

2015 Advances in Wireless and Optical Communications (RTUWO 2015)

**Riga, Latvia
5 – 6 November 2015**



IEEE Catalog Number: CFP15AWZ-POD
ISBN: 978-1-4673-7432-3

**Copyright © 2015 by the Institute of Electrical and Electronic Engineers, Inc
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 publication is a representation of what appears in the IEEE Digital Libraries. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number: CFP15AWZ-POD
ISBN (Print-On-Demand): 978-1-4673-7432-3

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

2015 Advances in Wireless and Optical Communications

RTUWO

Table of contents

Chairs' Welcome Message	vi
Steering Committee	vii
Technical Programme Committee (TPC).....	viii
Technical Sponsors, Patrons, Promoters and Supporters.....	ix
Keynote Speakers	x

Session A1 : PHY techniques

A Genetic Antenna Selection Algorithm for Massive MIMO Systems with Channel Estimation Error.....	1
<i>Ye Wang; Y. Dong</i>	
Performance Comparison of SVD- and GMD-assisted MIMO Systems	5
<i>A. Ahrens; C. Benavente Peces; A. Aboltins</i>	
Chaos Based Linear Precoding for OFDM.....	13
<i>A. Litvinenko; A. Aboltins</i>	
BFAM 2D-RLS Channel Estimation for Frequency Selective Environment in Two-Way Relay.....	14
<i>A. Joy; V. K. Chakka</i>	
Performance Model for MRC Receivers with Adaptive Modulation and Coding in Rayleigh Fading Correlated Channels with Imperfect CSIT	26
<i>R. Samano-Robles; E. Lavendelis</i>	

Session A2 : Optical fibers and Photonics

Estimation and Equalization Techniques Applied to Radio over Fiber System	30
<i>Z. Al-Husseini; N. Neumann; D. Plettmeier</i>	
Noise Figure Analysis of EDFA with different pumping configurations in 40 Gbit/s 8 channel DWDM transmission system	34
<i>I. Lavrinovica; J. Porins</i>	
Iterative Time Domain Simulation of Optical MIMO Channels.....	38
<i>P. Bartmann; A. Ahrens; S. Lochmann</i>	
Mode Locked Laser Diode Modelling for Designing A Photonic Analogue-to-Digital Converter.....	42
<i>S. Abdollahi; H. Al-Raweshidy; T. Owens</i>	

Session A3 : Ad-hoc and Sensor networks

The Physical Web in Smart Cities	46
<i>D. Namiot; M. Sneps-Sneppe</i>	
EDI WSN Testbed: Multifunctional, 3D Wireless Sensor Network Testbed	50
<i>R. Ruskuls; D. Lapsa; L. Selavo</i>	
Data Management in TestBed for Large Scale Wireless Sensor Networks.....	54
<i>A. Salmins; K. Ozols; R. Ruskuls</i>	

Path Selection Criteria for Multi-path Routing in Wireless Ad-hoc Network	58
<i>L. Cikovskis; I. Slaidins</i>	
Ant Colony Optimization Based Multicast Routing Algorithm for Mobile Ad Hoc Networks	62
<i>N. Anwar; H. Deng</i>	

Session B1 : Signal processing

Multi-Way Ranging With Clock Offset Compensation	68
<i>V. Sark; E. Grass; J. Gutiérrez</i>	
Wavelet Based Image-Text Fusion Algorithm for Encrypted Message Transmission	72
<i>J. Baviskar; A. Mulla; A. Baviskar</i>	
Software Implementation of Real-time Hurst Parameter Estimator Algorithm with Filter Banks	77
<i>E. Grabs; E. Petersons</i>	
Synchronization algorithm for RFID-reader and its implementation	82
<i>O. Martens; A. Liimets; A. Kuusik</i>	
Cognitive Sub-Band Replacement DWT Based Image Compression Scheme	86
<i>J. Baviskar; A. Mulla; A. Baviskar</i>	

Session B2 : Photonic Communication Systems

Towards Bandwidth Scalable Transceiver Technology for Optical Metro-Access Networks	94
<i>S. Spolitis; C. Wagner; V. Bobrovs; J. J. Vegas Olmos; I. Tafur Monroy</i>	
Decoding Metrics for Multistage Bit-Wise Coded Modulation in Optical Communications	98
<i>F. Waeckerle; R. Fischer; D. Clausen; R. Rath</i>	
Power Allocation in PMSVD-based Optical MIMO Systems	102
<i>A. Sandmann; A. Ahrens; S. Lochmann</i>	
Voltage Controlled Oscillators for 40 Gbit/s Cascaded Bit-Interleaving PON	106
<i>A. Vyncke; G. Torfs; M. Verbeke; C. Van Praet; H. Chow; D. Suvakovic; A. Duque; X. Yin</i>	
SDN Data Center Performance Evaluation of Torus and Hypercube Interconnecting Schemes	110
<i>B. Andrus; J. J. Vegas Olmos; V. Mehmeri; I. Tafur Monroy; S. Spolitis; V. Bobrovs</i>	

