

2025 IEEE International Topical Meeting on Microwave Photonics (MWP 2025)

**Quebec City, QC, Canada
14-17 October 2025**

IEEE Catalog Number:
ISBN:

CFP25756-POD
979-8-3315-9726-9



Copyright © 2025, IEEE

All Rights Reserved

Copyright and Reprint Permissions:

Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. 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:	CFP25756-POD
ISBN (Print-On-Demand):	979-8-3315-9726-9
ISBN (Online):	979-8-3315-9725-2
ISSN:	2835-3501

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

TABLE OF CONTENTS

Microwave Frequency Comb Generation Based on an Optoelectronic Oscillator Integrating a Coupled Optoelectronic Up-Conversion Recirculating Loop	1
<i>Yiran Guan, Jianping Yao</i>	
Tunable Optical Pulse Interleaving for Low Phase Noise Microwave Generation	5
<i>Maximilian Gloßner, Christian Carlowitz</i>	
Generation of Phase-Stabilized Microwave Frequency Combs Based on an Actively Mode-Locked Optoelectronic Oscillator	9
<i>Junyi Zhang, Sheng Dong, Guangying Wang, Ruiqi Zheng, Jiejun Zhang, Jianping Yao</i>	
Single-mode Optoelectronic Oscillator Based on ASE Source and Cascaded Zero-dispersion Recirculating Loops	13
<i>Zhuoran Wang, Santiago Bernal, David V. Plant, Lawrence R. Chen</i>	
Cryogenic and Room Temperature Microwave Generation with High-Speed Photodetection of Ultrashort Optical Pulse Trains	17
<i>Franklyn Quinlan</i>	
Photonic correlation of multi-GHz signals - Application to aperture synthesis in radio astronomy	19
<i>Guillaume Bourdarot, Vincent Carlet, Tituan Allain, Bernard Lazareff, Jean-Philippe Berger, Hugues Guillet de Chatellus</i>	
A Highly Flexible Photonic-assisted Phased Array with Broadband Coverage	22
<i>Xue Lan, Shilong Chen, Feifei Yin, Kun Xu, Ming Li, Yitang Dai</i>	
Precise Transmission Delay Measurement in Microwave Photonic Links	26
<i>Jinping Xiao, Wei Wei, Zhuoran Li, Guoying Zheng, Jinchuan Yao, Weilin Xie, Yi Dong</i>	
Electro-Optic Doppler Target Simulation for FMCW LiDAR	30
<i>Johannes Reichstein, Christian Carlowitz, Marius Schmidt</i>	
Fast and Stable Frequency Tuning of Optoelectronic Terahertz Waves Using Optical Single-Sideband Modulation	34
<i>Bo Li, Tomohiro Tetsumoto, Ming Che, Masato Kawano, Shenghong Ye, Yuya Mikami, Norihiko Sekine, Kazutoshi Kato</i>	
Photonic-based Multi-Beam Forming and Steering for a Synthetic Aperture Radar Receiver	38
<i>Ahmad W. Mohammad, Maarten T. Eijkel, Chris G. Roeloffzen, Paul W. van Dijk, Lennart Wevers, Rick W. Heuvink, Willy J. Bergsma, Edwin Klein, Furkan Sahin, Federico Camponeschi, Paolo Ghelfi</i>	
ASE-Driven OEO with Cascaded Zero-Dispersion Recirculating Loops Unlocks 458th-order Harmonic Mode-Locking	42
<i>Zhuoran Wang, Santiago Bernal, David V. Plant, Lawrence R. Chen</i>	
Microwave Photonics and AI	46
<i>Jianping Yao</i>	
High-Density Photonic Convolution Computing Enabled by a Soliton Microcomb and a Microdisk Mesh Array	48
<i>Shanshan Cheng, Yiran Guan, Chenye Qin, Kunpeng Jia, Zhenda Xie, Jianping Yao</i>	

