

2007 International Topical Meeting on Microwave Photonics

**Victoria, BC, Canada
2-5 October 2007**



IEEE Catalog Number:
ISBN 10:
ISBN 13:

CFP07756-PRT
1-4244-1167-X
978-1-4244-1167-2

Table of Contents

Advances in Organic Materials for Optical Modulation	1
<i>Larry Dalton, Ben Olbricht, Philip Sullivan</i>	
Sideband Generation Using Electro-Optic Modulation for Micro- and Millimeter-Wave Photonics	5
<i>Tetsuya Kawanishi</i>	
High-Power Photodiodes	9
<i>Keith Williams, David Tulchinsky, Joe Campbell</i>	
Uni-Traveling-Carrier Photodiodes with Increased Output Response and Low Intermodulation Distortion	14
<i>Jonathan Klamkin, Anand Ramaswamy, Yu-Chia Chang, Leif Johansson, Matthew Dummer, John Bowers, Steven DenBaars, Larry Coldre</i>	
Grin Lens-Coupled Top-Illuminated Photodetectors for High-Power Applications	18
<i>Abhay Joshi, Don Becker</i>	
Upcoming Perspectives and Future Challenges for ROF	21
<i>Benoit Charbonnier, Hugues Le Bras, Pierre Urvoas, Quoc Thai N'Guyen, Mathieu Huchard, Anna Pizzinat</i>	
Architectures and Enabling Technologies for Super-Broadband Radio-Over-Fiber Optical-Wireless Access Networks	24
<i>Gee-Kung Chang, Jianjun Yu, Zhensheng Jia</i>	
Optical Powering of Remote Units for Radio Over Fiber Links	29
<i>David Wake, Anthony Nkansah, Nathan Gomes</i>	
A Novel Nonlinear Distortion Suppression Method in RoF Systems Using Optical Filter	33
<i>Kosuke Uegaki, Kazuo Kumamoto, Koji Yasukawa, Keizo Inagaki, Takeshi Higashino, Katsutoshi Tsukamoto, Shozo Komaki</i>	
Gain-Saturated Reflective Semiconductor Optical Amplifier Cascaded Electroabsorption Transceiver for Enhanced Remote Node Performance	37
<i>Moon-Ki Hong, Sang-Kook Han</i>	
Inter-networking, VCSEL-Based Low-Cost Hybrid Base Stations Towards the Integration of Wireless and Wireline Access Networks	41
<i>Masuduzzaman Bakaul, Nishaanthan Nadarajah, Ampalavanapillai Nirmalathas</i>	
Clocks, Combs and Optical Arbitrary Waveforms	45
<i>Erich P. Ippen</i>	
Generation of 2 THz Span Optical Comb in a Tunable Fiber Ring Based Optical Frequency Comb Generator	46
<i>Pengbo Shen, Nathan Gomes, Philippe Davies, Bill Shillue</i>	
Optimization of Electro-Optic Comb Generation Using Conventional Mach-Zehnder Modulator	50
<i>Takahide Sakamoto, Tetsuya Kawanishi, Masayuki Izutsu</i>	
4-Channel Continuous-Time 77 GSa/s ADC Using Photonic Bandwidth Compression	54
<i>Jason Chou, George Seftler, Josh Conway, George Valley, Bahram Jalali</i>	
A Photonic Analog-to-Digital Converter Based on an Unbalanced Mach-Zehnder Quantizer	58
<i>Chris Sarantos, Nadir Dagli</i>	
Development of Microwave and Millimeter-Wave Traveling-Wave Electro-Optical Devices Using Substrate Integrated Circuit Concept	62
<i>Ke Wu, Ebrahim Mortazy, Maurizio Bozzi</i>	
Quantum Dash Mode-Locked Laser for Millimeter-Wave Coupled Opto-Electronic Oscillator	66
<i>Frédéric van Dijk, Alain Enard, Xavier Buet, François Lelarge, Guang-Hua Duan</i>	
A Low-Jitter Master-Slave Optoelectronic Oscillator Employing All-Photonic Gain	70
<i>Preetpaul Devgan, Vincent Urlick, Jason McKinney, Keith Williams</i>	