Session B3 : Network technologies, architectures

Energy Efficient Soft Real-time Spectrum Auction	113
<i>A. Oloyede; A. Dainkeh</i>	
An Enhanced HeRO Scheme for VoD with Heterogeneous Receivers in Wireless Networks	119
<i>Z. Zhong; L. Xiao; X. Wang; J. Liu</i>	
Impacts of OPNET Physical Layer Modelling on LANDY Routing Protocol	123
<i>A. Macintosh</i>	
Attractor selection algorithm's key parameters synchronization protocol among all routers in the domain for network dynamic resource management	128
<i>D. Finaskins; J. Jelinskis</i>	
Using the Probabilistic Model Checker PRISM to Analyze H-OTBA Algorithm in Optical Burst Switching (OBS) Networks	132
<i>V. Zagorskis</i>	

Session C1 : Network technologies

Power-Efficient Frequency Allocation Algorithms for Self-Organized Networks	142
<i>T. Ahmed; Y. Le Moullec</i>	
Prototyping of an Integrated, White-Space Solution for the Enforcement of Ship Reporting Systems	146
<i>L. Pilosu; A. Autolitano; D. Brevi; R. Scopigno</i>	
Methods for architecture synthesis of broadband wireless networks with linear topology	150
<i>D. Kozyrev; V. Vishnevsky; A. Larionov; R. Smolnikov</i>	

Mobile Application Based Traffic Advisory System for General Aviation - Is It Possible?	155
<i>J. Jelinskis; R. Babrovskis; P. Jelinskis</i>	

Session C2 : Vehicular communications

Reliability of Bidirectional V2X Communications in the Intelligent Transport Systems	159
<i>I. Kabashkin</i>	
Performance Evaluation of Heterogeneous Network for Two Vehicle Regime	164
<i>N. Bogdanovs; E. Petersons</i>	
Noises of passive fiber-optic network components.	168
<i>D. Kiesewetter</i>	
The application of side-illumination method for measurement of attenuation in fluorescent optical waveguides	172
<i>D. Kiesewetter; V. Levin; G. Baskakov</i>	

Session D1 : Wireless communications

Frequency sharing between FSS and BSS satellites in the 17.3-18.4 GHz band	176
<i>M. Höyhtyä</i>	
A Novel Subcarrier Allocation Algorithm for Throughput Improvement of OFDMA Femtocell Networks in Suburban Areas	184
<i>A. Aliaghazadeh; M. Majidzadeh; M. Eslami</i>	
Efficiency, Robustness, and Fairness of Suboptimal RA Algorithms for MIMO-OFDMA Systems	188
<i>M. Majidzadeh; A. Aliaghazadeh; M. Eslami</i>	
Interference-Aware Time-Frequency based Spectrum Sensing for Cognitive Radio Networks	192
<i>M. Sharma; D. Dahlhaus; R. Al Halaseh; N. Mansour</i>	
Meta-Material Lens Incorporated 5.8 GHz Omni-Directional Conformal Patch Antenna for Wireless Communication	196
<i>J. Baviskar; A. Mulla; A. Shah; A. Sakhardande; A. Jeyakumar</i>	

Session D2 : Optical networking

Multi-channel data acquisition and optical transmission supported by Event Timers	203
<i>I. Bilinskis; E. Boole; A. Skageris</i>	
Free Space Optical Communications System with Helical Beams	207
<i>R. Tudor; M. Kusko; C. Kusko; M. Mihailescu</i>	
Estimation of Analog-to-time and Time-to-digital Conversion Efficiency in Analog Optical Communication System Testbed	211
<i>A. Mezerins; V. Bespal'ko</i>	
Link Misalignment for Underwater Wireless Optical Communications	215
<i>H. Zhang; Y. Dong</i>	
On Capacity of 2-by-2 Underwater Wireless Optical MIMO Channels	219
<i>Y. Dong; J. Liu; H. Zhang</i>	

Author index	223
-------------------------------	------------