Photonic-assisted multiply-accumulate operations for high-throughput complex-valued dot products	52
<i>Hao Sun, Xinyi Zhu, José Azaea</i>	
A Microwave Photonic Convolutional Accelerator With Increased Computational Efficiency	56
<i>Mahdi Chegini, Jianping Yao</i>	
End-to-End Learning of a Neural-Network Digital Predistortion Scheme for a Noisy RF Link	60
<i>Keisuke Matsuda, Samuel Hess, Chenrui Xu, Taichiro Fukui, Laurenz Kulmer, Tobias Blatter</i>	
<i>Juerg Leuthold</i>	
AI-Computing Through Low-Consumption VCSEL-based Analog Radio-over-Fiber System	64
<i>Jacopo Nanni, Siqi Wang, Aziz Benlarbi Delai, Giovanni Tartarini</i>	
Demonstration of Dual-Pump Degenerate Optical Parametric Oscillation in Kerr Microresonators for Integrated Coherent Ising Machines	68
<i>Menglong He, Mohd Saif Shaikh, Abdou Shetewy, Kambiz Jamshidi</i>	
Image classification with a simple photonic perceptron based on heterodyne detection	72
<i>Miguel Cuenca Piqueras, Carlos R. Fernandez-Pousa, Hugues Guillet De Chatellus</i>	
Demonstration of an InP-SOI Heterogeneously Integrated Distributed Coherent Radar System	76
<i>Valentina Gemmato, Federico Camponeschi, Filippo Scotti, Luca Rinaldi, Muhammad Imran, Claudio Porzi</i>	
<i>Paolo Ghelfi, Mirco Scaffardi, Antonella Bogoni</i>	
A Silicon Photonic Chip for Simultaneous Microwave and Near-Infrared Dual-Band Beamforming	80
<i>Ruiqi Zheng, Jingxu Chen, Jinkun Hu, Haikun Huang, Jiejun Zhang, Jianping Yao</i>	
Fine-Grained Diffractive Slab for Accurate and Low-Complexity On-Chip Photonic Convolution	84
<i>Zichao Shen, Weichao Ma, Ruixuan Wang, Wangzhe Li</i>	
Characterization of a 300 GHz Carrier Wave Using an On-Chip Silicon Electro-Optic-Modulation Comb	88
<i>Yasunori Yoshida, Rai Kou, Guangwei Cong, Haruki Yaguchi, Mitsuki Nakamura, Tatsuto Okubo</i>	
<i>Xuejun Xu, Kenichi Hitachi, Junia Nomura, Noritsugu Yamamoto, Katsuya Oguri, Koji Yamada</i>	
<i>Atsushi Ishizawa</i>	
Free-Standing Polarization-Sensitive Terahertz FSS: Fabrication and Characterization	90
<i>Redwan Ahmad, Xavier Ropagnol, François Blanchard</i>	
Ultra-Wideband Reconfigurable Radar Waveform Generation Based on Optical Recirculating Frequency Shifter Loop	92
<i>Kunlong Li, Bin Wang, Weifeng Zhang</i>	
A Multi-Wavelength Microwave Photonic Transponder for Future Synthetic Aperture Radar Satellite Formations	96
<i>Josef Ydreborg, Sigurd Huber, Gerhard Krieger</i>	
Scalable Microwave Photonic Filters with a 100 GHz Free Spectral Range based on an Electro-optic Optical Frequency Comb	100
<i>Youngjin Jung, Minje Song, Hyunjong Choi, Jaeseong Kim, Taehyun Lee, Minhyup Song</i>	
Low noise photonic millimeter-wave generation in a coherent dual-frequency Brillouin laser oscillator	103
<i>Junyi Yuan, Hui Liu, Huanhuan Shi, Tian Zhang, Jian Dai, Kun Xu</i>	

