Tb/s with 1-Tb/s Channels Over 4800 Ghz-Wide C-Band Along 1000 Km of G654E Fiber	802
<i>B. Lavigne, M. Le Monnier, T. Zami, J. David, S. Weisser, L. Raddatz, F. Pulka</i>	
150.27-Tb/s Capacity Over 150-Km in S+C+L Band Using 156-Channel 115-GBaud Signals with Doped Fiber Amplification.....	805
<i>Qingyu He, Dawei Ge, Ming Luo, Xu Zhang, Yan Wu, Liang Mei, Ping Du, Dong Wang, Hongguang Zhang, Han Li, Xi Xiao</i>	
S+C+L WDM Coherent Transmission with >1-Tb/s/λ, Signals	808
<i>Fukutaro Hamaoka, Masanori Nakamura, Takayuki Kobayashi, Yutaka Miyamoto, Etsushi Yamazaki, Yoshiaki Kisaka</i>	
Single-Fiber Bidirectional Transmission Using 400G Coherent Digital Subcarrier Transceivers.....	811
<i>Pablo Torres-Ferrera, Jacqueline Sime, Thomas Duthel, Emanuele Virgillito, Vittorio Curri, Roberto Gaudino, Chris Fludger, Antonio Napoli</i>	
110.7-Tb/s Single-Mode-Fiber Transmission Over 1040 Km with High-Symbol-Rate 144-GBaud PDM-PCS-QAM Signals.....	814
<i>Fukutaro Hamaoka, Masanori Nakamura, Takeo Sasai, Shuto Sugawara, Takayuki Kobayashi, Yutaka Miyamoto, Etsushi Yamazaki</i>	

TU3F: OPTICAL NEURAL NETWORKS

Optics-Informed Neural Networks: Bridging Deep Learning with Photonic Accelerators	817
<i>M. Moralis-Pegios, A. Tsakyridis, C. Pappas, T. Moschos, G. Giamougiannis, S. Kovali, I. Roumpos, M. Kirtas, N. Passalis, A. Tefas, N. Pleros</i>	
Adaptive All-Optical Sigmoid Activation Functions for Photonic Neural Networks Using Fabry-Perot Laser Diodes Under Optical Injection.....	820
<i>Petar Atanasijevic, Christos Pappas, Mladen Banovic, Jasna Crnjanski, Apostolos Tsakyridis, Miltiadis Moralis-Pegios, Konstantinos Vyrsokinos, Marko Krstic, Peda Mihailovic, Slobodan Petricevic, Nikos Pleros, Dejan Gvozdic</i>	

Plasmonically Enhanced Optical Accelerator for Nonlinear Signal Processing Based on Artificial Neural Networks.....	823
<i>Tobias Blatter, Amane Zürrer, Yannik Horst, Christos Pappas, George Giamougiannis, Apostolos Tsakyridis, Manuel Kohli, Ueli Koch, Miltiadis Moralis-Pegios, Nikos Pleros, Juerg Leuthold</i>	
Demonstration of Neural Heterogeneity with Programmable Brain-Inspired Optoelectronic Spiking Neurons	826
<i>Yun-Jhu Lee, Mehmet Berkay On, Luis El Srouji, Li Zhang, Mahmoud Abdelghany, S. J. Ben Yoo</i>	
Optical Neural Networks with Tensor Compression and Photonic Memory.....	829
<i>Xian Xiao, Stanley Cheung, Bassem Tossoun, Thomas Van Vaerenbergh, Geza Kurczveil, Raymond G. Beausoleil</i>	
Inference and Training in Deep Learning Using a Symmetric Optical Crossbar Array	832
<i>Rui Tang, Shuhei Ohno, Ken Tanizawa, Kazuhiro Ikeda, Makoto Okano, Kasidit Toprasertpong, Shinichi Takagi, Mitsuru Takenaka</i>	

TU3H: ADVANCED OPTICAL SUBSYSTEMS

50G Burst-Mode Receiver Using Monolithic SOA-UTC and Burst-Mode TIA.....	835
<i>L. Breyne, C. Caillaud, T. Gurne, J. F. Paret, M. Straub, G. Coudyzer, K. Mekhazni, M. Verplaetse</i>	
Semi-Analytical Methodology for Advanced Filter Design in Chirped-Managed Lasers.....	838
<i>Reza Maram, Md Samiul Alam, Kh Arif Shahriar, Pasquale Ricciardi, David V. Plant</i>	
Multi-Channel Coherent Optical System Based on a High Power Fabry-Perot QW Laser Diode	841
<i>Sharmila Raisa, Shalmoli Ghosh, Maurice O'Sullivan, Charles Laperle, Rongqing Hui</i>	
EML-Based Coherent Receiver for Low CFSR Single-Sideband Transmission Enabled by Injection Locking.....	844
<i>Siyu Luo, Zhengxuan Li, Yingxiong Song</i>	
Throughput Maximisation in Ultra-Wideband Hybrid-Amplified Links	847
<i>Henrique Buglia, Eric Sillekens, Lidia Galdino, Robert Killely, Polina Bayvel</i>	
C-Band Net 1.8 Tb/s (240Gb/s/λ× 8λ) DWDM IM/DD Transmission Over 1.4km AR-HCF with Linear FFE Only.....	850
<i>Chao Li, Zichen Liu, Yizhi Sun, Shoufei Gao, Qibing Wang, Hui Chen, Siyue Jin, Ming Luo, Xu Zhang, Chao Yang, Yingying Wang, Wei Ding, Lei Wang, Xi Xiao, Zhixue He, Shaohua Yu</i>	
Parameter Estimation of Semi-Conductor Optical Amplifier Booster Based on Digital Signal Processing.....	853
<i>Tarek Eldahrawy, Abir Hraghi, Abel Lorences-Riesgo, Trung-Hien Nguyen, Iosif Demirtzioglou, Loig Godard, Hartmut Hafermann, Nayla El Dahdah, Yu Zhao, Yann Frignac, Gabriel Charlet</i>	

TU3I: DISAGGREGATED AND SOFTWARE DEFINED ACCESS NETWORKS

Real-Time Demonstration of Softwarized Low-Complexity Timing Recovery by CMA Filter Interpolation for Baud-Rate Sampling DSP	856
<i>Takahiro Suzuki, Sang-Yuep Kim, Jun-Ichi Kani, Tomoaki Yoshida</i>	

Low-Latency Upstream Scheduling in Multi-Tenant, SLA Compliant TWDM PON.....	859
<i>Arijeet Ganguli, Marco Ruffini</i>	
Low-Latency Physical-Layer Function Chaining Using Inter-Container Shared Memory for Fully Virtualized Access Networks.....	862
<i>Takahiro Suzuki, Sang-Yuep Kim, Jun-Ichi Kani, Tomoaki Yoshida</i>	
MAC-Assisted DSP Architecture for 50G TDM-PON Upstream Triple-Rate Reception	865
<i>Nannan Zhang, Junwei Li, Lirong Bai, Xiangnan Zhao, Miao Yu, Leiya Hu, Gengchen Liu</i>	

TU3J: FIBER SENSING APPLICATIONS II

Continuous Distributed Phase and Polarization Monitoring of Trans-Atlantic Submarine Fiber Optic Cable.....	868
<i>Mikael Mazur, Nicolas K. Fontaine, Megan Kelleher, Valey Kamalov, Roland Ryf, Lauren Dallachiesa, Haoshuo Chen, David T. Neilson, Franklyn Quinlan</i>	
Earthquake Early Warning Through Terrestrial Optical Networks: A Bi-GRU Attention Model Approach on SOP Data.....	871
<i>Fehmida Usmani, Hasan Awad, Emanuele Virgillito, Rudi Bratovich, Stefano Straullu, Francesco Aquilino, Roberto Proietti, Rosanna Pastorelli, Vittorio Curri</i>	
Field Implementation of Fiber Cable Monitoring for Mesh Networks with Optimized Multi-Channel Sensor Placement	874
<i>Philip N. Ji, Zilong Ye, Glenn Wellbrock, Tiejun Xia, Ming-Fang Huang, Yoshiaki Aono, Ting Wang</i>	
Optical Fiber Sensing Network Control Plane Enabled by a Novel Sub μ s Response Time Fiber Sensing Control Device.....	877
<i>Mijail Szczerban, Mikael Mazur, Lauren Dallachiesa, Haik Mardoyan, Sarvesh Bidkar, Roland Ryf, Jesse Simsarian</i>	
Remote Sensing with High Spatial Resolution.....	880
<i>André Sandmann, Florian Azendorf, Michael H. Eiselt</i>	
Real-Time Monitoring of Cable Break in a Live Network Using a Coherent Transceiver Prototype	883
<i>Mikael Mazur, Dennis Wallberg, Lauren Dallachiesa, Erik Börjeson, Roland Ryf, Magnus Bergroth, Börje Josefsson, Nicolas K. Fontaine, Haoshuo Chen, David T. Neilson, Jochen Schröder, Per Larsson-Edefors, Magnus Karlsson</i>	
Highly Sensitive Co-Trench Detection of Optical Fibers by Correlation Analysis with Field Test.....	886
<i>Jiachuan Lin, Zhiping Jiang, Tao Zhang, Qingpeng Liu, Haiming Qin, Hao Li</i>	

TU3K: HIGH CAPACITY RADIO-OVER-FIBER COMMUNICATION

Is Ultra-High Order QAM Necessary for Delta-Sigma Modulator in Mobile Front-Haul?	889
<i>Yin-He Jian, Jian-Wen Chen, Chih-Chun Wang, Tzu-Chieh Wei, Chi-Wai Chow, Chien-Hung Yeh</i>	
ASE Source Enabled 2 Tb/s CPRI-Equivalent Rate 1024-QAM DA-RoF Transmission	892
<i>Jingjing Lin, Yixiao Zhu, Chenbo Zhang, Xu Liu, Zhangyuan Chen, Weiwei Hu, Xiaopeng Xie</i>	

1.92-Tb/s CPRI-Equivalent Rate Direct Detection Transmission Based on ANN Pre-Equalization for Digital-Analog Radio-Over-Fiber Mobile Fronthaul	895
<i>Junhao Zhao, An Yan, Guoqiang Li, Zhongya Li, Wangwei Shen, Yongzhu Hu, Nan Chi, Zhixue He, Junwen Zhang</i>	
W-Band Photonics-Aided ISAC Wireless System Sharing OFDM Signal as Communication and Sensing	898
<i>Jiaxuan Liu, Jianjun Yu, Xianming Zhao, Chengzhen Bian, Xiongwei Yang, Long Zhang, Wenzhong He, Jianyu Long, Yao Zhang, Yu Zhang, Zhou Ju, Xinyi Wang, Wen Zhou, Kaihui Wang, Feng Zhao</i>	
Sigma-Delta-Over-Fiber	901
<i>G. Torfs, A. Vandierendonck, F. Zardosht, C. Meysmans, X. Wang, H. Li, P. Demeester</i>	
Analog RoF Fronthaul Carrying 27.6-Tb/s CPRI-Equivalent Rate and 512-QAM with Sideband Modulation for IQ Imbalance Separation and Bi-Directional Transmission	904
<i>Yixiao Zhu, Xiansong Fang, Chenbo Zhang, Yicheng Xu, Qunbi Zhuge, Xiaopeng Xie, Weisheng Hu, Fan Zhang</i>	
Fading-Free Integrated Digital and Analog RoF Fronthaul Based on Dual-Drive MZM and Chirp Multiplexing	907
<i>Yixiao Zhu, Xiansong Fang, Chenbo Zhang, Yicheng Xu, Guangying Yang, Qunbi Zhuge, Xiaopeng Xie, Fan Zhang, Weisheng Hu</i>	

W1A: INTEGRATED FILTERS FOR COMMUNICATION SYSTEMS

Band Aggregators for Band-Unaware Multi-Band CDC-ROADM.....	910
<i>Kenya Suzuki, Mitsunori Fukutoku</i>	
Highly Rectangular SCL-Band MUX/DEMUX Filter Using Compact Cascaded Arrayed Waveguide Gratings	913
<i>Masashi Ota, Kenya Suzuki, Keita Yamaguchi, Takeshi Umeki, Satomi Katayose, Osamu Moriwaki</i>	
32 × 100 GHz WDM Filter Based on Ultra-Compact Silicon Rings with a High Thermal Tuning Efficiency of 5.85 mW/π	916
<i>Qingzhong Deng, Ahmed H. El-Saeed, Alaa Elshazly, Guy Lepage, Chiara Marchese, Hakim Kobbi, Rafal Magdziak, Jeroen De Coster, Neha Singh, Marko Ersek Filipic, Kristof Croes, Dimitrios Velenis, Maumita Chakrabarti, Peter De Heyn, Peter Verheyen, Philippe Absil, Filippo Ferraro, Yoojin Ban, Joris Van Campenhout</i>	
Cost-Effective ROADM Using Wide-Bandwidth Silicon Tunable Ring Filter for Drop Operation	919
<i>Ryosuke Matsumoto, Ryotaro Konoike, Hiroyuki Matsuura, Keijiro Suzuki, Takashi Inoue, Kazuhiro Ikeda, Shu Namiki, Ken-Ichi Sato</i>	
Monolithic Silicon Photonic Few-Mode Waveguide with Satellite Structures for Athermal Spectral Filtering	922
<i>Ryotaro Konoike, Takayuki Kurosu, Guangwei Cong, Keijiro Suzuki, Kazuhiro Ikeda, Shu Namiki</i>	
Inverse-Designed CWDM Demultiplexer Operated in O-Band.....	925
<i>Alfred K. C. Cheung, Krishna Gadepalli, Jian Guan, Andreas Hoenselaar, Yang Meng, Anton Menshov, Jan Petykiewicz, Xavier Serey, Rhett Stucki, Lieven Verslegers, Jiahui Wang, Phil Watson, Ian A. D. Williamson, Yi-Kuei Ryan Wu</i>	

Dual-Polarization Phase Retrieval Receiver in Silicon Photonics.....	928
<i>Brian Stern, Hanzi Huang, Haoshuo Chen, Kwangwoong Kim, Mohamad Hossein Idjadi</i>	

W1B: MONITORING AND SENSING

On the Accuracy of Power Profile Estimation Using MMSE Or Deconvoluted Correlation-Based Profiles	931
<i>Alix May, Fabien Boitier, Ana Ore Remigio, Patricia Layec</i>	
Estimation and Localization of DGD Distributed Over Multi-Span Optical Link by Correlation Template Method.....	934
<i>Choloong Hahn, Junho Chang, Zhiping Jiang</i>	
Recent Advances in Digital Longitudinal Monitoring of Fiber-Optic Link.....	937
<i>Takeo Sasai, Minami Takahashi, Runa Kaneko, Yoshiaki Sone, Masanori Nakamura, Etsushi Yamazaki</i>	
Fiber Longitudinal Monitoring of Inter-Band-SRS-Induced Power Transition in S+C+L WDM Transmission.....	940
<i>Runa Kaneko, Takeo Sasai, Fukutaro Hamaoka, Masanori Nakamura, Etsushi Yamazaki</i>	
State-Of-Polarization Monitoring Employing Optical Supervisory Channel Enabling Instantaneous Fluctuation Detection and Localization.....	943
<i>Yusuke Sasaki, Masaki Sato, Hidemi Noguchi, Kohei Hosokawa</i>	
Digital Vibration Detection and Localization Using Carrier Laser Phase Noise Retrieval in a Conventional Coherent Transponder	946
<i>Yixiang Hu, Mohammad E. Mousa-Pasandi, Ramón Gutiérrez-Castrejón, Maurice O'Sullivan, Fanqi Kong, Brandon Buscaino, Jinsong Zhang, Santiago Bernal, Charles St-Arnault, David V. Plant</i>	

W1C: NETWORK CONTROL AND ORCHESTRATION

Cost-Effective Capacity Enhancement of Survivable Optical Networks by Supplemental Band Expansion and Backup Resource Sharing	949
<i>Daisuke Saito, Yojiro Mori, Kohei Hosokawa, Shigeyuki Yanagimachi, Hiroshi Hasegawa</i>	
Privacy Preserving Digital Twin Knowledge Sharing for Multi-Domain Networks	952
<i>Marc Ruiz, Luis Velasco</i>	
Open Software Development Kit (OpenSDK) for Optical Network Disaggregation.....	955
<i>Filippo Cugini, Davide Scano, Andrea Sgambelluri, Francesco Paolucci, Alessio Giorgetti, Piero Castoldi</i>	

W1D: DOPED FIBER AMPLIFIERS AND HIGH POWER LASER

Yb-Doped Fibers for kW-Class Fiber Lasers	958
<i>A. Rosales-García, J. W. Nicholson, R. Jensen, P. Kristensen, J. Pincha, S. Ovtar, M. Mitrovic, K. Ingerslev, B. Edvold, S. Christensen, D. Digiovanni, B. Pálsdóttir</i>	
A 16 M High Bismuth-Doped Fiber Amplifier Provides 47.9 dB Gain in E+S-Band.....	961
<i>Shaokun Liu, Xiaoke Yin, Le He, Zhimu Gu, Wenzhen Li, Yang Chen, Yingbin Xing, Yingbo Chu, Nengli Dai, Jinyan Li</i>	