Table of Contents

Hybrid Dual-Loop Optoelectronic Oscillators	74
<i>Kwang-Hyun Lee, Jae-Young Kim, Woo-Young Choi</i>	
Integrated Photonic Electromagnetic Band Gap Antenna with InGaAs/AlInGaAs Multiple Quantum Well Asymmetric Fabry-Perot Modulator	78
<i>Chin Hsiu Chuang, Chin Pang Liu, Tabassam Ismail, Xiao Jing Wang, Simon Tse, Yang Hao, Clive PariniPeter Huggard, Andrey Krysa, John Roberts, Alwyn Seeds</i>	
Photonicallly-Synthesized Waveforms to Combat Broadband Antenna Phase Distortions	82
<i>Andrew Weiner, Jason McKinney, Dimitrios Peroulis</i>	
Gain, Noise Figure and Bandwidth-Limited Dynamic Range of a Low-Biased External Modulation Link	84
<i>Harold Roussell, Michael Regan, Joelle Prince, Charles Cox, Jianxiao Chen, William Burns, Gary Betts, Edward Ackerman, Joe Campbell</i>	
Phased Array Receive Antenna Steering System Using a Ring Resonator-Based Optical Beam Forming Network and Filter-Based Optical SSB-SC Modulation	88
<i>Leimeng Zhuang, Arjan Meijerink, Chris Roeloffzen, David Marpaung, J Peña Hevilla, Wim van Etten, R G Heideman, A Leinse, M Hoekman</i>	
An Optically Integrated Coherent Frequency-Domain THz Spectrometer with Signal-to-Noise Ratio Up to 80 dB	92
<i>Joseph Demers, Ron Logan, Elliott Brown</i>	
Instantaneous Microwave Transmission Imaging of Aqueous Samples	96
<i>Atsushi Kanno, Kiyotaka Sasagawa, Masahiro Tsuchiya</i>	
IR-UWB Transmission in 40-GHz-Band Using Optical Conversion by Cascaded Modulators	100
<i>Hoang Giang Nguyen, Khalil Merzouk, René Gary, Béatrice Cabon, Stéphanie Constant, Gislaine Maury, Yannis Le Guennec</i>	
Novel Time Domain Bias Switching of Radio Over Fiber Links for Enhanced Sensitivity in Time Division Duplexed Services	104
<i>Michael Crisp, Richard Penty, Ian White</i>	
Testbed Demonstration and Analysis for Delivering Dual Services Simultaneously in a Single Radio-Over-Fiber Access Platform	108
<i>Zhensheng Jia, Jianjun Yu, Ming-Fang Huang, Roger L Packham, Gee-Kung Chang</i>	
An Effect of Downlink Optical Sideband Suppression on Uplink Transmission in Full-Duplex DWDM Millimeter-Wave-Band Radio-Over-Fiber	112
<i>Yoshitomo Takahashi, Kiyokazu Matsuba, Takahiro Sono, Susumu Sadoshima, Hiroyuki Toda, Toshiaki Kuri, Ken-Ich Kitayama</i>	
Transmission of High-Frequency Radio Over Fibre Signals Through Short and Middle Reach Multimode Fibre Links Using a Low-Linewidth Laser	116
<i>Ivana Gasulla, Jose Capmany</i>	
Optimum Receivers for Non-Linear Distortion Compensation of OFDM Signals in Fiber Supported Wireless Applications	120
<i>Joao Oliveira, Miguel Rodrigues, Henrique Salgado</i>	
Improving the Noise Figure of the 60-GHz Radio-Over-Fiber System Using a System-on-Package EAM Module with Two-Stage LNAs	124
<i>Kangbaek Kim, Dong-Soo Shin, Yong-Duck Chung, Kwang-Seong Choi, Jae-Sik Sim, Jaha Kim</i>	
Centralized Lightwave Radio-over-Fiber System with High-Frequency Optical Millimeter-Wave Generation by Low-Frequency and Low-Bandwidth Optical and El	127
<i>Jianjun Yu, Ting Wang, Zhensheng Jia, Gee Kung Chang</i>	
Reconfiguring Dispersion-Induced Microwave Transmission Windows on Radio Over Fiber Schemes by Using Optical Delays	130
<i>Celso Gutierrez-Martinez, Joel Santos-Aguilar, Jose Alfredo Torres-Fortiz, Adolfo Morales-Diaz</i>	