Microwave Photonic IQ Mixer for Long-Distance Transmission Based on Polarization Multiplexing	106
<i>Han Xu, Xiaoyu Wang, Zhenzhou Tang, Shilong Pan</i>	
Improving ASE-based Optoelectronic Oscillator Performance Using a Chirp-like Slicing Approach	110
<i>Zhuoran Wang, Santiago Bernal, David V. Plant, Lawrence R. Chen</i>	
Broadband Tunable Hybrid Optical Frequency Comb Based on Kerr Soliton and Opto-Electronic Oscillations	114
<i>Renzhen Yan, Xu Hong, Bin Wang, Weifeng Zhang</i>	
On-Chip Parallel Optical Convolution Accelerator Based on a Coupling-Tuned Micro-Disk Resonator Crossbar Array	118
<i>Lizhi Liu, Bin Wang, Weifeng Zhang</i>	
Deterministic-Frequency Optoelectronic Synthesizer Architecture Using Injection-Locked Oscillators	122
<i>Basel Chihabi, Jim Wight, Rony E. Amaya</i>	
Experimental Analysis of Optical Parametric Amplification in Silicon Waveguide	126
<i>Yue Wu, Jiabin Cui, Xinyan Zhang, Yanxia Tan, Guo-Wei Lu, Yuefeng Ji, Kunpeng Zhai, Sha Zhu Ninghua Zhu, Huashun Wen</i>	
Broadband linearly frequency-modulated signal generation based on bias switching of MZM	130
<i>Zheng Wang, Ying Xu, Xukai Ji, Feifei Yin, Yitang Dai, Kun Xu</i>	
Reconfigurable integrated microwave photonic filters	133
<i>Chris Roeloffzen, Charoula Mitsolidou, Marcel Hoekman, Carlos Ruiz Pineda, Roelof Bernardus Timens Ahmad Mohammad, Ilka Visscher, Roel Botter, Paul Kapteijn, Lan Anh Tran, Alberto Zarzuelo Guillermo Carpintero</i>	
A Fully Packaged 140 GHz Analog Radio-over-Fiber Transmitter Chipset with SiGe driver and TFLN modulator PIC	134
<i>Reinier Broucke, Karol Obara, Homa Zarebidaki, Jacopo Leo, Ivan Pietro, Hamed Sattari, Nishant Singh Guy Torfs</i>	
Precompensation of Nonlinear Phase Shifts for THz Analog Radio-over-Fiber Systems	138
<i>Ryoji Ito, Takaki Sugiyama, Daisuke Hisano, Akihiro Maruta, Hirofumi Sasaki, Ken Mishina</i>	
Lightning-Resistant Outdoor Antenna Unit Using Radio over Fiber and Power over Fiber	142
<i>Kensuke Ikeda</i>	
A Wavelength Division RF-Passive Optical Network for mmWave Analog Radio-over-Fiber Distribution on Large Intelligent Surfaces	146
<i>Michiel Van Osta, Reinier Broucke, Joris Van Kerrebrouck, Piet Demeester, Nishant Singh, Guy Torfs</i>	
Time-Frequency Analysis of Complex THz-Bandwidth Waveforms using Linear Microwave Photonic Processing	150
<i>Geunweon Lim, Benjamin Crockett, Majid Goodarzi, José Azaña</i>	
Scaled Reflection Cross-Section/ISAR Measurement using Photonic IC	154
<i>Lucio De Pra, Michael Benker, Tariq Manzur, Yifei Li</i>	
High-Precision 4D Parallel LiDAR Based on Dual Electro-Optic Combs and Injection-Locked OEO	157
<i>Junze Tian, Jiangyi Tong, Jianhao Duan, Shukang Xu, Bin Wang, Weifeng Zhang</i>	