Site Dependent Pumping Effect in Super L-Band EDFA	964
<i>Lixian Wang, Saber Jalilpiran, Jacques Lefebvre, Sophie Larochelle, Younès Messaddeq, Zhiping Jiang</i>	
E-Band Transmission of 30-Gbaud PM-16-QAM Supported by Neodymium-Doped Fiber Amplifier	967
<i>Aleksandr Donodin, Leily Kiani, Shabnam Noor, Wladek Forysiak</i>	
Gain Optimization of Er-Doped Fibers Doped with Er:BaF ₂ Nanoparticles	970
<i>Jennifer Campbell, Mary Ann Cahoon, Michael Gachich, Michael Norlander, Thomas Hawkins, John Ballato, Peter Dragic</i>	
S+L Dual Band Silica Based EDFA Enabling Seamless Upgrade from C-Band to S+C+L Triple Band System.....	973
<i>Youichi Akasaka, Paparao Palacharla</i>	
21.9 THz-Wide Ytterbium Doped Fiber Amplifier for 1 μ m Data Transmission	976
<i>Xin Huang, Sijing Liang, Lin Xu, David J. Richardson, Yongmin Jung</i>	

W1E: DIGITAL SUBSYSTEMS FOR SDM AND SCM TRANSMISSIONS

205.8Tb/s Weakly-Coupled 2-Mode 7-Core Transmission Over 1170-Km FM-MCF Only Using 2 \times 2 MIMO-DSP	979
<i>Gang Qiao, Yu Yang, Honglin Ji, Shuailuo Huang, Chengbin Long, Yuyang Gao, Mingqing Zuo, Jiarui Zhang, Zhaopeng Xu, Qi Wu, Shangcheng Wang, Lulu Liu, Lei Shen, Jie Luo, Junpeng Liang, Zhixue He, Yongqi He, Weisheng Hu, Zhangyuan Chen, Juhao Li</i>	
Low-Complexity 4D \times D MIMO Equalizer Enabling 2.6-Tb/s/I SDM Signal Reception Over Dynamic Four-Coupled-Core Cabled Transmission Line	982
<i>Akira Kawai, Kohki Shibahara, Masanori Nakamura, Takayuki Kobayashi, Takayoshi Mori, Ryota Imada, Taiji Sakamoto, Yusuke Yamada, Kazuhide Nakajima, Yutaka Miyamoto</i>	
Demonstration of Point-To-Multipoint Diversity Gain in a 1.6-Tb/s-Class Subcarrier-Multiplexed Coherent System.....	985
<i>Di Che</i>	
Circuit Implementation of Pilot-Based Dynamic MIMO Equalization for Coupled-Core Fibers	988
<i>Erik Borjeson, Ekaterina Deriushkina, Mikael Mazur, Magnus Karlsson, Per Larsson-Edefors</i>	
On the Impact of Spatial Mode Dispersion for Mode-Dependent Loss Estimation and Mitigation in Coupled-Core MCF Links	991
<i>Meng Mao, Bin Chen, Rendong Xu, Lin Sun, Junjie Xiong, Lin Ma, Gangxiang Shen, Gordon Ning Liu</i>	
Low-Complexity Frequency Packing to Enable Filtering-Tolerant DSCM Transmission	994
<i>Romil K. Patel, Sami Mumtaz, Marco A. Fernandes, Beatriz M. Oliveira, Gabriel Charlet, Yu Zhao, Paulo P. Monteiro, Abel Lorences-Riesgo, Fernando P. Guiomar</i>	
A Low Complexity Coherent 16 \times 400 Gbit/s 4SC-16QAM DSCM System with Precise Transceiver IQ Skew Compensation and Simplified Equalization	997
<i>Wei Wang, Dongdong Zou, Zhenpeng Wu, Xingwen Yi, Wei Sun, Fan Li, Zhaohui Li</i>	
Enhanced Carrier Phase Recovery for Spectral-Efficient Digital Subcarrier Multiplexing Transmissions	1000
<i>Meng Xiang, Sailan Yan, Can Wei, Hong Lv, Jianping Li, Songnian Fu, Yuwen Qin</i>	

W1F: OPTICAL COMPUTING AND MEMORY

Hyperspectral In-Memory Computing	1004
<i>Mostafa Honari Latifpour, Byoung Jun Park, Yoshihisa Yamamoto, Myoung-Gyun Suh</i>	
Computation with Degenerate Optical Parametric Oscillator Networks	1007
<i>Hiroki Takesue, Takahiro Inagaki, Kensuke Inaba, Takuya Ikuta, Yasuhiro Yamada, Yuya Yonezu, Toshimori Honjo</i>	
Integrated Photonic Computing Chip for Unary-Based Option Pricing	1008
<i>Hui Zhang, Sergi Ramos-Calderer, Yuancheng Zhan, Hong Cai, Guo-Qiang Lo, Leong Chuan Kwek, José Ignacio Latorre, Ai Qun Liu</i>	
20 GHz Silicon Integrated Optical Ternary Content Addressable Memory (CAM) Cell	1011
<i>George Giamougiannis, Christos Pappas, Theodoros Moschos, Apostolos Tsakyridis, Miltiadis Moralis-Pegios, Christos Vagionas, Yanir London, Thomas Van Vaerenbergh, Bassem Tossoun, Nikos Pleros</i>	
Holographic Optical Storage for the Cloud?	1014
<i>Grace Brennan, Nathanael Cheriére, Jiaqi Chu, Jannes Gladrow, Douglas Kelly, Giorgio Maltese, Dushyanth Narayanan, Greg O'Shea, Alan Sanders, Xingbo Wu, Mengyang Yang, Benn Thomsen</i>	
Frequency-Comb-Enabled Photonic RF Memory for Multi-False-Target Radar Compound Jamming	1017
<i>Kai Xu, Xinghan Li, Hongyu Li, Mengfan Cheng, Qi Yang, Ming Tang, Deming Liu, Lei Deng</i>	

W1H: SHORT-REACH TRANSMISSION

A Novel Machine Learning-Based Equalizer for a Downstream 100G PAM-4 PON	1020
<i>Chen Shao, Elias Giacomidis, Shi Li, Jialei Li, Michael Farber, Tobias Kafer, Andre Richter</i>	
Multiplication-Free Equalization Schemes for 244-Gbps PAM-4 Transmission.....	1023
<i>Fei Xie, Xiaoqian Huang, Shuangyue Liu, Du Tang, Zhengkang Wang, Yaojun Qiao</i>	
Single-Mode Coherent Transmission Over Universal Fiber for Data Center Interconnects.....	1026
<i>Fabio A. Barbosa, Mareli Rodigheri, Samuel Lennard, Ming-Jun Li, Filipe M. Ferreira</i>	
Nonlinear Vector Autoregressor Equalization for PAM-4 Micro-Ring Modulator-Based Short-Reach Transmission.....	1029
<i>Yevhenii Osadchuk, Deming Kong, Darko Zibar, Francesco Da Ros</i>	
CD-Aware OCT Precoding for C-Band 100-Gb/s IM/DD OFDM Transmission Over 50-Km SSMF.....	1032
<i>Junwei Zhang, Liwang Lu, Heyun Tan, Xiaojian Hong, Chao Fei, Kangping Zhong, Alan Pak Tao Lau, Chao Lu</i>	
Simultaneous IM/DD Data Transmission and High-Rate Secret Key Distribution Over a Single C-Band Channel	1035
<i>M. Jachura, J. Szlachetka, M. Kucharczyk, M. Jarzyna, P. Kolenderski, J. P. Turkiewicz, K. Banaszek</i>	

WIJ: ACCESS, METRO AND MOBILE CONVERGENCE

Experimental Demonstration of In-Field 400G Coherent Metro-Access Convergence	1038
<i>G. Rizzelli, M. Casasco, A. Pagano, V. Ferrero, R. Gaudino</i>	
Will a Metro-Access Optical Continuum Ever Fly? Deployment Challenges and Enabling Technologies.....	1041
<i>Fabio Cavaliere, Alessandro Percelsi</i>	
Port-Agnostic Path Establishment with Point-To-Multipoint Control of Remote User Terminals for Metro/Access-Integrated All-Photonics Network.....	1044
<i>Ryo Igarashi, Shin Kaneko, Yasutaka Kimura, Naotaka Shibata, Takahiro Suzuki, Masamichi Fujiwara, Jun-Ichi Kani, Tomoaki Yoshida</i>	
Wideband FTTR PON Integrating Optical Wireless Access	1047
<i>Bernhard Schrenk</i>	
Optical Transport Networks Converging Edge Compute and Central Cloud: An Enabler for 6G Services	1050
<i>A. Tzanakaki, M. Anastasopoulos, V. M. Alevizaki</i>	
Large-Scale Network Field Trial Demonstrating the Evolution of 10G EPON to 50G PON Using Two-Generation Multi-PON Modules.....	1053
<i>Dezhi Zhang, Jialiang Jin, Jianglong Wang, Dekun Liu, Derek Nessel</i>	

WIK: PHOTONIC INTEGRATION AND INTEGRATED RECEIVERS

Breaking the Interconnection Limit by Integrating CMOS Electronics on PICs.....	1056
<i>F. Zanetto, M. Crico, A. Martinez, F. Toso, F. Morichetti, A. Melloni, G. Ferrari, M. Sampietro</i>	
Widely Tunable Laser Based on Thin-Film Lithium Niobate / III-V Hybrid Integration.....	1059
<i>Shuxin Wang, Qi Wang, Rui Ma, Zhongjin Lin, Xinlun Cai</i>	
Heterogeneously-Integrated Self-Injection Locked Lasers on Thin Film Lithium Niobate	1062
<i>Mingxiao Li, Chao Xiang, Jonathan Peters, Joel Guo, Theodore Morin, Shixin Xue, Mario Dumont, Jeremy Staffa, Qiang Lin, John E. Bowers</i>	
A Cost-Efficient 1.28 Tb/s DWDM Receiver Using All-Si Double Microring Avalanche Photodiodes	1065
<i>Yiwei Peng, Yuan Yuan, Wayne V. Sorin, Stanley Cheung, Zhihong Huang, Di Liang, Marco Fiorentino, Raymond G. Beausoleil</i>	
Integrated Photonic Resonant Modulator-Based Equalization and Optimization for DWDM.....	1068
<i>Asher Novick, Maarten Hattink, Anthony Rizzo, Yuyang Wang, Vignesh Gopal, Songli Wang, Robert Parsons, Keren Bergman</i>	
InP-Based Optical Devices Integrated on Silicon Photonic Circuits.....	1071
<i>Takuya Okimoto, Naoki Fujiwara, Naoko Inoue, Takuo Hiratani, Takehiko Kikuchi, Takuya Mitarai, Munetaka Kurokawa, Hajime Tanaka, Hidenari Fujikata, Tohma Watanabe, Toshiyuki Nitta, Nobuhiko Nishiyama, Hideki Yagi</i>	
128 GBaud Coherent Receiver Engine with Flat Frequency Response.....	1074
<i>Jonas Gläsel, Alexander Schindler, Hendrik Boerma, Thanh T. Tran, Felix Ganzer, Duy P. Nguyen, Billy Allen, Patrick Runge, Martin Schell</i>	

W2A: POSTERS SESSION I, IN-PERSON, EXHIBIT HALL B1

Improving FFE Performance by an Error Decorrelation Algorithm.....	1077
<i>Nebojsa Stojanovic, Stefano Calabrò, Lin Youxi, Tom Jonas Wettlin, Talha Rahman, Maxim Kuschnerov</i>	
Wavelength-Stable Transmitter at ONU by Using Burst SOA for Coherent TDM-PON	1080
<i>Acai Tan, Zhengxuan Li, Siyu Luo, Zheng Xin, Qinyao Yang, Yingxiong Song</i>	
Optical Single-Sideband (SSB) Conversion Technique Using Phase Modulator for High-Speed Short-Reach IM/DD PAM Signaling	1083
<i>Nobuhiko Kikuchi, Riu Hirai, Takahito Tanimura</i>	
Long-Distance Quantum Key Distribution Supported by a PIC-Based Interferometer.....	1086
<i>Giulia Guarda, Domenico Ribezzo, Tommaso Occhipinti, Alessandro Zavatta, Davide Bacco</i>	
3D Freeform Millimeter-Wave and THz Structures Based on Multi-Photon Lithography.....	1089
<i>Pascal Maier, Alexander Kotz, Joachim Hebler, Qiaoshuang Zhang, Christian Benz, Alexander Quint, Marius Kretschmann, Tobias Harter, Sebastian Randel, Uli Lemmer, Wolfgang Freude, Thomas Zwick, Christian Koos</i>	
100 Gbps PAM4 VCSEL-Based Transmission Over Meter-Scale Flexible Multimode Polymer Waveguides for Board-Level Optical Interconnects Application	1092
<i>Xu Liu, Lin Ma, Ying Shi, Qiancheng Yu, Motoya Kaneta, Zuyuan He</i>	
A Grating Coupler with High Coupling Efficiency and Large Bandwidth for Silicon-On-Insulator Technology	1095
<i>Christian Schweikert, Simon Nau, Niklas Hoppe, Wolfgang Vogel, Manfred Berroth, Georg Rademacher</i>	
Low-Divergent 940-Nm Photonic-Crystal Surface-Emitting Laser for Short-Reach Free-Space Data Link	1098
<i>Chih-Hsien Cheng, Po-Lun Chen, Pin-Wei Ho, Yu-Heng Hong, Shih-Chen Chen, Shu-Wei Chang, Chao-Hsin Wu, Hao-Chung Kuo, Atsushi Matsumoto, Kouichi Akahane, Gong-Ru Lin</i>	
Large-Scale Integrated Focal Plane Array for Two-Dimensional Scanning	1101
<i>Lei Yu, Yifan Xin, Pengfei Wang, Guangzhen Luo, Pengfei Ma, Zheng Wang, Licheng Chen, Yibo Yang, Yejin Zhang, Jiaoqing Pan</i>	
A 7×4 Silicon Photonic Reconfigurable Optical Analog Processor with Algorithmic Calibration.....	1104
<i>Md Jubayer Shawon, Vishal Saxena</i>	
Single Wavelength Laser TO-CAN Integrated with One-Chip Wavelength Locker	1107
<i>Junichi Suzuki, Kiyotomo Hasegawa, Kei Masuyama, Nobuo Ohata</i>	
Experimental Demonstration of Error Detection-Driven Nonlinearity Compensation for Optical Fiber Communication Systems.....	1110
<i>Metodi P. Yankov, Edson Porto Da Silva, S?ren Forchhammer</i>	
Importance of the Contentionless OXC Property for WDM Networks Handling the Fastest Optical Channels	1113
<i>Thierry Zami</i>	

A Low-Cost Network Architecture Enabled by SOA-Based Filter-Less OADMs and Digital Subcarrier Multiplexing.....	1116
<i>Carlos Castro, Shiyi Xia, Antonio Napoli, João Pedro, Yesica Rumaldo, Nelson Costa, Nicola Calabretta, Bernhard Spinnler, Albert Rafel</i>	
Energy-Efficient Spiking Neural Network Equalization for IM/DD Systems with Optimized Neural Encoding.....	1119
<i>Alexander Von Bank, Eike-Manuel Edelmann, Laurent Schmalen</i>	
Providing Anomalous Behaviour Profiling by Extending SmartNIC Transceiver Support in Packet-Optical Networks.....	1122
<i>R. Vilalta, F. J. Vilchez, Ll. Gifre, C. Manso, J. L. Carcel-Cervera, R. Leira, J. Aracil-Rico, J. P. Fernández-Palacios, R. Martinez, R. Casellas, R. Muñoz</i>	
Flexible Optical Metro-Access Networks Leveraging SOA-Based OADM Nodes and DSCM with Power Loading	1125
<i>Zhouyi Hu, Shiyi Xia, Henrique Freire Santana, Marijn Rombouts, Bin Shi, Nicola Calabretta</i>	
Multi-Section Partially-Corrugated-Grating DFB Lasers for Achieving High Power, Low Noise, and Narrow Linewidth.....	1128
<i>Siti Sulikhah, Kryzchel Anne Malicsi Dela Cruz, San-Liang Lee, Charng-Gan Tu, Ing-Fa Jang, Hung-Pin Shiao, Chao Hsin Wu, Hsiang-Chun Yen</i>	
Machine Learning-Driven Low-Complexity Optical Power Optimization for Point-To-Point Links.....	1131
<i>Isaia Andrenacci, Matteo Lonardi, Petros Ramantanis, Elie Awwad, Ekhiñe Irurozki, Stephan Cléménçon, Paolo Serena, Chiara Lasagni, Sébastien Bigo, Patricia Layec</i>	
Polarization-Insensitive, Silicon-Photonics Circuit, Four-Mode Spatial Multiplexer Matched to a Rectangular Core Fiber.....	1134
<i>David Halfon, Lior Rechtman, Aleksey Kukin, Jeffery S. Stone, Gaozhu Peng, Ming-Jun Li, Dan M. Marom</i>	
Ultra-Efficient Interleaved Vertical-Junction Microdisk Modulator with Integrated Heater.....	1137
<i>Asher Novick, Songli Wang, Anthony Rizzo, Vignesh Gopal, Keren Bergman</i>	
Photonic Physically Unclonable Functions Using Ring-Assisted Contra-Directional Couplers.....	1140
<i>Mohammad Amin Mahdian, Ebadollah Taheri, Kaveh Hassan Rahbardar Mojaver, Mahdi Nikdast</i>	
Broadband Transmission Opto-Mechanical Switch Based on Cylindrical Ferrule Rotation Switching Using Fiber Bundle Inserted in Ferrule.....	1143
<i>Chisato Fukai, Takui Uematsu, Ryo Koyama, Ikutaro Ogushi, Kazunori Katayama</i>	
Verification of the Physical Modelling Approach of Spectral Hole Burning in EDFA Based on Erbium Ion Groups.....	1146
<i>Inga L. Rittner, Peter M. Krummrich</i>	
High-Precision Frequency Difference Locking System for Up/Downstream Lasers with 30 nm Interval in Next Generation Coherent PON.....	1149
<i>Zifeng Chen, Jiajun Lou, Yuanhao Zhang, Quanan Chen, Can Liu, Juan Xia, Qiaoyin Lu, Weihua Guo</i>	
Add-Drop Multiplexing for Spectrally Overlapped Nonlinear Frequency Division Multiplexed Transmission Systems	1152
<i>Olaf Schulz, Alvaro Moscoso-Mártir, Jeremy Witzens, Stephan Pachnicke</i>	