Table of Contents

Bidirectional Dynamic Capacity Allocation by Using Optically Switched Foldback AWG.....	134
<i>Jose Mora, Beatriz Ortega, Gustavo Puerto, Jose Capmany</i>	
A Simplified Wavelength Reuse and Dispersion Tolerance Scheme for Radio-Over-Fiber System	138
<i>Zhenbo Xu, Xiupu Zhang, Jianjun Yu</i>	
Demonstration of Distortion Suppression in Photonic Time-Stretch ADC Using Back Propagation Method.....	141
<i>Shalabh Gupta, Bahram Jalali, Johan Stigwall, Sheila Galt</i>	
UWB monocycle and Doublet Pulses Generation in Optical Domain.....	145
<i>Hongwei Chen, Minghua Chen, Jian Zhang, Shizhong Xie</i>	
Hardware Correlation of Ultra-Wideband RF Signals Generated via Optical Pulse Shaping.....	149
<i>Ingrid Lin, Andrew Weiner</i>	
Analysis of Sampled Optical Phase-Lock Loops.....	153
<i>Leif Johansson, Darko Zibar, Anand Ramaswamy, Larry Coldren, Mark Rodwell, John Bowers</i>	
High Power MQW Electroabsorption Modulator with a Waveguide Taper	157
<i>Ivan Shubin, Xiaobo Xie, Justin Bickford, William Chang, Paul Yu, Dong-Soo Shin</i>	
Very Low Drive Voltage Substrate Removed GaAs/AlGaAs Electro-Optic Modulators.....	160
<i>Jaehyuk Shin, Yu-Chia Chang, Nadir Dagli</i>	
A Coherent Fiber-Optic Link with Optical-Domain Down Conversion and Digital Demodulation	164
<i>Maja Bystrom, Yifei Li, Nick Vacirca, Peter Herczfeld, William Jemison</i>	
Optical Generation of a Modulated Microwave Carrier for SDR Applications	168
<i>Stéphane Paquet, Joe Seregelyi, Claude Bélisle, Jianping Yao, Guohua Qi</i>	
Merging of Optoelectronic Techniques for Microwave Signal Generation	172
<i>Arnaud Le Kernec, Margarita Varon, Jean-Claude Mollier</i>	
Limits for the Generation of Ultra-Wideband Signals with the Incoherent-Pulse-Shaping Technique	176
<i>Victor Torres-Company, Jesus Lancis, Vicent Climent, Mercedes Fernández-Alonso, Pedro Andres</i>	
Efficient Photonic Generation of Millimeter-Waves Using Optical Frequency Multiplication in Radio-over-fiber Systems	179
<i>Mohmoud Mohamed, Xiupu Zhang, Bouchaib Hraïmel, Ke Wu</i>	
Optical Injection Locking of VCSEL with Amplitude Modulated Master.....	183
<i>Qing Gu, Kai Wa Chan, Ada Au, Behnam Faraji, Lukas Chrostowski, W Hofmann, M C Amann</i>	
Edge-Coupled Terahertz Photomixer Sources for on-Chip Sensing Applications	187
<i>Daryoosh Saeedkia, Mohammad Neshat, Safieddin Safavi-Naeini</i>	
Performance Improvement of High-Extinction-Ratio LiNbO3 Optical Intensity Modulator by Means of Polarization Crosstalk Reduction.....	191
<i>Hiroyuki Toda, Katsuya Fukuta, Daisuke Arai, Akito Chiba, Kiyotaka Sasagawa, Tetsuya Kawanishi, Masahiro Tsuchiya, Masayuki Izutsu</i>	
Photoconductive Control of Generated Ultrashort Microwave Impulses.....	194
<i>Salim Faci, Charlotte Tripon-Canseliet, Najma Guldner, Georges Alquie, Stéphane Formont, Jean Chazelas</i>	
Opto-Electronic Feedback Loop for Phase Noise Suppression at FET Based RF Oscillators.....	198
<i>Tamas Banky, Tibor Berceci</i>	
All-Optical Electrical Chirped Pulse Generation with Tunable Chirp Rate Based on a Nonlinearly Chirped Fiber Bragg Grating.....	202
<i>Chao Wang, Jianping Yao</i>	
Bragg Gratings (BG) Structures and Slow-Light Approach for the Processing of RF Signals Over Large Bandwidths.....	206
<i>Myriam Kaba, Fangcun Zhou, Anthony Lim, Didier Decoster, Jean-Pierre Huignard, Sylvie Tonda, Daniel Dolfi, Jean Chazelas</i>	