Real-time Spectrogram of 20 GHz Bandwidth Frequency Hopping Signals using a 6 GHz Detector	161
<i>Connor M.L. Rowe, Benjamin Crockett, Xinyi Zhu, José Azaña</i>	
Adaptive Photonic Self-Interference Cancellation Assisted by Deep Learning on Microcontrollers	165
<i>Nicole Daniel, Suen Xin Chew, Yeming Chen, Hongchao Chen, Jeffrey Shao, Chen Song, Linh Nguyen Xiaoke Yi</i>	
Recent Advances in Integrated Microwave Photonic Radars (Invited)	169
<i>Shilong Pan, Simin Li, Dezhe Yuan, Jiaqi Shen, Likun Wang</i>	
Microwave Plasmonics	172
<i>Juerg Leuthold, Laurenz Kulmer, Hande Ibili, Wolfgang Heni, Boris Vukovic, Tobias Blatter, Yannik Horst Jasmin Smajic, Marcel Destraz</i>	
THz-wave Rapid Beam Switching and Wireless Transmission Enabled by High-Speed Tunable Laser and Chromatic Dispersion	175
<i>Masato Kawano, Ryota Kaide, Yoshiki Kamiura, Yuya Mikami, Yuta Ueda, Kazutoshi Kato</i>	
Compact WDM Terahertz Link With SiC-based UTC-PD and High-Speed Envelope Detection	179
<i>Shinji Iwamoto, Yoshiki Kamiura, Ryo Doi, Chengyuan Qian, Yuya Mikami, Tadao Ishibashi, Hiroshi Ito Kazutoshi Kato</i>	
Broadband Photomixing-Based THz Transmitter for Multi-Channel High-Speed Wireless Communication	183
<i>Yoshiki Kamiura, Shinji Iwamoto, Ryo Doi, Yuya Mikami, Tadao Ishibashi, Kazutoshi Kato</i>	
Terahertz Polarimetric Spectrometer Using CMOS Detector	186
<i>Redwan Ahmad, Xavier Ropagnol, Richard Al Hadi, François Blanchard</i>	
Self-Pulsating III-V/Si DFB Laser for Tunable Photonic Microwave Generation	189
<i>Mourad Azhar, Youcef Driouche, Joan Manel Ramirez, Kamel Merghem</i>	
Photonic Terahertz Vector Analysis with Optical Frequency Comb Modulation	192
<i>Zhe Ding, Zuomin Yang, Zhidong Lyu, Shiping Chen, Peiqi Zhou, Lu Zhang, Xianbin Yu</i>	
A Cost-effective Single Element Dielectric Rod Antenna for THz Applications	196
<i>A. Piroutiniya, M. Ali, A. Kumar, A. Rivera-Lavado, D. De Felipe, L. Liebermeister, P. Winklhofer G. Carpintero</i>	
Integrated Thin-Film Lithium Niobate Receiver for Both Frequency Demultiplexing and Modulation De-chirping Functions in Dual-Band Radar	198
<i>Yongtao Du, Ningyuan Zhong, Xihua Zou, Fang Zou, Wenlin Bai, Xiaojun Xie, Wei Pan, Lianshan Yan</i>	
Y-branch Waveguide-type Exclusive OR Logical Gate for THz-band Communication	202
<i>Koichi Takiguchi, Wataru Ishihara</i>	
Microwave Photonic Channelization-Based Broadband Phased Array Receiver	205
<i>Shilong Chen, Xue Lan, Feifei Yin, Kun Xu, Ming Li, Yitang Dai</i>	
Power Response of GaInAs/InP Uni-Traveling Carrier Photodiodes (UTC-PDs) with Abrupt and Graded Collectors	209
<i>Amirmohammad Miran Zadeh, Nikolaos Poupouridis, Rinchen Bhutia, Pascal Kaufmann, Olivier Ostinelli Colombo Bolognesi</i>	

A Highly Linear and Compact Si Ring-Assisted Mach-Zehnder Modulator at X Band	213
<i>Min-Hyeok Seong, Yongjin Ji, Woo-Young Choi</i>	
Fast Tunable InP-LNOI DBR Laser at 1550nm	217
<i>Sara Bassil, Sylvain Boust, Cosimo Calo, Romain Hersent, Hamed Sattari, Ivan Prieto Gonzalez</i> <i>Homa Zarebidaki, François Duport, Frédéric Van Dijk, Nadege Courjal</i>	
A Practical Demonstration of Mach-Zehnder Modulator Chirp Measurement Using a DC Method	221
<i>Lam Anh Bui</i>	
A 4.5 GHz Optical Receiver Utilizing an 800uW Modified RGC Transimpedance Amplifier	225
<i>Shadrach K. Sarpong, Jeongyong Yang, Junwu Bai, Andreas Beling, Travis N. Blalock, Steven M. Bowers</i>	
Millimeter-Wave Fixed Wireless: Challenges and Insights from Models and Machine Learning	229
<i>Nutwipa Pinkhumpee, Chumphon Kaewmalee, Ukrit Mankong</i>	
All-dielectric broadband interconnects and devices	233
<i>Guillermo Carpintero, Daniel Headland, Enderson Falcón-Gómez, Daniel Gallego Cabo, Ashish Kumar</i> <i>Alejandro Rivera</i>	
Dispersion-tuned Mode-locked Optoelectronic Oscillator	237
<i>Zhuoran Wang, Santiago Bernal, David V. Plant, Lawrence R. Chen</i>	
Absolute Frequency Stabilization and Phase Noise Reduction of Tunable Lasers via Reference-Stabilized Fiber Interferometer	241
<i>Jose Javier Fernandez-Pacheco, Loïc Morvan, Daniel Dolfi</i>	
Investigating the Role of Ultra-Low Noise Lasers in Advancing Microwave Photonics	245
<i>Lute Maleki</i>	
Photonic Control of Phased Arrays: From Seminal Demonstrations to Future Prospects	246
<i>Willie Ng</i>	
Integrated multibeam beamformers at microwave and millimeter wave frequencies	250
<i>Luca Rinaldi, Valentina Gemmato, Federico Camponeschi, Filippo Scotti, Paolo Ghelfi, Mirco Scaffardi</i> <i>Antonella Bogoni</i>	