Compact Hybrid-Integrated Multi-Wavelength O-Band Laser Source Using Photonic Wire Bonding.....	1155
<i>Victoria Rosborough, Juergen Musolf, Thomas Liu, Henry Garrett, Don Kebort, Steve Penniman, Devon Gavigan, Hannah Grant, Sabrina Wagner, Gordon Morrison, Leif Johansson, Milan Mašanovic</i>	
Experimental Analysis of Receiver Failure for 19-Core Randomly Coupled Core Fibre Transmission.....	1158
<i>Menno Van Den Hout, Ruby S. B. Ospina, Ruben S. Luís, Benjamin J. Puttnam, Giammarco Di Sciullo, Tetsuya Hayashi, Ayumi Inoue, Takuji Nagashima, Simon Gross, Andrew Ross-Adams, Michael J. Withford, Jun Sakaguchi, Darli A. A. Mello, Cristian Antonelli, Hideaki Furukawa, Chigo Okonkwo, Georg Rademacher</i>	
A Versatile Point-To-Point Network Architecture with Multi-Rate Adaptability from 100 Gbit/s to 10 Gbit/s	1161
<i>Georges Gaillard, Fabienne Saliou, Dylan Chevalier, Gaël Simon, Philippe Chanclou, Luiz Anet Neto, Michel Morvan, Bruno Fracasso</i>	
Frequency Response Modeling and Saturation Power Improvement of Lateral-PIN Germanium Photodetectors	1164
<i>Hao Wu, Ning Cheng, Yanlong Yin, Min Teng, Xuezhe Zheng</i>	
Experimental Demonstration of Robust Spatial-Diversity Combining for Coherent Free-Space Optical Transmission	1167
<i>Abraham Johst, Markus Nölle, Lutz Molle, Nicolas Perlot, Michael Rohde, Ronald Freund</i>	
Efficient Inter-Channel Interference Monitoring Using DSP in Standard Coherent Receivers	1170
<i>Leonardo Minelli, Gabriella Bosco, Antonino Nespola, Stefano Straullu, Stefano Piciaccia, Dario Pilori</i>	
Comparison of FEC Design Concepts for Higher Error Correction Performance with Utilizing Turbo Product Code.....	1173
<i>Yohei Koganei, Kiichi Sugitani</i>	
Optimizing Key Consumption in Switched QKD Networks.....	1176
<i>K. Christodoulououlos, N. Makris, G. T. Kanellos, D. Syvridis</i>	
Impact of Symbol Rate Optimization and Laser Frequency Stability on Transmission Reach of Super-Channel Transceiver Configurations for Beyond 1.6 Tb/s.....	1179
<i>Olga Vassilieva, Inwoong Kim, Hiroyuki Irie, Hisao Nakashima, Takeshi Hoshida, Paparao Palacharla</i>	
Comparison of Feedback and Feedforward Clock Recoveries for Ultra-Fast Synchronization in Passive Optical Networks.....	1182
<i>Patrick Matalla, Christian Koos, Sebastian Randel</i>	
Broadband, Efficient, and Low Dark Current SiN-On-SOI Waveguide-Coupled Photodetectors for Visible Light.....	1185
<i>Alperen Govdeli, Jared C. Mikkelsen, Abhishek Suriya, Hongyao Chua, Guo-Qiang Lo, Joyce K. S. Poon, Wesley D. Sacher</i>	

W2B: POSTERS SESSION II, REMOTE, EGALLERY ON OFC WEBSITE

Optimization of Channel Powers, Raman Pumps and EDFAs in the Wideband Fiber Optic Transmission Systems	1188
<i>Viacheslav V. Ivanov, Lidia Galdino, John D. Downie</i>	

Topological Rotation Symmetry-Based Wavelength Allocation for Entanglement Distribution Networks	1191
<i>Jiali Zhu, Yuan Cao, Jian Li, Xingyu Zhou, Chunhui Zhang, Xiaosong Yu, Yongli Zhao, Jie Zhang, Qin Wang</i>	
Modeling and Experimental Evaluation of End-To-End Delay Jitter for Cross-Domain Interconnection in SD-TSN	1194
<i>Xiaodong Zhang, Guochu Shou, Junli Xue</i>	
Photon-Counting Single-Pixel 3D Imaging Using a Multimode-Fiber-Coupled Fractal SNSPD	1197
<i>Kai Zou, Yun Meng, Zifan Hao, Xiaolong Hu</i>	
Measurement of Optical Signal State of Polarization in OPGW Under Lightning Strike Condition	1200
<i>Fei Tong, Kaijing Hu, Wei Li, Shaohua Yu, Weihua Lian, Hanqi Zhao, Bin Wu, Danke Hong, Ming Luo, Qianggao Hu, Jian Xu</i>	
A Low-Complexity 64QAM-Based Probabilistically Shaped OFDM for W-Band RoF System	1203
<i>Long Zhang, Kaihui Wang, Jiaxuan Liu, Xiongwei Yang, Ming Chen, Chen Wang, Bohan Sang, Yikai Wang, Li Zhao, Wen Zhou, Jianjun Yu</i>	
CPRI-Equivalent Data Rate of 3.12 Tbps 16384QAM DSM 300GHz Terahertz Wave Signals Over Hollow-Core Fiber	1206
<i>Xiongwei Yang, Jianjun Yu, Weiping Li, Chen Wang, Wen Zhou, Kaihui Wang, Chengzhen Bian, Yi Wei, Mingxu Wang, Qitong Zhang, Ying Wu, Bo Liu, Xianming Zhao, Junjie Ding, Jiao Zhang, Min Zhu, Jianguo Yu, Feng Zhao</i>	
Data Labeling Using Unsupervised Cascaded Pre-Training with Fused Multi-Port Data for Optical Failure Management	1209
<i>Weijie Yang, Chunyu Zhang, Danshi Wang, Hong Zhu, Xinxing Xu, Degang Shi, Min Zhang</i>	
Wide-Angle Vertical Coupling Gratings Enabled by Nano-Imprinted Microlens Array	1212
<i>Gan Xiao, Xuanming Zhang, Fei Lou, Lei Lei, Xin Cheng</i>	
Reconfigurable Photonic Integrated Reservoir for Different Baud-Rate PAM-4 Signal Recognition	1215
<i>Kailai Liu, Ying Zhu, Siyao Chang, Ming Lei, Chao Yang, Qiansheng Wang, Xi Xiao</i>	
A Multi-Channel Chromatic Dispersion Compensation for 15-Km Front-Haul Transmission	1218
<i>Yang Ren, Yangbo Wu, Zhengrui Tu</i>	
In-Service Simultaneous Monitoring of Transceiver and Channel Impairments in DSCM Systems Without Impairments Compensation	1221
<i>Linsheng Fan, Yanfu Yang, Qun Zhang, Siyu Gong, Jianwei Tang, Xueyang Li, Chen Cheng, Yongchao Jin, Yong Yao</i>	
Denosing in Mode Conversion by Utilizing Diffractive Deep Neural Networks Optimized with Reinforcement Learning	1224
<i>Zheng Li, Wenbo Zhang, Yang Wang, Guanju Peng, Zongze Li, Xiaoyan Zhou, Lin Zhang</i>	
High-Performance Chiral Mode Switching Device at 2 μ m Waveband Using Photonic Crystal Waveguide	1227
<i>Kang Li, Hejie Peng, Siwei Wang, Lin Chen, Jian Wang</i>	
Experimental Demonstration of 51.2 Tb/s Self-Homodyne Coherent Interconnects on a 3D Photonic Chip Inspiring Coherent Technology Transfer to Centimeter-Scale Ultra-Short-Reach Applications	1230
<i>Min Yang, Chengkun Cai, Kangrui Wang, Guofeng Yan, Shuo Zheng, Zhenyu Wan, Yanjun Zhu, Hua Zhang, Chaonan Yao, Yuchen Shao, Jian Wang</i>	

Direct Radio Frequency Modulation of Quantum Cascade Lasers for Mid-IR Applications	1233
<i>Grzegorz Dudzik, Wojciech Fraczek, Piotr Jaworski, Karol Krzempek, Krzysztof Abramski</i>	
Cryogenic Ge-On-Si Avalanche Photodiodes Operating at 1550 nm Wavelength	1236
<i>Xiaofei Liu, Jingchuan Liu, Funan He, Ruyuan Ma, Xingyan Zhao, Qize Zhong, Yuan Dong, Ting Hu</i>	
Direct Measurement of Resonant Phonon Modes in Optical Fibers.....	1239
<i>Andrea Pertoldi, Rasmus Dybbro Engelsholm, Ivan Galinskiy, Poul Varming, Patrick Bowen Montague</i>	
Mode Division Multiplexed Coherent Optical Transmission in Time Domain by Using Higher-Order Hermite-Gaussian Pulses.....	1242
<i>Masataka Nakazawa, Masato Yoshida, Toshihiko Hirooka</i>	
Integrated Silicon Photonics Transmitter and Receiver Array Modules Enabling 1 Tb/s Interboard Optical Interconnect Over 8-Channel Polymer Optical Waveguide	1245
<i>Chao Yang, Chao Li, Daigao Chen, Ming Luo, Ying Zhu, Zhixue He, Xu Liu, Lin Ma, Xi Xiao</i>	
High Sampling Rate Arbitrary Waveform Generation in the Polarimetric Synthetic Dimension.....	1248
<i>Yiran Guan, Guangying Wang, Jiejun Zhang, Jianping Yao</i>	
New GAWBS Noise Interacting with Longitudinally Propagating Acoustic Waves in Few-Mode Fibers.....	1251
<i>Masato Yoshida, Takaaki Hirai, Shohei Beppu, Keisuke Kasai, Toshihiko Hirooka, Masataka Nakazawa, Yuta Wakayama, Noboru Yoshikane</i>	
Accelerate Distributed Deep Learning with a Fast Reconfigurable Optical Network	1254
<i>Wenzhe Li, Guojun Yuan, Zhan Wang, Guangming Tan, Peiheng Zhang, George N. Rouskas</i>	
Fast Online Optimization of Multi-Pump Raman Amplifiers for Field Deployment in Multi-Band Optical Networks.....	1257
<i>Xiaoxuan Gao, Rentao Gu, Yuejiao Liu, Linbai, Yuefeng Ji</i>	
Chirp-Dispersion Interaction-Enabled Uneven Optical PAM-4 Based on Dual-Drive MZM for 5.9-DB SNR Gain in Digital RoF Fronthaul with Quantizer Compatibility.....	1260
<i>Yimin Hu, Yixiao Zhu, Guangying Yang, Ziheng Zhang, Lina Man, Ziyu Cheng, Weisheng Hu</i>	
Polarization-Insensitive Simplified Self-Heterodyne Detection Based on Optical Frequency Comb in MCF Transmission System	1263
<i>Jie Li, Ming Luo, Xiang Li, Qinyu He, Yuhan Gong, Xu Zhang, Zepeng Gong, Xi Xiao</i>	
Super Wide-Flat Beam Transmission Over Scatter-Prone Underwater Channel Using Twin Parallel Flat-Narrow Beams Generated by Aspheric Lens Pair-Type Beam Shaper.....	1266
<i>Tomoya Ishikawa, Ayumu Kariya, Fumiya Kobori, Keita Tanaka, Takahiro Kodama</i>	
Near-Field Multi-Source Localization and Signal Enhancement for Fiber-Optic DAS	1269
<i>Junfeng Chen, Ke Ai, Hao Li, Cunzheng Fan, Zhijun Yan, Qizhen Sun</i>	
Large-Range and Seamless Rate-Adaptive Free-Space Optical System Based on Rate Compatible Modulation	1272
<i>Yang Zou, Tao Shu, Qirun Fan, Tianjin Mei, Xinyu Chang, Shenmao Zhang, Xiaoxiao Dai, Chen Liu, Mengfan Cheng, Lei Deng, Qi Yang, Deming Liu</i>	
60+60 Km Weakly-Coupled MDM-WDM Transmission Enabled by 4-LP-Mode FM-EDFA.....	1275
<i>Shuailuo Huang, Gang Qiao, Yuyang Gao, Mingqing Zuo, Jing Long Zhu, Lei Shen, Yuanpeng Ding, Lei Zhang, Jie Luo, Yongqi He, Zhangyuan Chen, Juhao Li</i>	

Si-SiN-SiN Tri-Layer Strictly Non-Blocking 8×8 Microring-Based Optical Switch.....	1278
<i>Bohao Sun, Ziyao Zhang, Minjia Chen, Chunhui Yao, Peng Bao, Zhitian Shi, Qixiang Cheng, Keren Bergman, Richard Penty</i>	
High Bandwidth (>35GHz) 1060nm Single-Mode Transverse Coupled-Cavity VCSEL Array for Single-Mode Fiber Transmission.....	1281
<i>Hameeda R. Ibrahim, Chang Ge, Xiaodong Gu, Babu D. Padullaparthi, Fumio Koyama</i>	
Security Enhancement of Quantum Noise Stream Cipher Based on Probabilistic Constellation Shaping.....	1284
<i>Sheng Liu, Shuang Wei, Wei Wang, Yajie Li, Dong Wang, Yongli Zhao, Dechao Zhang, Han Li, Jie Zhang</i>	
Low-Complexity Multi-Tap ET-DFE-PU for Soft-Input FEC in High-Speed IM/DD Systems.....	1287
<i>Xue Zhao, Jiahao Zhou, Jing Zhang, Rui Wang, Zhengyu Ma, Shaohua Hu, Bo Xu, Kun Qiu</i>	
Air/Water Path Switching with Beam Steering for Water Distance/Turbidity Adaptive Underwater Optical Wireless Communication Network: Concept and Demonstration	1290
<i>Kiichiro Kuwahara, Hyuga Nagami, Keita Tanaka, Fumiya Kobori, Ayumu Kariya, Shogo Hayashida, Takahiro Kodama</i>	
Pass-Through ELSFP with Optional Integrated Optical Mux and Demux for Colorless CPO Systems.....	1293
<i>Jingwei Liu, Zhan Su, Le Wu, Lei Shi, Lihua Chi, Xujun Pan, Sam Huang, Yu Ning, Zhigang Gong</i>	

W3A: TRANSMITTERS AND RECIEVERS

Net-1.8 Tbps/λ Transmission Enabled by C+L-Band InP-Based Coherent Driver Modulator.....	1296
<i>Josuke Ozaki, Yoshihiro Ogiso, Hiroshi Yamazaki, Masanori Nakamura, Kenta Sugiura, Kazuya Nagashima, Yasuaki Hashizume, Nobuhiro Nunoya, Yutaka Miyamoto, Mitsuteru Ishikawa</i>	
Integrated Coherent Transmit-Receive Optical Sub-Assembly (IC-TROSA) for 140 GBd Applications.....	1299
<i>Efthymios Rouvalis, Patrick Domburg, Jörg Honecker, Jens Stephan, Christopher Harbs, Johann Henkel, Ulrich Technau, Andrés Varon, Sebastian Wissig, Georg Clarici, Matthias Berger</i>	
Fully Integrated Silicon Photonic High-Speed Transmitter with Ring-Assisted Mach-Zehnder Modulator	1302
<i>Xinru Wu, Duanni Huang, Ranjeet Kumar, Guan-Lin Su, Junyi Gao, Songtao Liu, Xiaoxi Wang, Haisheng Rong</i>	
Ultra-Thin Bottom-Emission VCSEL-Based Optoelectronic Flexible Printed Circuit Module for High-Speed Transmission.....	1305
<i>Zuhaib Khan, Chung-Yu Hong, Ming-Che Hsieh, Chun-I Wu, Long-Yi Lin, Chun-Chieh Chen, David Cheng</i>	
A 4×112Gbps Compact Polarization-Insensitive Silicon Photonic WDM Receiver	1308
<i>Jintao Xue, Jinyi Wu, Chao Cheng, Wenfu Zhang, Binhao Wang</i>	