Table of Contents

Ultra Wideband Light Source Using 136-Wavelengths SSB Frequency Sweep Technique for Optical Coherence Tomography	210
<i>Takehiro Yamamoto, Ryuji Kohno, Akito Chiba, Takahide Sakamoto, Tetsuya Kawanishi</i>	
Chaotic Behavior of Noise Suppressed Solid State Lasers Used in Radio-Over-Fiber Systems	214
<i>Mark Csörnyei, Tibor Berceci</i>	
Noise Conversion in Photonic-Microwave Filters.....	218
<i>Mark Csörnyei, Tibor Berceci</i>	
Coherent Combination of Semiconductor Lasers Using Optical Phase-Lock Loops	222
<i>Annon Yariv, Wei Liang, Naresh Satyan, Anthony Kewitsch, George Rakuljic</i>	
Linear Coherent Receiver Based on a Broadband and Sampling Optical Phase-Locked Loop.....	225
<i>John Bowers, Anand Ramaswamy, Leif Johansson, Jonathan Klamkin, Matt Sysak, Darko Zibar, Larry Coldren, Mark Rodwell, Larry Lembo, Roy Yoshimitsu, Dennis Scott, Rich Davis, Peter Ly</i>	
A Single-Fiber Analog Optical Link with Differential Phase Demodulation and Intensity Noise Suppression	229
<i>Vahid Tavassoli, Jinye Zhang, Thomas E. Darcie</i>	
Stability Analysis and Characterization of Optical Single Sideband Modulation with Linearization Scheme for Fiber-Wireless Applications.....	233
<i>Christina Lim, Ampalavanapillai Nirmalathas, Dalma Novak, Rod Waterhouse, Ka-Lun Lee</i>	
Multiplexed Transmission of Uncompressed HDTV Signals Using 120-GHz-Band Millimeter-Wave Wireless Link	237
<i>Tadao Nagatsuma, Akihiko Hirata, Naoya Kukutsu, Yuichi Kado</i>	
Bandwidth Enhancement by Optical Amplitude and Phase Modulation of Injection-Locked Semiconductor Lasers	241
<i>Erwin Lau, Hyuk-Kee Sung, Xiaoxue Zhao, Devang Parekh, Young-Kai Chen, Connie Chang-Hasnain, Ming Wu</i>	
40 GHz Millimeter-Wave Signal Generation Using a Lattice-Form Mach-Zehnder Interferometer	245
<i>Irina Kostko, Lawrence Chen, David Plant</i>	
Photonic Dynamic Channel Allocation in Optical-Frequency-Interleaved DWDM Millimeter-Wave-Band Radio-Over-Fiber Access Network	249
<i>Toshiaki Kuri, Juan Jose Vegas Olmos, Ken-Ichi Kitayama</i>	
Experimental demonstration of a photonic phase locked loop	253
<i>Y. Li, G. Ding, P. Herczfeld</i>	
An Approach to Optical Generation and Distribution of Binary Phase Coded Direct Sequence Ultra-Wideband Signals	257
<i>Yitang Dai, Jianping Yao</i>	