W3B: OPTICAL SIGNAL PROCESSING

Cascadability of PPLN-Based Inter-Band Wavelength Conversion for Band-Switchable Multi-Band Optical Cross-Connect.....	1311
<i>Haruka Minami, Takafumi Fukatani, Masahiro Nakagawa, Takeshi Seki, Shimpei Shimizu, Takayuki Kobayashi, Takushi Kazama, Koji Enbutsu, Takeshi Umeki, Rie Hayashi, Takeshi Kuwahara</i>	
Over 3 THz Real-Time Optical Vector Oscilloscope.....	1314
<i>Lun Li, Yuchong Cai, Chi Zhang, Xi Xiao, Xinliang Zhang</i>	
Universal Optical Logic Gates on a Programmable Silicon Photonic Platform	1317
<i>Farshid Ashtiani</i>	
Integrated Non-Sliced OAWM Engine Enabling 320 GHz Photonic-Electronic Analog-To-Digital Conversion.....	1320
<i>D. Drayss, D. Fang, A. Quint, L. Valenziano, M. Lauermann, G. Lihachev, Y. Chen, H. Peng, S. Randel, T. Zwick, W. Freude, T. J. Kippenberg, C. Koos</i>	
Photonic 1K3D@60 FPS Surface Extraction with Hilbert Dimension Squeezing Approach.....	1323
<i>Yue Jiang, Wenjia Zhang, Jiayuan Guo, Han Wang, Zuyuan He</i>	
Heterogeneous Integrated Fiber-Chip System Enabling 192-Channel and 20-Tbit/s Multi-Dimensional Optical Signal Transmission and Processing.....	1326
<i>Kang Li, Guofeng Yan, Kangrui Wang, Chengkun Cai, Min Yang, Yuanjian Wan, Guangze Wu, Weike Zhao, Yingying Peng, Yaocheng Shi, Daoxin Dai, Jian Wang</i>	

W3C: NETWORK PLANNING AND OPERATION

Is Unceasing Increase of Channel Symbol Rate the Panacea for WDM Transparent Meshed Networks?.....	1329
<i>Thierry Zami, Nicola Rossi, Bruno Lavigne</i>	
Networking Benefits of Coherent Pluggable Optics.....	1332
<i>João Pedro</i>	
Dynamic Asymmetric SC Allocation and Reconfiguration in Drop-And-Continue Optical Networks Based on P2MP-TRXs	1335
<i>Ruoxing Li, Sijia Li, Meihan Wu, Yuxiao Zhang, Qian Lv, Zuqing Zhu</i>	
Identification of Optical Links with Heterogenous Fiber Types in a Production Network.....	1338
<i>Emmanuel Seve, Sebastien Bigo, Patricia Layec</i>	
Employing Fiber Loss Degradation Statistics in SLA Based Margin Calculation Method for Optical Networks	1341
<i>Zhiqun Zhai, Liang Dou, Sai Chen, Huan Zhang, Chongjin Xie</i>	
Capacity-Bound Evaluation and Routing and Spectrum Assignment for Elastic Optical Path Networks with Distance-Adaptive Modulation	1344
<i>Kenji Cruzado, Yojiro Mori, Shih-Chun Lin, Motoharu Matsuura, Suresh Subramaniam, Hiroshi Hasegawa</i>	
Using P2MP Transceivers as Regenerators in Disaggregated and Multi-Rate Regional Optical Networks	1347
<i>Ashwin Gumaste, João Pedro, Antonio Napoli, Sai Kishore Bhyri, Walid Wakim</i>	

W3D: LASER STABILIZATION AND COMB SOURCES

Environmentally Stable Ultra-Low Noise Self-Injection Locked Semiconductor Lasers	1350
<i>Anatoliy Savchenkov, Wei Zhang, Vladimir Iltchenko, Andrey Matsko</i>	
Frequency Modulated Integrated 780 nm Brillouin Laser with 24 Hz Fundamental and 1.4 kHz Integral Linewidths and 22 kHz Modulation Bandwidth	1353
<i>Andrei Isichenko, Nitesh Chauhan, Jiawei Wang, Mark W. Harrington, Kaikai Liu, Daniel J. Blumenthal</i>	
Parametric Oscillators and Soliton Combs in Bandgap-Detuned Nanoresonators	1356
<i>Yan Jin, Jizhao Zang, Travis Briles, David Carlson, Scott Papp</i>	
Dark Soliton Microcomb with High Conversion Efficiency in a 400-Nm-Thick Si ₃ N ₄ Microring for WDM Light Sources.....	1359
<i>Hongyi Zhang, Liangjun Lu, Shuxiao Wang, Yan Cai, Yuyao Guo, Jianping Chen, Linjie Zhou</i>	
All-Fiber Raman and Parametric-Assisted Spectral Talbot Array Illuminator for Mode Spacing Multiplication	1362
<i>Zijian Li, Chen Ding, Qiarong Xiao, Qijie Xie, Yuanfei Zhang, Chaoran Huang, Chester Shu</i>	

W3F: SUBMARINE LONG-HAUL AND REPEATERLESS TRANSMISSION

Subcarrier-Enabled Record Field Trial Demonstration in a Dispersion Uncompensated Ultra-Long Transpacific Cable.....	1365
<i>Sumudu Edirisinghe, Siddharth Varughese, Domaniç Lavery, Pierre Mertz, Han Sun</i>	
Low-Complexity Experimental Model for Submarine Link Performance Prediction.....	1368
<i>Juliana Tiburcio De Araujo, Alexis Carbo Meseguer, Jean-Christophe Antona</i>	
Tailoring Transceiver Designs for Subsea	1371
<i>Siddharth Varughese, Domaniç Lavery, Pierre Mertz</i>	
66.8 Tb/s Real-Time C+L Unrepeated Transmission Over 301 Km Using Forward and Backward Raman Amplification.....	1374
<i>Ivan Fernandez De Jauregui Ruiz, Nurmemet Abdikerim, John Van Weerdenburg, Thomas Gerard, F. J. Vaquero Caballero, Jonathan M. Buset, Lidia Galdino</i>	
Real-Time 100G and 200G Unrepeated Transmission Over 691.8km and 655.9km Respectively	1377
<i>Quanying Wen, Jianping Li, Yan Wang, So Ngsong Xu, Yanpu Wang, Jiang Lin, Jingying Yu, Xuegang Lao, Gan Luo</i>	

W3G: COHERENT DWDM PLUGGABLES

Demonstration of 400G High Power ZR+ IP Over WDM in Key Network Scenarios with End-To- End 400GE Traffic	1380
<i>Yu Rong Zhou, John Keens, Martyn Allen</i>	
QoT Estimation for Large-Scale Mixed-Rate Disaggregated Metro DCI Networks by Artificial Neural Networks.....	1383
<i>Yan He, Kausthubh Chandramouli, Zhiqun Zhai, Sai Chen, Liang Dou, Chongjin Xie, Chao Lu, Alan Pak Tao Lau</i>	

Interoperable Coherent WDM Interfaces at 400G and 800G	1386
<i>Erwan Pincemin, Olivier Renais</i>	

W3H: LARGE CAPACITY INTERCONNECT

Reconfigurable Lightwave Fabrics for ML Supercomputers.....	1389
<i>Hong Liu, Ryohei Urata, Kevin Yasumura, Xiang Zhou, Roy Bannon, Jill Berger, Pedram Dashti, Norm Jouppi, Cedric Lam, Sheng Li, Erji Mao, Daniel Nelson, George Papen, Mukarram Tariq, Amin Vahdat</i>	
Real-Time 1.2Tb/s Large Capacity DCI Transmission.....	1392
<i>H. Zhang, B. Zhu, S. Zhang, T. Pfau, A. Awadalla, M. Aydinlik, J. Geyer</i>	
First Demonstration of Net-1.6-Tbps 4 λ -WDM in 150-GHz-Grid IM/DD Transmission with a Single DAC/Channel and Advanced DSP for Intra-Datacenter-Interconnects	1395
<i>An Yan, Guoqiang Li, Sizhe Xing, Yongzhu Hu, Wangwei Shen, Ziwei Li, Chao Shen, Jianyang Shi, Xi Xiao, Zhixue He, Nan Chi, Junwen Zhang</i>	
Dispersion-Unmanaged Transmission of 144-Gb/s PAM-8 and 110-Gb/s PAM-6 Signals Over 10/20-Km SSMF for DML-Based IM-DD Optics at C Band.....	1398
<i>Qi Wu, Zhaopeng Xu, Yixiao Zhu, Honglin Ji, Yu Yang, Junpeng Liang, Tonghui Ji, Gang Qiao, Shangcheng Wang, Lulu Liu, Zhixue He, Jinlong Wei, Qunbi Zhuge, Weisheng Hu</i>	
8 λ ×462Gb/s Transmission with Symmetric Carrier-Assisted Differential Detection Using Delay-Unknown Field Recovery.....	1401
<i>Yixiao Zhu, Xiansong Fang, Guangying Yang, Qunbi Zhuge, Weisheng Hu, Fan Zhang</i>	

W3J: MULTI-CORE FIBER DESIGN AND TRANSMISSION CHARACTERISTICS

Field Transmission Performance of Multi-Core and Few-Mode Fibers.....	1404
<i>C. Antonelli, A. Mecozzi, A. Marotta, F. Graziosi, G. Di Sdullo, D. Ribezzo, M. Mazur, N. Fontaine, L. Dallachiesa, R. Ryf, R. Luis, B. Puttnam, H. Furukawa, G. Rademacher, R. Emmerich, C. Schubert, T. Hayashi, T. Nakanishi, T. Nagashima, P. Sillard, D. Bacco, A. Zavatta, M. Zahidy, L. Oxenløwe, M. Cappelletti, L. Palmieri, P. Parolari, A. Gatto, P. Boffi, N. Sambo, A. Carena, A. Nespola</i>	
U-Band Transmission Characteristics Over Standard Cladding Step-Index 4-Core Fiber Span.....	1407
<i>Daiki Soma, Tomoyuki Kato, Shohei Beppu, Daniel J. Elson, Hidenobu Muranaka, Hiroyuki Irie, Shun Okada, Yu Tanaka, Yuta Wakayama, Noboru Yoshikane, Takeshi Hoshida, Takehiro Tsuritani</i>	
Design Guideline for Unrepeated Counter-Propagating Multi-Core Fiber Link.....	1410
<i>Takashi Matsui, Taiji Sakamoto, Masaki Wada, Kazuhide Nakajima</i>	
Development of Four-Core MCFs with Standard Cladding Diameter from High-Core-Count MCFs.....	1413
<i>Kazuhiko Aikawa, Takuya Oda, Shota Kajikawa, Kohei Ozaki, Mayu Iizuka, Katsuhiko Takenaga, Akito Nishimura, Kentaro Ichii</i>	
High-Density Weakly-Coupled 4-Core MCF with 160- μ m Coating for O-Band Application.....	1416
<i>Shota Kajikawa, Mayu Iizuka, Takuya Oda, Katsuhiko Takenaga, Kentaro Ichii</i>	
Standard Coating Diameter Uncoupled 19-Core Multicore Fiber with Highest Core Density for Optical Wiring.....	1419
<i>Yusuke Matsuno, Ryuichi Sugizaki, Masanori Takahashi</i>	

W3K: PICS FOR QUANTUM COMMUNICATION AND QUANTUM COMPUTING: CHALLENGES AND OPPORTUNITIES I

Monolithic Integration of Silicon Quantum Photonics and Electronics in a 45nm SOI CMOS Foundry Platform	1422
<i>Danielius Kramnik, Imbert Wang, Josep M. Fargas Cabanillas, Anirudh Ramesh, Dorde Gluhovic, Sidney Buchbinder, Panagiotis Zarkos, Christos Adamopoulos, Prem Kumar, Miloš A. Popovic, Vladimir M. Stojanovic</i>	

W4A: THZ PROCESSING AND COMMUNICATIONS

616-Gbit/s Single Line Rate Fiber-THz-Fiber Seamless Transmission Utilizing Cascaded MIMO Equalization.....	1424
<i>Junjie Ding, Zhigang Xin, Weidong Tong, Jiao Zhang, Yuancheng Cai, Mingzheng Lei, Bingchang Hua, Yucong Zou, Xingyu Chen, Jianjun Yu, Min Zhu</i>	
Flexible Capacity Wireless Communication in THz-Band with Michelson Interferometer-Based THz-Wave Filter.....	1427
<i>Koichi Takiguchi</i>	
Photonic Frequency Hopping Driven by High-Speed Wavelength Tunable Laser for Secure Terahertz-Wave Communication	1430
<i>Shenghong Ye, Naoto Masutomi, Bo Li, Ryo Matsumoto, Ryota Kaide, Haolan Tang, Yoshiki Kamiura, Ming Che, Yuya Mikami, Yuta Ueda, Kazutoshi Kato</i>	
Digital Coherent Receiver Based Optical Performance Monitoring Technology and Its Application to Photonics Tomography.....	1433
<i>Shoichiro Oda, Ryu Shinzaki, Motohiko Eto, Kazuyuki Tajima, Kyosuke Sone, Setsuo Yoshida, Inwoong Kim, Olga Vassilieva, Paparao Palacharla, Takeshi Hoshida</i>	
Broadband InGaAs mHEMT THz Transmitters and Receivers.....	1436
<i>Laurenz John, Fabian Thome, Arnulf Leuther, Axel Tessmann</i>	

W4B: FSO FOR TURBULENT AND UNDERWATER CHANNELS

Water-To-Air PAM4 Optical Camera Communication Using Long Short Term Memory Neural Network (LSTM-NN).....	1439
<i>Yun-Han Chang, Shang-Yen Tsai, Ming-Chieh Tsai, Jia-Fu Li, Yin-He Jian, Chi-Wai Chow, Chien-Hung Yeh</i>	
Seeing Through Wave—Real-Time Beam Tracking Via a ResNet-Based Model in Water-Air OWC Systems.....	1442
<i>Anzi Xu, Yujie Di, Xiangyu Yue, Lian-Kuan Chen</i>	
Experimental Demonstration of 14.5 Gbps Turbulence-Resilient Visible Laser Communication with Vector Beams Based on LiNbO ₃ External Modulation.....	1445
<i>Jifan Cai, Zhilan Lu, Shuqi Zhang, Wenqing Niu, Jianyang Shi, Ziwei Li, Chao Shen, Junwen Zhang, Nan Chi</i>	
Experimental Demonstration of an 8-Gbit/s QPSK Coherent Underwater Wireless Optical Communication Link Under Scattering Conditions	1448
<i>Yuxiang Duan, Huibin Zhou, Zile Jiang, Muralekrishnan Ramakrishnan, Xinzhou Su, Wing Ko, Yue Zuo, Hongkun Lian, Zixun Zhao, Ruoyu Zeng, Yingning Wang, Moshe Tur, Alan E. Willner</i>	

Broadband Single Flat Narrow Beam Shaped Time-Domain Adaptive Modulation for Underwater Transmission with Wavelength Characteristics in Blue-Green WDM System.....	1451
<i>Takahiro Kodama, Fumiya Kobori, Ayumu Kariya, Keita Tanaka, Kiichiro Kuwahara</i>	
Experimental Demonstration of Underwater Optical Ranging with Enhanced Accuracy Under Scattering Conditions Using Multiple Bessel Modes	1454
<i>Zile Jiang, Muralekrishnan Ramakrishnan, Huibin Zhou, Xinzhou Su, Yuxiang Duan, Hao Song, Ruoyu Zeng, Yingning Wang, Robert Bock, Moshe Tur, Alan E. Willner</i>	
Underwater Wireless Optical Communications: From the Lab Tank to the Real Sea	1457
<i>Jing Xu, Yufan Zhang, Chengye Cai</i>	

W4C: CODING AND MODULATION

FPGA Prototyping of CCDM with On-Line Configurable Probabilistic Distribution Based on Parallel Arithmetic Coding	1460
<i>Jingwei Song, Yan Li, Xiaoshuo Jia, Zulin Liu, Kejia Xu, Jifang Qiu, Hongxiang Guo, Xiaobin Hong, Zhisheng Yang, Jian Wu</i>	
Generalized Staircase Codes with Arbitrary Bit Degree	1463
<i>Mohannad Shehadeh, Frank R. Kschischang, Alvin Y. Sukmadji</i>	
Low-Complexity SD-FEC Based on Channel-Polarized Multistage Codes for Data Center Networks	1466
<i>Takeshi Kakizaki, Masanori Nakamura, Fukutaro Hamaoka, Seiji Okamoto, Etsushi Yamazaki</i>	
High-Speed Multilevel Coded Modulation and Soft Performance Monitoring in Optical Communications.....	1469
<i>Tsuyoshi Yoshida, Isamu Kudo, Kenji Ishii, Hideo Yoshida, Hidenori Shimizu, Susumu Hirano, Yoshiaki Konishi, Magnus Karlsson, Erik Agrell</i>	
Compensation of FEC Induced Distribution Distortion Based on Distribution Detuning in a 36-Tb/s (45×800-Gb/s) 2100-Km Polar Coded PS-64QAM System.....	1472
<i>Xiaoshuo Jia, Yan Li, Jingwei Song, Ming Luo, Chao Yang, Qingyu He, Xu Zhang, Daigao Chen, Hongguang Zhang, Xi Xiao, Xiaobin Hong, Hongxiang Guo, Zhisheng Yang, Jifang Qiu, Jian Wu</i>	
Low-Complexity Non-Binary Forward Error Correction for Lattice-Based 4D Constellations.....	1475
<i>Sebastian Stern, Mahmoud Sallam, Robert F. H. Fischer</i>	
Optimization of Iterative Chase Soft Decoder Based on Cross Entropy Minimization.....	1478
<i>Etsushi Yamazaki, Shinya Sugiura</i>	
Iteration-Dependent Scaled Min-Sum Decoding for Low-Complexity Key Reconciliation in CV-QKD	1481
<i>Erdem Eray Cil, Laurent Schmalen</i>	

W4D: AMPLIFIER ARCHITECTURE FOR DATA TRANSMISSION

C+L Band Transmission Under Bidirectionally Pumped Distributed Raman Amplification Using Semiconductor Incoherent Pumps	1484
<i>Shigehiro Takasaka, Daichi Ogata, Ayato Shirai, Satoru Ichihara, Junji Yoshida, Norihiro Ohishi</i>	

1200km Coherent O-Band Transmission Using In-Line BDFAs and Standard Single-Mode Fibre	1487
<i>K. R. H. Bottrill, N. Taengnoi, Y. Wang, J. K. Sahu, P. Petropoulos</i>	
U-Band WDM Transmission Over 90-Km Deployed Fiber-Optic Cable Leveraged by S+C+L-Band WDM Channels.....	1490
<i>Tomoyuki Kato, Shohei Beppu, Daiki Soma, Hidenobu Muranaka, Shun Okada, Hiroyuki Irie, Yuta Wakayama, Noboru Yoshikane, Takehiro Tsuritani, Yu Tanaka, Takeshi Hoshida</i>	
Transmission Capacity Expansion Using Bidirectional Multicore EDFA Under Bidirectional Signal Assignment.....	1493
<i>Hitoshi Takeshita, Yusuke Shimomura, Kohei Hosokawa</i>	
122.6 Tb/s S+C+L Band Unrepeated Transmission Over 223 Km Link with Optimised Bidirectional Raman Amplification.....	1496
<i>Jiaqian Yang, Romulo Aparecido, Henrique Buglia, Pratim Hazarika, Eric Sillekens, Ronit Sohanpal, Mingming Tan, Dini Pratiwi, Ruben S. Luis, Benjamin J. Puttnam, Yuta Wakayama, Wladek Forysiak, Polina Bayvel, Robert I. Killey</i>	

W4F: OPTICAL ARCHITECTURES AND SUBSYSTEMS FOR ACCELERATING ML/AI APPLICATIONS

Wavelength Reconfigurable Transceiver for Multi-Interface Compute Accelerator Networks.....	1499
<i>Zhenguo Wu, Robert Parsons, Songli Wang, Yuyang Wang, Keren Bergman</i>	
A Tale for Many: Integrated Control Mechanism of Optical Circuit Switching for Data Center and Distributed Deep Learning System.....	1502
<i>Cen Wang, Yuta Wakayama, Noboru Yoshikane, Takehiro Tsuritani</i>	
Assessment of an O-Band 4×4 InP Monolithic Photonic Switch at 100 Gbit/s PAM-4	1505
<i>Marijn Rombouts, Aref Rasoulzadeh Zali, Stefanos Andreou, Luc Augustin, Nicola Calabretta</i>	

W4G: SPACE COMMUNICATION

Photonic Integrated Circuits for Space Communications.....	1509
<i>Chris Roeloffzen, Peter Maat, Ilka Visscher, Marcel Hoekman, Lennart Wevers, Edwin Klein, Paul Van Dijk, Roelof Bernardus Timens, Robert Grootjans, Furkan Sahin, Rick Heuvink, Ronald Dekker</i>	
A 100 W Output Power Coherent Transmission Link for Future High Data Rate Earth-To-Satellite Communication	1512
<i>Yannik Horst, Laurenz Kulmer, Tobias Blatter, Joel Winiger, Vincent Billault, Guénolé Dandé, Jérôme Bourderionnet, Arnaud Brignon, Anaëlle Maho, Matthew Welch, Stefan M. Koepfli, Juerg Leuthold</i>	
Range and Velocity Measurement with a Bi-Static LiDAR System Based on Optical Phased Array	1515
<i>Weihan Xu, Xianyi Cao, Qiqi Yuan, Chuxin Liu, Yuyao Guo, Liangjun Lu, Kan Wu, Jianping Chen, Linjie Zhou</i>	
Common Path Beam Angle Measurement for Free Space Optical Communication System.....	1518
<i>Qirun Fan, Yansheng Zou, Haoze Du, Xueyuan Ao, Qirui Xu, Xiaoxiao Dai, Qi Yang, Ming Tang, Chen Liu</i>	

Reconfigurable Silicon Photonic Transmitter for Space Based Communications Nodes.....	1521
<i>Vignesh Gopal, Xinzhou Su, Asher Novick, Hao Song, Zile Jiang, Muralekrishnan Ramakrishnan, James M. Venditto, Anthony Rizzo, Xiang Meng, Ricard Menchon-Enrich, Alan E. Willner, Keren Bergman</i>	
Circularly-Polarized Self-Homodyne Free-Space Optical Communication Using Partial Stokes-Vector Receiver	1524
<i>Shota Ishimura, Hidenori Takahashi, Go Soma, Kento Komatsu, Takuo Tanemura, Takehiro Tsuritani, Masatoshi Suzuki</i>	
Rate-Flexible Hybrid Constellation Shaping for Polar-Coded 32QAM in FSO Systems	1527
<i>Xiaoyu Liu, Zhiyang Liu, Shilin Xiao, Weiyang Yang, Weisheng Hu</i>	

W4H: DATACOM MODULATION AND LINEAR TRANSCEIVERS

Advances in Thin-Film Lithium Niobate Photonics for Datacom Applications.....	1530
<i>Mengyue Xu</i>	
Connecting Switch to Fiber: The Energy Efficiency Challenge.....	1533
<i>Davide Tonietto</i>	
100G and 200G Per Lane Linear Drive Optics for Data Center Applications.....	1536
<i>Elaine S. Chou, Yishen Huang, Siamak Amiralizadeh, Jeffrey Rahn, J. K. Doylend, Qing Wang, Janet Chen, Darron Young</i>	
300-Gbit/s/ λ PAM8 Modulation with a Silicon Microring Modulator Using Long Short Term Memory Regression and Deep Neural Network Classification.....	1539
<i>Tun-Yao Hung, David W. U. Chan, Ching-Wei Peng, Chi-Wai Chow, Chien-Hung Yeh, Hon Ki Tsang</i>	
Single Carrier Net 400 Gbit/s IM/DD Over 400 M Fiber Enabled by Plasmonic Mach-Zehnder Modulator	1542
<i>Laurenz Kulmer, Tobias Blatter, Manuel Kohli, Yannik Horst, Stefan M. Koepfli, Juerg Leuthold</i>	

W4I: AI-BASED AUTOMATION

Experimental Demonstration of Automated ML Service Provisioning for VNT Configuration in SDM Networks.....	1545
<i>Hanyu Gao, Xiaokang Chen, Wenbang Zheng, Aoxue Wang, Jingshun Pan, Xiaoliang Chen, Zhaohui Li</i>	
AI-Based Automation of Multi-Layer Multi-Domain Transport Networks.....	1548
<i>O. Gonzalez De Dios, P. Armingol-Robles, L. Roelens, A. Muñiz-Da-Costa, J. P. Fernández-Palacios</i>	
Extending the OCATA Digital Twin for Optical Connections Based on Digital Subcarrier Multiplexing	1551
<i>M. Devigili, D. Sequeira, M. Ruiz, N. Costa, C. Castro, A. Napoli, J. Pedro, L. Velasco</i>	
Digital Twin-Based Insertion Loss Estimator for Anomalous Loss Localization and Network Equalization Enhancement	1554
<i>Xin Yang, Chenyu Sun, Gabriel Charlet, Massimo Tornatore, Yvan Pointurier</i>	

Digital Twin-Enabled Optical Network Automation: Power Re-Optimization	1557
<i>Chenyu Sun, Xin Yang, Gabriel Charlet, Photios A. Stavrou, Yvan Pointurier</i>	
Towards Explainable Reinforcement Learning in Optical Networks: The RMSA Use Case	1560
<i>Omran Ayoub, Carlos Natalino, Paolo Monti</i>	
Resource Re-Allocation for Pre-Planned Power Outages in Optical Networks	1563
<i>Qiaolun Zhang, Patricia Layec, Achille Pattavina, Massimo Tornatore</i>	

W4J: MULTI-CORE FIBER CHARACTERIZATION AND CONNECTION

Advancements in Key Technological Building Blocks for Enabling MCF Implementation.....	1566
<i>Tetsuya Nakanishi, Tetsuya Hayashi, Shintaro Mouri, Takemi Hasegawa</i>	
Multi-Core Fiber Backscattered Crosstalk Statistical Distribution Model	1569
<i>Aramais Zakharian, Ming-Jun Li</i>	
Single-End Crosstalk Measurement Method for Multi-Core Fibers Using Continuous Light Source	1572
<i>Yuto Yamaguchi, Ayumi Inoue, Takahiro Kikuchi, Takuji Nagashima, Hidehisa Tazawa, Tetsuya Hayashi</i>	
Measurement-End Dependence of Counter-Propagating Crosstalk in Spooled Multi-Core Fiber	1575
<i>Yuto Kobayashi, Shin Sato, Yuki Kawaguchi, Takemi Hasegawa</i>	
Stress Distribution Effects on Polarization-Mode Dispersion in Multi-Core Fibers	1578
<i>Gustavo Ocampo, Yoshimichi Amma, Kunimasa Saitoh</i>	
96-Core MPO-APC Connector Using 4-Core Fiber with SMF Standard Insertion Loss Grade	1581
<i>Kohei Hagi, Yuki Saito, Shuhei Toyokawa, Shintaro Mouri, Tetsu Morishima</i>	
Self-Written Waveguide Approach for Optical Interconnects in Multi-Core Fiber Systems.....	1584
<i>Liangjun He, Hau Ping Chan</i>	

TH1A: PROGRAMMABLE CIRCUITS/SWITCHES AND CONTROL TECHNOLOGIES

Programmable Integrated Photonic Circuit for Matrix Inversion.....	1587
<i>G. Cavicchioli, D. A. B. Miller, N. Engheta, A. Melloni, F. Morichetti</i>	
Automated Tuning of Ring-Assisted MZI-Based Interleaver for DWDM Systems.....	1590
<i>Songli Wang, Yuyang Wang, Xiang Meng, Kaveh Hosseini, Tim Tri Hoang, Keren Bergman</i>	
Reinforced Q-Learning Enabled Automatic Blind Working Wavelength Alignment Against Wide Input-Wavelength Shifts and Temperature Variations for Silicon Photonic Vernier Ring Filters.....	1593
<i>Guangwei Cong, Ryotaro Konoike, Keijiro Suzuki, Noritsugu Yamamoto, Rai Kou, Yuriko Maegami, Morifumi Ohno, Kazuhiro Ikeda, Shu Namiki, Koji Yamada</i>	
A Scalable, High-Speed Optical Rotor Switch.....	1596
<i>William M. Mellette, Ilya Agurok, Alex Forencich, Spencer Chang, George Papen, Joseph E. Ford</i>	
Low-Crosstalk 8×8 Silicon Photonic Switch Fabric with Dual-Stage MZI Cells	1599
<i>Peng Bao, Chunhui Yao, Giuseppe Talli, Maxim Kuschnerov, Richard Penty, Qixiang Cheng</i>	

1×5 MEMS Mode Selective Switch with an Inverse-Designed Silicon Nitride MDM	1602
<i>Julian L. Pita Ruiz, Almur A. S. Rabih, Seyedfakhreddin Nabavi, Frederic Nabki, Michaël Ménard</i>	

TH1B: DATACOM: VCSELS, MULTI-LAMBDA SOURCES, SPATIAL MULTIPLEXING

Multi-Wavelength Sources for Optical IO Co-Packaged Optics	1605
<i>Matthew N. Sysak, Radek Roucka, Nandita Aggarwal Chen Li, Fernando Luna, Sally El-Hemawy, John Frey, Manan Raval, Ken Wang, Li-Fan Yang, Mark Wade, Chen Sun</i>	
Self-Locking of Free-Running DFB Lasers to a Single Microring Resonator for Dense WDM.....	1608
<i>Yonghang Sun, James Salamy, Caitlin E. Murray, Brent E. Little, Sai T. Chu, Roberto Morandotti, Arnan Mitchell, David J. Moss, Bill Corcoran</i>	
56G VCSEL Transmission at 980 nm Across 500 M Multimode Fiber	1611
<i>Jochen Hellmig, Xin Chen, Rashid Safaisini, Adrian Juarez, Jeroen Dragt, Jason E. Hurley, Philip Moser, Bedouin Sassiya, Roger King, Gunter Larisch, Ming-Jun Li, Roman Koerner</i>	
Multimode Links Based on High-Speed VCSELS for Cost-Effective Data Center Connectivity	1614
<i>Vipul Bhatt</i>	
C Band Single Wavelength 1.68Tb/s Optical Interconnect Over 12.18-Km 7-Core Multicore Fiber	1617
<i>Qibing Wang, Chao Li, Yuanyuan Zhao, Ziehen Liu, Hui Chen, Siyue Jin, Xi Xiao, Lei Wang, Zhixue He, Shaohua Yu</i>	
130.6-Tb/s Self-Homodyne Coherent Transmission Over Weakly-Coupled FMF for Data Center Applications.....	1620
<i>Gang Qiao, Yu Yang, Zhaopeng Xu, Mingqing Zuo, Chengbin Long, Jiarui Zhang, Shangcheng Wang, Lulu Liu, Qi Wu, Junpeng Liang, Lei Shen, Jie Luo, Honglin Ji, Zhixue He, Yongqi He, Zhangyuan Chen, Weisheng Hu, Juhao Li</i>	

TH1C: WIRELESS AND ACCESS QUANTUM NETWORKS

High-Rate Quantum Access Network Using Coherent States	1623
<i>Yan Pan, Yiming Bian, Li Ma, Heng Wang, Jiayi Dou, Yun Shao, Yaodi Pi, Ting Ye, Jie Yang, Yang Li, Wei Huang, Song Yu, Yichen Zhang, Bingjie Xu</i>	
The Opportunities and Challenges of EuroQCI.....	1626
<i>Felix Wissel, Oleg Nikiforov, Daniel Giemsa, Matthias Gunkel</i>	
Continuous-Variable Quantum Passive Optical Network.....	1629
<i>Adnan A. E. Hajomer, Ivan Derkach, Vladyslav C. Usenko, Radim Filip, Ulrik L. Andersen, Tobias Gehring</i>	
Adaptive Reconciliation for Experimental Continuous-Variable Quantum Key Distribution Over a Turbulent Free-Space Optical Channel.....	1632
<i>Kadir Gümüs, João Dos Reis Frazão, Vincent Van Vliet, Sjoerd Van Der Heide, Menno Van Den Hout, Aaron Albores-Mejia, Thomas Bradley, Chigo Okonkwo</i>	
Co-Propagation of Classical and Continuous-Variable QKD Signals Over a Turbulent Optical Channel with a Real-Time QKD Receiver	1635
<i>João Dos Reis Frazão, Vincent Van Vliet, Sjoerd Van Der Heide, Menno Van Den Hout, Kadir Gümüs, Aaron Albores-Mejia, Boris Škoric, Chigo Okonkwo</i>	

O-Band QKD Link Over a Multiple ONT Loaded Carrier-Grade GPON for FTTH Applications 1638
N. Makris, A. Ntanos, A. Papageorgopoulos, A. Stathis, P. Konteli, I. Tsoni, G. Giannoulis, F. Setaki, T. Stathopoulos, G. Lyberopoulos, H. Avramopoulos, G. T. Kanellos, D. Syvridis

Datacom-Agnostic Shortwave QKD for Short-Reach Links..... 1641
Mariana Ferreira Ramos, Marie-Christine Slater, Michael Hentschel, Martin Achleitner, Hannes Hübel, Bernhard Schrenk

TH1D: INTEGRATED NONLINEAR-OPTICAL DEVICES AND AMPLIFIERS

Broadband Mid-Infrared Continuous-Wave Wavelength Conversion in a Germanium-On-Silicon Waveguide 1644
Zhiwei Yan, Qiyuan Yi, Qiyuan Li, Guanglian Cheng, Yuhan Sun, Lipeng Xia, Yuheng Liu, Xinzhe Xiong, Zengfan Shen, Fanglu Xu, Meng He, Yi Zou, Li Shen

An Integrated Gallium Phosphide Travelling-Wave Optical Parametric Amplifier..... 1647
Nikolai Kuznetsov, Alberto Nardi, Alisa Davydova, Mikhail Churaev, Johann Riemensberger, Paul Seidler, Tobias J. Kippenberg

Integrated Optical Parametric Amplifier with Record Gain 1650
Junjie Xiao, Di Xia, Liyang Luo, Zhaohui Li, Bin Zhang

Efficient Two Photon Absorption for 400-Nm Remote Optical Control at 2- μ m Waveband in a Low-Loss Multimode Silicon Waveguide 1653
Zhaonian Wang, Jiangbing Du, Ke Xu, Zuyuan He

Over 100nm Wavelength Conversion Bandwidth with High Efficiency on AlGaAsOI Nonlinear Waveguides..... 1656
Zhengshun Lei, Weiqiang Xie, Wenqi Wei, Zihao Wang, Ting Wang, Jianjun Zhang, Yikai Su

Highly Efficient Second-Harmonic Generation in a Double-Layer Thin-Film Lithium Niobate Waveguide 1659
Yuan Li, Lutong Cai, Lin Zhang

TH1E: ADVANCED PON TECHNOLOGY

400 Gbit/s Dual-Wavelength and Dual-Polarization IM-DD TDM-PON with 34 dB Power Budget 1662
Doutje Van Veen, Robert Borkowski, Kovendhan Vijayan, Amitkumar Mahadevan, Vincent Houtsma

A 92% Complexity Reduction of Low-Latency Multi-Group Precoding Scheme Based on Björck Sequences 1665
Geyang Wang, David W. U. Chan, Hon Ki Tsang, Wai Ho Mow, Lian-Kuan Chen

New Applications and Technologies of Optical Access..... 1668
Frank Effenberger

1.024-Tbit/s CDM-SDM Coherent PON Over 10-Km Weakly-Coupled MCF..... 1671
Luxiao Zhang, Lin Sun, Rendong Xu, Junjie Xiong, Lin Ma, Bin Chen, Jun Li, Yi Cai, Gangxiang Shen, Gordon Ning Liu

200G IM/DD Time-And-Polarization-Division-Multiplexed PON with >29dB Power Budget Using Boosted EML and APDs..... 1674
Robert Borkowski, Kovendhan Vijayan, Vincent Houtsma, Qian Hu, Amitkumar Mahadevan, Pat Iannone, Doutje Van Veen

Hybrid TFDm Coherent PON Featuring Adaptable Capacity and Out-Of-Band Communication Channels	1677
<i>Haipeng Zhang, Zhensheng Jia, Luis Alberto Campos, Karthik Choutagunta, Curtis Knittle</i>	

Analysis of SBS-Induced Performance Penalties and Their Mitigation in 50G TDM-PON Downstream.....	1680
<i>Christoph Füllner, Ning Wang, Shabana M. A. Fathima, Dora Van Veen, René Bonk</i>	

TH1F: OPTICAL METHODS AND SENSING

Free-Space Optical Receiver with Real-Time Self-Configuration Using a Fully Integrated CMOS Controller	1683
<i>E. Sacchi, A. Andronie, S. Seyedinnavadeh, F. Zanetto, F. Morichetti, A. Melloni, M. Sampietro, G. Ferrari</i>	

Photon-Counting Technologies for Efficient High-Capacity Space-To-Ground Laser Communications.....	1686
<i>D. O. Caplan, Z. J. Darling, M. E. Grein, M. Guyton, D. Russo, B. Tyrrell, A. Wagner</i>	

PPLN-Based Polarization-Diverse Phase-Sensitive Amplification of 96-Gbaud PDM-PCS-64QAM Signal with Carrier-Phase-Locked Phase-Conjugated Twin Waves	1689
<i>Shimpei Shimizu, Takushi Kazama, Takeshi Umeki, Koji Enbutsu, Masanori Nakamura, Masashi Abe, Takayuki Kobayashi, Yutaka Miyamoto</i>	

Cryptographic Key Generation Using Conventional Single-Mode Fiber and an Optical Time Domain Reflectometer.....	1692
<i>Yuto Sagae, Atsushi Nakamura, Takayoshi Mori, Yusuke Koshikiya, Kazuhide Nakajima</i>	

Demonstration of On-Chip Optical Frequency Comb Generation and Optical Injection Locking.....	1695
<i>Efstathios Andrianopoulos, Nikolaos K. Lyras, Tianwen Qian, Milan Deumer, Georgios Megas, Garrit Schwanke, Y. Durvasa Gupta, Panos Groumas, Zerihun G. Tegegne, Ben Schuler, Muhsin Ali, Bradley Snyder, Simon Nellen, Christos Tsokos, David De Felipe, Maria Massaouti, Guillermo Carpintero, Robert B. Kohlhaas, Joost Van Kerkhof, Norbert Keil, Christos Kouloumentas, Hercules Avramopoulos</i>	

Nonlinear SNR Estimation Based on Power Profile Estimation in Hybrid Raman-EDFA Link	1698
<i>Inwoong Kim, Kyousuke Sone, Olga Vassilieva, Shoichiro Oda, Papparao Palacharla, Takeshi Hoshida</i>	

Reflective Microresonator Based Microwave Photonic Sensor Assisted by Sparse Transformer	1701
<i>Xiaoyi Tian, Yeming Chen, Joel Sved, Yiming Yan, Luping Zhou, Liwei Li, Linh Nguyen, Xiaoke Yi</i>	

TH1G: OPEN LINE SYSTEMS AND DIGITAL TWINS

Characterizing Fiber Nonlinearity with Deployed Equipment in Optical Line Systems	1704
<i>Yinqing Pei, Alex W. Mackay, Mehrnoosh Boroojerdi, Jean-Luc Archambault, David W. Boertjes</i>	

All-Optical GOSNR Estimation on an Open Line System Using Polarization-Resolved Optical Spectrum Analysis.....	1707
<i>Gang He, Steven Searcy, Sorin Tibuleac</i>	

Optical Spectrum as a Service in Multi-Operator Environments: Challenges and Enabling Technologies for Transparent Optical Overlay Networks	1710
<i>Kaida Kaeval, Klaus Grobe, Jörg-Peter Elbers</i>	
GPT-Enabled Digital Twin Assistant for Multi-Task Cooperative Management in Autonomous Optical Network	1713
<i>Yao Zhang, Min Zhang, Yuchen Song, Xiaotian Jiang, Yidi Wang, Shikui Shen, Danshi Wang</i>	
Auto-DTWave: Digital Twin-Aided Autonomous Optical Network Operation with Continuous Wavelength Loading.....	1716
<i>Xiaomin Liu, Qizhi Qiu, Yihao Zhang, Meng Cai, Yichen Liu, Lilin Yi, Weisheng Hu, Qunbi Zhuge</i>	
The Evolution of Open and Disaggregated Optical Networks: From Open Line System to Open Box System.....	1719
<i>Sai Chen, Weitang Zheng, Liang Dou, Huan Zhang, Zhao Sun, Lei Wang, Fan Gao, Boyuan Yan, Zhiqun Zhai, Chongjin Xie</i>	

TH1H: MMF BASED TRANSMISSION

5.27 Peta-Bit/s Weakly-Coupled SDM-WDM Transmission Over 55-Km 10-Mode 7-Core Fiber for SDM-Priority Scheme	1722
<i>Gang Qiao, Yu Yang, Honglin Ji, Yuyang Gao, Mingqing Zuo, Chengbin Long, Jiarui Zhang, Jinyi Yu, Zhaopeng Xu, Shangcheng Wang, Lulu Liu, Qi Wu, Lei Shen, Jie Luo, Zhixue He, Hongbin Li, Weisheng Hu, Shaohua Yu, Juhao Li</i>	
102-Tbit/s C-Band WDM-MDM-PDM Transmission Over 1000-Km FMF Enabled by Advanced Block-Wise MIMO-FD-DFE.....	1725
<i>Chen Wang, Bohan Sang, Kaihui Wang, Junjie Ding, Wen Zhou, Jianyu Long, Xianming Zhao, Bing Ye, Weizhang Chen, Xiangjun Xin, Bo Liu, Lei Shen, Jianjun Yu</i>	
A Joint Mode Permutation Architecture for 10-Mode-Multiplexed Long-Haul Transmissions	1728
<i>Xiaochuan Liu, Yanze Wang, Qiushi Huang, Dechao Zhang, Xutao Wang, Qiang Guo, Zhiqun Yang, Yaping Liu, Rui Zhou, Wei Sun, Mingqing Zuo, Min Yan, Zhenhua Liu, Xianyu Zhang, Zhanhua Huang, Dong Wang, Xinhua Xiao, Lin Zhang</i>	
147.4 Tb/s DP-64QAM MDM-WDM Transmission Over 500-Km FMF Utilizing MIMO Equalization Based on Multi-Label Neural Network	1731
<i>Bohan Sang, Chen Wang, Yao Zhang, Bowen Zhu, Jianyu Long, Tianqi Zheng, Kaihui Wang, Wen Zhou, Bo Liu, Lei Shen, Bing Ye, Jianjun Yu</i>	
Mechanism and First Experimental Demonstration of ILMD-Induced Reduction of Intramodal Cross-Phase Modulation in Weakly-Coupled FMF Transmission.....	1734
<i>Mingqing Zuo, Gang Qiao, Yu Yang, Chengbin Long, Dawei Ge, Dong Wang, Yunbo Li, Zhangyuan Chen, Dechao Zhang, Han Li, Juhao Li</i>	
Effect of Modal Dispersion on the Nonlinear Interference Noise in SDM Transmissions	1737
<i>C. Lasagni, P. Serena, A. Bononi, A. Mecozzi, C. Antonelli</i>	
10-Mode PM-QPSK Transmission Over 2320 Km Enabled by Optimized Mode Permutation Strategies	1740
<i>Yanze Wang, Xiaochuan Liu, Qiushi Huang, Dechao Zhang, Xutao Wang, Qiang Guo, Tianyu Gao, Zhiqun Yang, Yaping Liu, Haofeng Hu, Rui Zhou, Wei Sun, Mingqing Zuo, Min Yan, Zhenhua Liu, Xianyu Zhang, Zhanhua Huang, Dong Wang, Xinhua Xiao, Lin Zhang</i>	

TH1I: NEXT GENERATION ROADMS, MULTIBAND AND SDM NETWORKING

Enabling Technologies for Scalable ROADMs	1743
<i>Peter Roorda, Brian Smith, Paul Colbourne, Sheldon McLaughlin, Martin Matthews</i>	
Double-Decker CDC-ROADM Node for Multi-Band Network with Wavelength Band Granularity	1746
<i>Kenya Suzuki, Masashi Ota, Yoshie Morimoto, Keita Yamaguchi, Fukutaro Hamaoka, Shuto Sugawara, Takeo Sasai, Takayuki Kobayashi, Masanori Nakamura, Satomi Katayose, Takeshi Umeki, Daisuke Ogawa, Yiran Ma, Stefano Camatel, Mitsunori Fukutoku, Yutaka Miyamoto, Osamu Moriwaki</i>	
Throughput Increase in Multi-Fiber Networks Using Partial Lane-Change Capabilities.....	1749
<i>Oleg Karandin, Francesco Musumeci, Yvan Pointurier, Massimo Tornatore</i>	
Control of Packet Over Multi-Granular Optical Networks Combining Wavelength, Waveband and Spatial Switching for 6G Transport	1752
<i>Raul Muñoz, V. Lohani, R. Casellas, R. Martínez, R. Vilalta</i>	
Comparative Assessment of S+C+L-Band and E+C+L-Band Systems with Hybrid Amplification	1755
<i>Andre Souza, Nelson Costa, João Pedro, João Pires</i>	
Hyperaccelerated Power Optimization in Multi-Band Elastic Optical Networks.....	1758
<i>F. Arpanaei, K. Ghodsifar, H. Beyranvand, J. A. Hernández, José M. Rivas-Moscoso, C. Natalino, M. Ranjbar Zefreh, A. Napoli, Juan P. Fernandez-Palacios, D. Larrabeiti</i>	

TH1J: SHORT-REACH TRANSMISSION SYSTEMS

Optical Multipath Interference Reduction Using Adaptive DC-Removal in High-Speed IM/DD Systems.....	1761
<i>Silas Oettinghaus, Annika Dochhan, Tom Wettlin, Talha Rahman, Stefano Calabrò, Nebojsa Stojanovic, Stephan Pachnicke</i>	
Advanced MLSE with Simple Soft Output Achieving High NGMI for SD-FEC in IM-DD Transmission with Severe Bandwidth Limitation.....	1764
<i>Shuto Yamamoto, Hiroki Taniguchi, Masanori Nakamura, Akira Masuda, Etsushi Yamazaki</i>	
Adaptive and DSP-Compatible Optical Multipath Interference Mitigation Scheme for 60Gbps PAM8-CRAN	1767
<i>Rui Xue, Chuanming Huang, Mengfan Cheng, Qi Yang, Deming Liu, Lei Deng</i>	
An Optimization Method for Probabilistic Constellation Shaping in Peak-Power Constraint Systems in the Presence of Peak Enhancement Effects.....	1770
<i>Basak Ozaydin, Xi Chen, Di Che</i>	
Role of Frequency-Resolved SNR in Entropy-Loading DMT Systems: Rate Comparison and Simplified Options	1773
<i>Peiji Song, Di Che</i>	

TH2A: POSTERS SESSION III, IN-PERSON

Optical Fiber Bendable at 3-Mm Diameter for Optical Transceivers and Silicon Photonic Packaging	1776
<i>Xin Chen, Jason E. Hurley, Yin Shu, Ming-Jun Li</i>	

TeraFlowSDN Controlling SDM and Wideband Optical Networks.....	1779
<i>A. Sgambelluri, N. Sambo, M. Ismaeel, L. Gifre, C. Manso, M. Enrico, J. M. Fabrega, R. Vilalta, R. Munoz</i>	
Crosstalk-Compensated Optical Phased Arrays for Wide-Angle Beam-Steering.....	1782
<i>Ankita Sharma, John N. Straguzzi, Tianyuan Xue, Alperen Govdeli, Fu-Der Chen, Andrei Stalmashonak, Wesley D. Sacher, Joyce K. S. Poon</i>	
Span Order Dependency for Nonlinear Interference Noise Over In-Homogeneous Multispan O-Band Coherent Transmission.....	1785
<i>Daniel J. Elson, Mindaugas Jarmolovicius, Noboru Yoshikane, Takehiro Tsuritani, Eric Sillekens, Polina Bayvel, Robert Killely, Yuta Wakayama</i>	
Hierarchical Energy-Aware Monitoring Framework for Sustainability of Packet-Optical Networks	1788
<i>W. Akbar, J. Vilchez, R. Muñoz, R. Vilalta, Ll. Gifre</i>	
100 Gbps PAM4 Transmissions Over 50 Km with 40 dB Power Budget for PON Using a High-Gain Quantum Dot SOA	1791
<i>Lakshmi Narayanan Venkatasubramani, Ahmed Galib Reza, Vladimir S. Mikhrin, Alexey Gubenko, Alexey R. Kovsh, Liam Barry</i>	
A Novel Low Complexity and Precise Transceiver IQ Skew Calibration Method for Single Carrier Coherent System.....	1794
<i>Wei Wang, Zhenpeng Wu, Dongdong Zou, Fan Li, Zhaohui Li</i>	
Joint Network and Computing Resource Optimisation in Distributed Quantum Computing.....	1797
<i>Sima Bahrani, Rui Wang, Juan Parra-Ullauri, Romerson D. Oliveira, Reza Nejabati, Dimitra Simeonidou</i>	
A Silicon Photonic Chip-Based System for 2.5-GHz Quantum Key Distribution (QKD)	1800
<i>W. Luo, L. Cao, H. Cai, M. F. Karim, L. C. Kwek, A. Q. Liu</i>	
Optimal Nonlinear Spectral Back-Rotation for Discrete Eigenvalue NFT Transmission Systems	1803
<i>Chuang Xu, Alan Pak Tao Lau</i>	
High-Speed and Low-Power Optical DAC Transmitter Using All-Silicon Lumped Segmented Modulator Directly Driven by CMOS Inverter Driver.....	1806
<i>Yohei Sobu, Yukito Tsunoda, Toshihiko Mori, Guoxiu Huang, Takuji Yamamoto, Shinsuke Tanaka, Takeshi Hoshida</i>	
100 Gbps WDM OWC Link Performance Using IMOS Surface Grating Coupler and Commercial Fiber Receivers.....	1809
<i>Mikolaj Wolny, Jiangrui Deng, Sander Reniers, Ton Koonen, Eduward Tangdiongga</i>	
Activation Stretching for Tackling Noise in Photonic Aware Neural Networks.....	1812
<i>E. Paolini, L. De Marinis, L. Valcarenghi, L. Maggiani, N. Andriolli</i>	
Learning to Extract Distributed Polarization Sensing Data from Noisy Jones Matrices.....	1815
<i>Mohammad Farsi, Christian Hager, Magnus Karlsson, Erik Agrell</i>	
Over 1-Watt Analog RoF Signal Transmission Using a 1-Km Hollow-Core Photonic Bandgap Fiber.....	1818
<i>Kai Murakami, Souya Sugiura, Hironori Yamaji, Motoharu Matsuura, Takeshi Takagi, Kazunori Mukasa</i>	
End-To-End QoT Predictions Enhanced by GNPpy-Based Digital Twin with Network Telemetry.....	1821
<i>S. Shen, H. Li, A. Tyrovolas, Y. Teng, R. Nejabati, S. Yan, D. Simeonidou</i>	

400G Cost-Effective EML for B5G/6G Fronthaul Network	1824
<i>Seungchul Lee, Namje Kim, Miran Park, Kihong Yoon, Mihee Hwang, Joonsang Yu, Sangho Lee, O-Kyun Kwon</i>	
Interleaved Dielectric-Metal Plasmonic Grating Polarizer.....	1827
<i>Yao Cui, Yipeng Ji, Jonas Kapraun, Chih-Chiang Shen, Jiaxing Wang, Connie J. Chang-Hasnain</i>	
0.08 fF, 0.72 nA Dark Current, 91% Quantum Efficiency, 38 Gb/s Nano-Photodetector on a 45 nm CMOS Silicon-Photonic Platform	1830
<i>Mingye Fu, S. J. Ben Yoo</i>	
Automated Control Plane for Reconfigurable Optical Crosshaul in Next Generation RAN.....	1833
<i>Yijie Tao, Chathurika Ranaweera, Sampath Edirisinghe, Christina Lim, Ampalavanapillai Nirmalathas, Lena Wosinska, Tingting Song</i>	
XLRON: Accelerated Reinforcement Learning Environments for Optical Networks	1836
<i>Michael Doherty, Alejandra Beghelli</i>	
Filter-Less Synthesis of 50-GHz Double-Spaced Flat Optical Comb by In-Phase/Quadrature Electro-Optic Modulator for High Bandwidth Transmission	1839
<i>Shun Harada, Tatsuki Ishijima, Takahide Sakamoto</i>	
Experimental Disaggregation of Propagation Effects in Optical Links.....	1842
<i>J. Girard-Jollet, J. C. Antona, A. Carbó Meseguer, F. Boitier, P. Ramantanis, G. Rekaya</i>	
Sub-Terahertz Interconnection Based on Ge-Si Photodetector.....	1845
<i>Wei Chen, Yilun Wang, Liao Chen, Zhibin Jiang, Zhibo Hou, Yu Yu, Xinliang Zhang</i>	
16.9 Gb/s Single-Channel LWIR FSO Data Transmission with Directly Modulated QCL and MCT Detector	1848
<i>Mahdieh Joharifar, Hamza Dely, Laureline Durupt, Armands Ostrovskis, Richard Schatz, Rafael Puerta, Thomas Bonazzi, Gregory Maisons, Djamel Gacemi, Lu Zhang, Sandis Spolitis, Yan-Ting Sun, Vjaceslavs Bobrovs, Xianbin Yu, Angela Vasanelli, Oskars Ozolins, Carlo Sirtori, Xiaodan Pang</i>	
Accurate beyond-400G Transmitter Quality Metric Based on Transmitter Constellation Closure Measurement	1851
<i>Qirui Fan, Xiang Liu</i>	
Sub-1 dB Loss SiN-To-Polymer Waveguide Coupling: An Enabler for Co-Packaged Optics	1854
<i>Jef Van Asch, Jeroen Missinne, Junwen He, Pengfei Xu, Arnita Podpod, Guy Lepage, Negin Golshani, Rafal Magdziak, Huseyin Sar, Hakim Kobbi, Swetanshu Bipul, Dieter Bode, Yoojin Ban, Filippo Ferraro, Joris Van Campenhout, Geert Van Steenberge</i>	
Performance Evaluation and Optimization of LDPC FEC for 100 Gbps Coherent Passive Optical Networks	1857
<i>Qun Zhang, Haipeng Zhang, Zhensheng Jia</i>	
Capacity Optimization Strategies in an Unrepeated System	1860
<i>H. Bissessur, A. Busson, D. Kravchenko, F. Hedaraly</i>	
Reduced-Complexity Frequency Interleaved DAC for High-Speed Optical Communications.....	1863
<i>Juan Bonetti, Mario Hueda</i>	
Beam-Steering Based on Dispersive Optical Phased Array for FMCW LiDAR Application	1866
<i>Xingyi Jiang, Zhaoyang Zhang, Qikai Huang, Qiang Zhang, Jianyi Yang, Hui Yu</i>	

Integrated Coherent Optical Fiber Communication System with Discrete-Time Analog Transmission.....	1869
<i>Hongyu Huang, Zhenming Yu, Liming Cheng, Wei Zhang, Yueqiu Mu, Kun Xu</i>	
A Compact Silicon-Based Photonic Phase-Tunable Microwave Frequency Downconverter.....	1872
<i>Xingyi Jiang, Qiang Zhang, Shengyu Fang, Shuyue Zhang, Hui Yu</i>	
QoT-Aware Adaptive Multi-Band Networking Over Hybrid Fibers Enabled by Wavelength-Selective Band Switching.....	1875
<i>Masahiro Nakagawa, Takafumi Fukatani, Takeshi Seki, Rie Hayashi, Takeshi Kuwahara</i>	
Estimation of Energy Storage Status in Power Supply System Using Power Over Fiber for Outdoor Environment.....	1878
<i>Tomohiro Kawano, Ryo Koyama, Akihiro Kuroda, Takui Uematsu, Chisato Fukai, Hiroshi Watanabe, Ikutaro Ogushi</i>	
Neural Network Model of a Second Stage L-Band Amplifier Using Experimental Training Sets.....	1881
<i>Hamed Rabbani, Kaboko Jean-Jacques Monga, Sophie Larochelle, Leslie A. Rusch</i>	
PtMP Multi-IF-Over-Fiber Systems Using Remotely Shared Local Oscillators for Plural Antenna Sites.....	1884
<i>Kazuki Tanaka, Shinji Nimura, Ryo Inohara</i>	

TH3B: PRACTICAL SECURITY DEMONSTRATION

Secure FSO Transmission with Quantum Deliberate Signal Randomization on the Y-00 Protocol Under Fog Conditions.....	1887
<i>Fumio Futami, Ken Tanizawa, Kentaro Kato, Yuichiro Hara, Michikazu Hattori, Abdelmoula Bekkali, Yukihiko Suga</i>	
Experimental Demonstration of an Efficient Correlation Attack Method in 300km QAM/QNSC Transmission.....	1890
<i>Mingrui Zhang, Yajie Li, Kongni Zhu, Shuang Wei, Yuang Li, Yongli Zhao, Jie Zhang</i>	
Integrating Quantum Key Distribution into TLS 1.3: A Transport Layer Approach to Quantum-Resistant Communications in Optical Networks.....	1893
<i>Carlos Rubio Garcia, Abraham Cano, J. J. Vegas Olmos, Simon Rommel, Idelfonso Tafur Monroy</i>	
Field Trial of Quantum-Secured IPsec Tunnels with Chip-Based QKD.....	1896
<i>Philip Sibson, Jake Kennard, Tom Crabtree, Paul Wright, Catherine White, Emilio Hugues Salas, Andrew Lord, Gert Grammel, Bill Mead, Radko Radev, Melchior Aelmans, Steven Jacques</i>	
Quantum-Safe 10 Gbps Site-To-Site IPsec VPN Tunnel Over 46 Km Deployed Fibre.....	1900
<i>O. Alia, A. Huang, H. Luo, O. Amer, M. Pistoia, C. Lim</i>	
Solar-Blind QKD Over Simplified Short-Range FSO Link.....	1903
<i>Florian Honz, Michael Hentschel, Philip Walther, Hannes Hübel, Bernhard Schrenk</i>	

TH3C: FREE SPACE OPTICAL COMMUNICATION

Free Space Communication Enabled by Directly Modulated Quantum Cascade Laser.....	1906
<i>Xiaodan Pang, Richard Schatz, Mahdieh Joharifar, Hamza Dely, Laureline Durupt, Gregory Maisons, Djamel Gacemi, Rafael Puerta, Thomas Bonazzi, Lu Zhang, Sandis Spolitis, Yan-Ting Sun, Vjaceslavs Bobrovs, Xianbin Yu, Angela Vasanelli, Carlo Sirtori, Oskars Ozolins</i>	
Large-Core Optics for Simplified Short-Range FSO Links.....	1909
<i>Florian Honz, Bernhard Schrenk</i>	
Experimental Demonstration of Fidelity Enhancement for Chaotic Signals in Free-Space Turbulent Channels Utilizing Vector Optical Field Manipulation	1912
<i>Yiqun Zhang, Mingfeng Xu, Zheng Song, Mengjie Zhou, Jiazheng Ding, Mingbo Pu, Kun Qiu, Ning Jiang, Xiangang Luo</i>	
100m Free-Space Over 10Gbps Visible Light Laser Communication Using Gallium-Nitride Blue LD and Huffman-Coded Dyadic Probabilistic Shaping	1915
<i>Zengyi Xu, Yuning Zhou, Zhilan Lu, Jifan Cai, Nan Chi</i>	
Tailoring Rate and Latency of Free Space Optical Systems to Turbulence Conditions with Probabilistic Constellation Shaping and Data Interleaving	1918
<i>Rajiv Boddeda, Amirhossein Ghazisaeidi, Sébastien Bigo, Samar Rabeh, Guillaume Dovillaire, Sylvain Almonacil, Haik Mardoyan, Jeremie Renaudier</i>	
Reliability Enhancement in FSO Communications Using FMF Assisted by Subcarrier Multiplexing	1921
<i>Manuel M. Freitas, Marco A. Fernandes, Vitor D. Correia, Paulo P. Monteiro, Fernando P. Guiomar, Gil M. Fernandes</i>	
Eye-Safe Terabit-Class WDM Optical Wireless: How Many Channels Are Enough?	1924
<i>Marco A. Fernandes, Gil M. Fernandes, Bruno T. Brandão, Manuel M. Freitas, Nourdin Kaai, Alina Tomeeva, Bas Van Der Wielen, John Reid, Daniele Raiteri, Paulo P. Monteiro, Fernando P. Guiomar</i>	

TH3D: PHOTONIC INTEGRATION FOR NOVEL APPLICATIONS

Enhanced Recurrent Neural Network Equalization Based on Hidden Feature Extraction Learning for Optical Interconnect.....	1927
<i>Chuanchuan Yang, Yunfeng Gao, Jiaying Wang, Hongbin Li, Constance J. Chang-Hasnain</i>	
Hybrid Photonic Integrated Circuits for Quantum Communications	1930
<i>Moritz Kleinert, Martin Kresse, Sarah Simon, Maximilian Ott, Jakob Reck, Csongor Keuer, Klara Mihov, Madeleine Weigel, Tianwen Qian, Philipp Winklhofer, David De Felipe, Crispin Zawadzki, Norbert Keil, Martin Schell</i>	
Plasmonic On-Chip Antenna Enabling Fully Passive Sub-THz-To-Optical Receiver for Future RoF Systems.....	1933
<i>Hande Ibili, Tobias Blatter, Laurenz Kulmer, Michael Baumann, Salim Turki, Yannik Horst, Stefan M. Koepfli, Boris Vukovic, Jasmin Smajic, Juerg Leuthold</i>	
Space Qualifying Silicon Photonic Modulators and Circuits	1936
<i>Dun Mao, Lorry Chang, Po Dong, Tingyi Gu</i>	
Sub-1V Near-Infrared Thin-Film Lithium Niobate Modulator for High-Speed Visible Communication	1939
<i>Daniel Assumpcao, Dylan Renaud, Amirhassan Shams-Ansari, Marko Loncar</i>	

High Temperature and Large Bandwidth Blue InGaN/GaN Micro-LEDs	1941
<i>Daniel Rogers, Haotian Xue, Fred Kish, Bardia Pezeshki, Alex Tselikov, Jonathan J. Wierer</i>	

TH3E: MCF BASED TRANSMISSION

Transoceanic-Class WDM/SDM Transmission of PDM-QPSK Signals Over Coupled 12-Core Fiber	1944
<i>Manabu Arikawa, Kohki Shibahara, Taiji Sakamoto, Ryota Imada, Kazuhide Nakajima, Yutaka Miyamoto, Emmanuel Le Taillandier De Gabory</i>	
45.7 Tb/s Over 12 053 Km Transmission with an All-Multi-Core Recirculating-Loop 4-Core-Fiber System	1947
<i>Giammarco Di Sciullo, Benjamin J. Puttnam, Menno Van Den Hout, Ruben S. Luis, Divya A. Shaji, Georg Rademacher, Chigo Okonkwo, Antonio Mecozzi, Cristian Antonelli, Hideaki Furukawa</i>	
Long-Haul Transmission Over Ultra-Low Attenuation and Crosstalk 4-Core Multicore Fiber	1950
<i>John D. Downie, Jason Hurley, Mark Gray, Stephen Johnson</i>	
Experimental Demonstration of Single-Wavelength Net 16.1Tb/s Self-Homodyne Coherent Transmission Over a 24-Core Fiber.....	1953
<i>Guofeng Yan, Min Yang, Kangrui Wang, Chengkun Cai, Bing Han, Zhenyu Wan, Shuo Zheng, Yanjun Zhu, Hua Zhang, Chaonan Yao, Yuchen Shao, Jian Wang</i>	
Tailoring Large Scale Manufacturing of MCF to High-Capacity Subsea Systems	1956
<i>Kevin Bennett</i>	

TH3F: SUB-THZ AND MM-WAVE SIGNAL PROCESSING

151.5-GHz Sub-THz Signal Reception and Downconversion Using All-Optical Technology.....	1959
<i>Pham Tien Dat, Yuya Yamaguchi, Shingo Takano, Shotaro Hirata, Junichiro Ichikawa, Ryo Shimizu, Keizo Inagaki, Isao Morohashi, Yuki Yoshida, Atsushi Kanno, Naokatsu Yamamoto, Kouichi Akahane</i>	
40-GHz Bandwidth Envelope Detector Used in 0.3-THz IM/DD System for 4096-QAM DSM Signal Transmission	1962
<i>Jianyu Long, Jingwen Tan, Jianjun Yu, Jiakuan Liu, Xiongwei Yang, Yi Wei, Kaihui Wang, Wen Zhou, Xianmin Zhao, Junjie Ding, Jiao Zhang, Min Zhu, Jianguo Yu, Feng Zhao</i>	
Optical Frequency Division on SiN-Based Platform for Low-Noise mmWave Generation.....	1965
<i>Shuman Sun, Beichen Wang, Kaikai Liu, Jiawei Wang, Ruxuan Liu, Mandana Jahanbozorgi, Zijiao Yang, Paul Morton, Karl Nelson, Daniel Blumenthal, Xu Yi</i>	
Integrated Photonic Microring Resonators for FSR Dependent Microwave Bandpass Filters.....	1968
<i>Ashitosh Velamuri, Bijoy Krishna Das</i>	
Integrated Twisted Bilayer Graphene Photonic Upconverter for D-Band Wireless Links	1971
<i>A. Montanaro, A. Boschi, G. Ducournau, V. Mišeikis, S. Soresi, M. G. L. Frecassetti, P. Galli, H. Happy, S. Pezzini, C. Coletti, M. Romagnoli, V. Sorianello</i>	
Applications of Multicore-Fiber Nonuniformly-Spaced Delay Lines in Microwave Photonics	1974
<i>Mario Annier González, Elham Nazemosadat, Ivana Gasulla</i>	

Narrowband Noise Filtering of Arbitrary Waveforms by Reversible In-Fiber Temporal Talbot Sampling..... 1977
Majid Goodarzi, Manuel P. Fernandez, Xinyi Zhu, José Azaña

Ultra-Large Key Space Multi-Dimensional Masking Encryption System for DSM-Based D-Band Wireless Fronthaul..... 1980
Tianqi Zheng, Kaihui Wang, Xiongwei Yang, Qiutong Zhang, Weiping Li, Yi Wei, Feng Wang, Xianming Zhao, Feng Zhao, Jianjun Yu

TH3G: OPTICAL COMPUTING AND ACCELERATORS

A TeraFLOP Photonic Matrix Multiplier Using Time-Space-Wavelength Multiplexed AWGR-Based Architectures 1983
Christos Pappas, Theodoros Moschos, Miltiadis Moralis-Pegios, George Giamougiannis, Apostolos Tsakyridis, Manos Kirtas, Nikolaos Passalis, Anastasios Tefas, Nikos Pleros

Multi-Transverse Mode Multiply-And-Accumulate Operation Toward Advancement of Photonic Accelerators..... 1986
Seyed Mohammad Reza Safaee, Kaveh Hassan Rahbardar Mojaver, Odile Liboiron-Ladouceur

TH3H: PHOTONICS MANUFACTURING TECHNOLOGIES

Latest Progress and Challenges in 300 mm Monolithic Silicon Photonics Manufacturing 1989
Takako Hirokawa, Yusheng Bian, Ken Giewont, Abdelsalam Aboketaf, Sujith Chandran, Jae-Kyu Cho, Zahidur Chowdhury, Won Suk Lee, Qidi Liu, Prateek Sharma, Massimo Sorbara, Frederick G. Anderson, Farid Barakat, Arpan Dasgupta, Kevin Dezfulian, Thomas Houghton, Jason Kim, Yarong Lin, Norman Robson, Vaibhav Ruparelia, Shenghua Song, Ryan Sporer, Teck-Jung Tang, Janet Tinkler, Helen Wong, Michelle Zhang

Mitigating Substrate Leakage Loss on a Monolithic SiPh Platform: Experimental Demonstration of Hybrid Si-SiN Waveguides for O-Band Datacom 1992
Yusheng Bian, Won Suk Lee, Sujith Chandran, Abdelsalam Aboketaf, Takako Hirokawa, Kevin Dezfulian, Massimo Sorbara, Fahimeh Banihashemian, Salman Mosleh, Arman Najafi, Qidi Liu, Ming Gong, Michal Rakowski, Chris Ritchie, Ryan Sporer, Michelle Zhang, Shenghua Song, Helen Wong, Arpan Dasgupta, Zahidur Chowdhury, Ryan Gallagher, Jae Gon Lee, Janet Tinkler, George Gifford, Vikas Gupta, Anthony Yu, Ken Giewont, Ted Letavic

High Performance Silicon Nitride Passive Optical Components on Monolithic Silicon Photonics Platform 1995
Sujith Chandran, Yusheng Bian, Won Suk Lee, Ahmed Abumazwed, Neng Liu, Luhua Xu, Hanyi Ding, Abdelsalam Aboketaf, Michal Rakowski, Kevin Dezfulian, Arman Najafi, Takako Hirokawa, Qidi Liu, Andy Stricker, Subramanian Krishnamurthy, Kate McLean, Ryan Sporer, Michelle Zhang, Shenghua Song, Helen Wong, Salman Mosleh, Dan Deptuck, Janet Tinkler, Jae Gon Lee, Vikas Gupta, Anthony Yu, Ken Giewont, Ted Letavic

Low-Temperature and Hydrogen-Free Silicon Dioxide Cladding for Next-Generation Integrated Photonics 1998
Zihan Li, Zheru Qiu, Rui Ning Wang, Xinru Ji, Marta Divall, Anat Siddharth, Tobias J. Kippenberg

Arbitrary Mode Size Conversion with 3D-Nanoprinted Couplers: A Generic Coupling Strategy 2001
Huiyu Huang, Zhitian Shi, Giuseppe Talli, Maxim Kuschnerov, Richard Penty, Qixiang Cheng

TH3I: SURVIVABILITY AND FAULT MANAGEMENT

Unavailability Analyses of Hyperscale Data Center Interconnect Optical Networks with Optical Layer Protection	2004
<i>Lingling Wang, Lei Wang, Chunxiao Wang, Chongjin Xie</i>	
Scaling Optical Network Fault Management with Decentralized Graph Learning	2007
<i>Qunzhi Lin, Xiaokang Chen, Zhenlin Ouyang, Hanyu Gao, Xiaoliang Chen, Zhaohui Li</i>	
Optical Network Anomaly Detection and Localization Based on Forward Transmission Sensing and Route Optimization.....	2010
<i>Philip N. Ji, Zilong Ye, Yue-Kai Huang, Thomas Ferreira De Lima, Yoshiaki Aono, Koji Asahi, Ting Wang</i>	
Detecting Anomalies in the Optical Layer Using Unsupervised Machine Learning	2013
<i>Sandra Aladin, Lena Wosinska, Christine Tremblay</i>	
Expertise-Embedded Machine Learning for Enhanced Failure Management of Optical Modules in OTN.....	2016
<i>Zhiming Sun, Chunyu Zhang, Min Zhang, Bing Ye, Danshi Wang</i>	
Spatio-Temporal Failure Prediction Using LSTGM for Optical Networks	2019
<i>Cheng Xing, Chunyu Zhang, Yu Wang, Zhiyan Duan, Wenjie Song, Min Zhang, Danshi Wang</i>	
DC-Carrier Cooperation for Rapid Restoration Against PNE-Node Failure in Optical Networks.....	2022
<i>Subhadeep Sahoo, Sifat Ferdousi, Sugang Xu, Yusuke Hirota, Massimo Tornatore, Yoshinari Awaji, Biswanath Mukherjee</i>	
Disaggregated Confidentiality-Preserving Scheme for Fault Detection in Optical Networks.....	2025
<i>R. F. Sales, A. Ribeiro, M. F. Silva, F. R. Lobato, A. Sgambelluri, L. Valcarenghi, J. C. W. Costa</i>	

TH3J: MACHINE LEARNING DSP

Real-Time Implementation of Machine-Learning DSP.....	2028
<i>Erik Börjeson, Keren Liu, Christian Häger, Per Larsson-Edefors</i>	
Non-Uniform Quantization and RUM for Optimizing Implementation of Real-Time FIR Equalization in Short-Reach Optical Links	2031
<i>Bohan Sang, Kaihui Wang, Luhan Jiang, Chen Wang, Yikai Wang, Jiaxuan Liu, Long Zhang, Jingtao Ge, Wen Zhou, Jianjun Yu</i>	
Transmitter Nonlinearity Mitigation Using Direct Learning Architecture Based Digital Predistortion Coefficients Identification.....	2034
<i>Zepeng Gong, Fan Shi, Ming Luo, Xu Zhang, Yuhan Gong, Xiang Li, Tianye Huang, Xi Xiao</i>	
Machine Learning-Aided Nonlinearity-Tailored Carrier Phase Recovery for Subcarrier Multiplexing Systems.....	2037
<i>M. S. Neves, A. Lorences-Riesgo, P. P. Monteiro, F. P. Guiomar</i>	
Fully-Blind Neural Network Based Equalization for Severe Nonlinear Distortions in 112 Gbit/s Passive Optical Networks.....	2040
<i>Vincent Lauinger, Patrick Matalla, Jonas Ney, Norbert Wehn, Sebastian Randel, Laurent Schmalen</i>	

POST DEADLINE PAPERS

- C+L+U-Band 14.85-THz WDM Transmission Over 80-Km-Span G.654.E Fiber with Hybrid PPLN-OPA/EDFA U-Band Lumped Repeater Using 144-Gbaud PCS-QAM Signals..... 2043
Takayuki Kobayashi, Shimpei Shimizu, Akira Kawai, Masanori Nakamura, Masashi Abe, Takushi Kazama, Takeshi Umeki, Munehiko Nagatani, Kosuke Kimura, Hitoshi Wakita, Yuta Shiratori, Fukutaro Hamaoka, Hiroshi Yamazaki, Hiroyuki Takahashi, Yutaka Miyamoto
- Continuous 16.4-THz Bandwidth Coherent DWDM Transmission in O-Band Using a Single Fibre Amplifier System 2046
Daniel J. Elson, Vitaly Mikhailov, Jiawei Luo, Shohei Beppu, Glenn Baxter, Ralf Stolte, Luke Stewart, Shigehiro Takasaka, Mindaugas Jarmolovicius, Eric Sillekens, Robert I. Killey, Polina Bayvel, Noboru Yoshikane, Takehiro Tsuritani, Yuta Wakayama
- 402 Tb/s GMI Data-Rate OESCLU-Band Transmission..... 2049
B. J. Puttnam, R. S. Luis, I. Phillips, M. Tan, A. Donodin, D. Pratiwi, L. Dallachiesa, Y. Huang, M. Mazur, N. K. Fontaine, H. Chen, D. Chung, V. Ho, D. Orsuti, B. Boriboon, G. Rademacher, L. Palmieri, R. Man, R. Ryf, D. T. Neilson, W. Forysiak, H. Furukawa
- 18,090-Km 2-Core Fiber Transmission Using Circulatory Directional Fan-In/Fan-Out Devices 2052
Daiki Soma, Shohei Beppu, Lidia Caldino, Michael Lorenz, Qiulin Ma, Katsuhiko Iwasaki, Seiya Sumita, Kosuke Komatsu, Daniel J. Elson, Tomoaki Kiriya, Katsuya Kito, Keito Kitamura, Hidenori Takahashi, Noboru Yoshikane, Takashi Kato, Takehiro Tsuritani, Martin Böttcher, Ansgar Meissner, Kevin Bennett, Sergejs Makovejs, Yuta Wakayama
- Towards International Clock Comparisons on a Telecom Network: Ultrastable Optical Frequency Transfer Over Deployed Multi-Core Fiber..... 2055
Nazanin Hoghooghi, Mikael Mazur, Nicolas Fontaine, Yifan Liu, Tetsuya Hayashi, Giammarco Di Sciullo, Divya Ann Shaji, Antonio Mecozzi, Cristian Antonelli, Franklyn Quinlan
- Wideband S, C,+ L-Band Comb Regeneration in Large-Scale Few-Mode MCF Link with Single-Mode Seed Channel..... 2058
B. J. Puttnam, D. Orsuti, R. S. Luis, M. S. Neves, M. Van Den Hout, G. Di Sciullo, G. Rademacher, J. Sakaguchi, C. Antonelli, C. Okonkwo, L. Palmieri, H. Furukawa
- Broadband Dual-Polarization 90° Optical Hybrid Array Supporting Spatial Parallelism 2061
H. Chen, N. K. Fontaine, R. Ryf, T. Kawashima, K. Kim, C. Tran, H. Huang, Y. Huang, A. Ross-Adams, M. J. Withford, S. Gross, K. Berger, T. Oonuma, S. Kawakami, X. Xu, M. Mazur, L. Dallachiesa, T. Hayashi, C. Antonelli, D. T. Neilson
- Hollow Core DNANF Optical Fiber with <0.11 dB/km Loss 2064
Y. Chen, M. N. Petrovich, E. Numkam Fokoua, A. I. Adamu, M. R. A. Hassan, H. Sakr, R. Slavik, S. Bakhtiari Gorajoobi, M. Alonso, R. Fatobene Ando, A. Papadimopoulos, T. Varghese, D. Wu, M. Fatobene Ando, K. Wisniowski, S. R. Sandoghchi, G. T. Jasion, D. J. Richardson, F. Poletti
- End-To-End Joint Digital and Optical Signal Processing Enabled by Interpretable Deep Learning for Coherent Optical Communication Systems 2067
Qiaoya Liu, Mengfan Fu, Xiaomin Liu, Lilin Yi, Weisheng Hu, Qunbi Zhuge
- Metasurface-Based Coherent Receiver Insensitive to LO Polarization..... 2070
Kento Komatsu, Shota Ishimura, Chun Ren, Go Soma, Hidenori Takahashi, Takehiro Tsuritani, Masatoshi Suzuki, Yoshiaki Nakano, Takuo Tanemura

Real-Time Demonstration of Photonics-Assisted W-Band 23 Gbps PS-64QAM DMT Signals Over 40.5-M Wireless Based on FPGA.....	2073
<i>Long Zhang, Kaihui Wang, Zonghui Zhu, Xiongwei Yang, Jiakuan Liu, Bohan Sang, Jingwen Tan, Ming Chen, Li Zhao, Wen Zhou, Jianjun Yu</i>	
Field Trial of E/W-Band Signal Over 30.4-Km Wireless Delivery Based on Full Photonic Up- And Down-Conversions Achieving Record Net-Rate and Distance Product.....	2076
<i>Yinjun Liu, Li Tao, Boyu Dong, Qichao Lu, Dianyuan Ping, Shuhong He, Junhao Zhao, Tong Cheng, Yaxuan Li, Sizhe Xing, Junlian Jia, Jianyang Shi, Chao Shen, Ziwei Li, Nan Chi, Junwen Zhang</i>	
High-Power O-Band QD Booster Amplifier for Uncooled Operation	2079
<i>S. V. Poltavtsev, J. Rautert, V. S. Mikhrin, S. S. Mikhrin, A. E. Gubenko, A. R. Kovsh</i>	
O-Band SOH Mach-Zehnder Modulator Operating at a PAM4 Line Rate of 384 Gbit/s with Sub-Volt Drive Voltage	2082
<i>A. Schwarzenberger, S. Sarwar, C. Eschenbaum, A. Mertens, M. Martens, A. Kotz, D. Fang, A. Sherifaj, S. Singer, H. Kholeif, P. Kern, P. Erk, A. Kuzmin, S. Bräse, S. Randel, W. Freude, C. Koos</i>	
4D Optical Link Tomography: First Field Demonstration of Autonomous Transponder Capable of Distance, Time, Frequency, and Polarization Resolved Monitoring.....	2085
<i>Takeo Sasai, Giacomo Borraccini, Yue-Kai Huang, Hideki Nishizawa, Zehao Wang, Tingjun Chen, Yoshiaki Sone, Tatsuya Matsumura, Masanori Nakamura, Etsushi Yamazaki, Yoshiaki Kisaka</i>	
Real-Time In-Line Coherent Distributed Sensing Over a Legacy Submarine Cable	2088
<i>Mikael Mazur, Nicolas K. Fontaine, Roland Ryf, Philip Pilgrim, Tracy Chodkiewicz, Gonzalo Sosa, Stephen D. Carter, Sergio Velazquez Jasso, Jeewan Naik, Kishore Padmaraju, Ajay Mistry, David Winter, Lauren Dallachiesa, Haoshuo Chen, David T. Neilson</i>	
First Demonstration of 200-G Coherent PON at O-Band with Heterogeneously-Integrated SiP Tx and Rx with Lasers	2091
<i>Jinsong Zhang, Zixian Wei, Stephen Misak, Aaron Wissing, Junqian Liu, Hector Andrade, Aaron Maharry, Giovanni Gilardi, Ranjeet Kumar, Guan-Lin Su, Ansheng Liu, Yuliya Akulova, James F. Buckwalter, Adel A. M. Saleh, Larry Coldren, Clint L. Schow, David V. Plant</i>	
100-GHz-Bandwidth InP-Based on-Board Coherent Tx Front-End Enabling 2-Tb/s/ λ Optical Transmission.....	2094
<i>Hitoshi Wakita, Munehiko Nagatani, Yoshihiro Ogiso, Masanori Nakamura, Fukutaro Hamaoka, Yuta Shiratori, Takayuki Kobayashi, Yutaka Miyamoto, Hiroyuki Takahashi</i>	
A 160 TOPS Multi-Dimensional AWGR-Based Accelerator for Deep Learning	2097
<i>C. Pappas, T. Moschos, A. Prapas, A. Tsakyridis, M. Moralis-Pegios, K. Vyrsoinos, N. Pleros</i>	
1.6-Tbps Low-Power Linear-Drive High-Density Optical Interface (HDI/O) for ML/AI	2100
<i>Son Thai Le, Guilhem De Valicourt, Pete Pupalais, Randy Giles, Marco Lamponi, Lukas Elsinger, Shawn Liu, Brett Sawyer, Jon Proesel, Eugene Ho, Karen Liu, Glen Homsey, Joseph Lopez, Zhiqiu Zhu, Steve Corteselli, Laurent Alloin, Chris Daunt, Mark Ferriss, Behzad Rahmani, Fred Warning, Ashok Bruno, Siamak Abbaslou, Mehdi Zaman, Zeyu Pan, George Fischer, Paul Haigh, Gannon Reichert, Alexander Gazman, Faezeh Fesharaki, Peter Winzer</i>	

400 Gbps/ λ DP-16QAM O-Band Link with SiP TX and RX PICs Using Only Heterogeneously Integrated Lasers and SOAs for Optical Gain	2103
<i>Stephen Misak, Aaron Wissing, Jinsong Zhang, Zixian Wei, Junqian Liu, Hector Andrade, Aaron Maharry, Giovanni Gilardi, Ranjeet Kumar, Guan-Lin Su, Ansheng Liu, Yuliya Akulova, James F. Buckwalter, Adel A. M. Saleh, Larry Coldren, David V. Plant, Clint L. Schow</i>	
Net 1.6 Tbps (4 \times 400Gbps/ λ) O-Band IM/DD Transmission Over 2 km Using Uncooled DFB Lasers on the LAN-WDM Grid and Sub-1V Drive TFLN Modulators.....	2106
<i>Charles St-Arnault, Santiago Bernal, Essam Berikaa, Zixian Wei, Ramón Gutiérrez-Castrejón, Jinsong Zhang, Md Samiul Alam, Aleksandar Nikic, Benjamin Krueger, Fabio Pittalà, David V. Plant</i>	
SM-TCC-VCSEL-Based 800 Gbps Linear Drive Pluggable Transceiver	2109
<i>Yamato Iwama, Takatoshi Yagisawa, Satoshi Ide, Kazutaka Takeda, Chang Ge, Xiodong Gu, Fumio Koyama</i>	
Heterogenous InP Electro-Absorption Modulator with Si Waveguides for Beyond 200 Gbps/ λ Optical Interconnects.....	2112
<i>Armands Ostrovskis, Krzysztof Szczerba, Toms Salgals, Erik Norberg, Michael Koenigsmann, John Sonkoly, Kristaps Rubuls, Han Yun, Benjamin Krüger, Molly Piels, Arvids Sedulis, Fabio Pittalà, Sandis Spolitis, Markus Gruen, Hadrien Louchet, Robert Jahn, Kazuo Yamaguchi, Vjaceslavs Bobrovs, Xiaodan Pang, Robert Guzzon, Oskars Ozolins</i>	

Author Index