# 2019 IEEE Microwave Theory and Techniques in Wireless Communications (MTTW 2019)

## Riga, Latvia
## 1 – 2 October 2019

**IEEE Catalog Number:** CFP19V25-POD
**ISBN:** 978-1-7281-4474-0

**Copyright © 2019 by the Institute of Electrical and Electronics 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 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: CFP19V25-POD
ISBN (Print-On-Demand): 978-1-7281-4474-0
ISBN (Online): 978-1-7281-4473-3

**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

# 2019 IEEE Microwave Theory and Techniques in Wireless Communications

# MTTW

Table of contents

**Chairs Welcome Message** . . . . . V

**Steering Committee** . . . . . VI

**List of Reviewers** . . . . . VII

**Technical Sponsors, Patrons, Promoters and Supporters** . . . . . IX

**Keynote Speakers** . . . . . XI

**Abstracts**

**Session A1 : Signal Processing**

Data Processing Method for Deterioration Detection During Radio Equipment Operation . . . . . 1
*O.Solomentsev, M.Zaliskyi, T.Herasymenko, Y.Petrova*

Designing Efficient Bilinear Bicomplex Orthogonal Digital Filters . . . . . 5
*Z.Valkova-Jarvis, V.Stoynov, D.Mihaylova*

Location Accuracy of Radio Emission Sources for Beamforming in Ultra-Dense Radio Networks . . . . . 9
*G.Fokin, V.Lazarev*

Time Compression in Asymmetrically Clipped OFDM for Bandwidth Efficiency . . . . . 13
*U.Choudhary, V.Janyani*

Advanced Chaos Shift Keying Based on a Modified Chua's Circuit . . . . . 17
*A.Litvinenko, A.Aboltins, D.Pikulins, A.Ahrens, F.Capligins, J.Eidaks*

**Session B1 : Antennas & Active Circuits and components**

Design and Simulation Study of Wraparound Couplers for Gyrotron Travelling Wave Amplifiers . . . . . 23
*A.Singh*

Frequency Reconfigurable Antenna Using Double Phase-Shifted Feed . . . . . 27
*J.Chafla Altamirano, D.Nicolalde Rodríguez, V.Ati Sarango, G.Herrera Tonato, D.Navarro-Méndez, H.Barba Molina*

Design of a Miniaturized Blade Antenna in V/UHF Frequencies Using Characteristic Mode Analysis . . . . . N/A
*F.Molaee-Ghaleh, K.Mohammadpour-Aghdam*

High Gain UWB Double Slot Antipodal Vivaldi Antenna Design for GPR Applications . . . . . N/A
*B.Awad, S.Karamzadeh*

Inductor-less Low-Noise CMOS Transimpedance Amplifier for OTDR Applications . . . . . 30
*A.Romanova, V.Barzdėnas*

Numerical Experiments with Open Source Programs for Antenna Design . . . . . 34
*A.Fedeli, G.Gragnani, C.Montecucco*

Wide Angle Simple Rectangular Patch Frequency Scanning Antenna in X-Band Application. . . . . N/A
*S.Karamzadeh, V.Rafiei*

**Session A2 : Sensor networks and IoT**

Adaptive Path Planning in Three-Dimensional Wireless Sensor Networks for Micro Aerial Vehicle - Assisted Localization . . . . . 39
*A.Rubina, D.Gegolli, A.Mitschele-Thiel*

BER Performance of Wireless-Powered Dual-Hop AF Relaying . . . . . 43
*M.Babaei, U.Aygölü, L.Durak-Ata*

Security Embedded Offloading Requirements for IoT-Fog Paradigm . . . . . 47
*S.Jamil, M.Khan, M.Ali*

PRoPHET Using Optimal Path Hops (PRoPHET-OPH) . . . . . N/A
*S.Sati, T.Abulifa, A.Sohoub*

**Session B2 : Passive circuits and components**

Frequency Selective Surface Using the Metamaterial Property of the U-Shaped Strip . . . . . N/A
*M.Al-Atrakchii, K.Sayidmarie, R.Abd-Alhameed*

Mechanically Tunable Coupled Resonator Waveguide Bandpass Filter . . . . . 52
*K.Ķimsis, J.Semenjako, Y.Shestopalov*

Signal Waveform Impact on Efficiency of Low Power Harvesting Devices in WSN. . . . . 57
*J.Eidaks, A.Litvinenko, A.Aboltins, D.Pikulins*

Waveforms Impact on Performance of Prefabricated Energy Harvesting Device . . . . . 62
*S.Tjukovs, A.Litvinenko, D.Pikulins, A.Aboltins, J.Eidaks*

**Session A3 : PHY techniques**

On the Error Performance of Relay-Assisted Vehicular Communication Systems . . . . . 68
*S.Koşu, S.Ata, L.Durak-Ata*

Performance Analysis of Hierarchical Decision Aided 2-Source BPSK H-MAC CSE with Feed-Back Gradient Solver for WPNC Networks . . . . . 72
*P.Hron, J.Sykora*

Scaling Laws for Simple User Selection Algorithm in MIMO Broadcast Channels . . . . . 76
*M.Khan*

**Session B3 : Microwave electronics**

Applications and Design Methods of Meander-Type Structures: A Review . . . . . 82
*D.Belova-Ploniené, V.Šlegerytė, D.Plonis, A.Katkevičius*

Microwave Devices with Graphene Layers: A Review . . . . . 87
*V.Šlegerytė, D.Belova-Ploniené, A.Katkevičius, D.Plonis*

Wideband Perfect Absorption Polarization Insensitive Reconfigurable Graphene Metasurface for THz Wireless Environment . . . . . 93
*S.Dash, C.Liaskos, I.Akyildiz, A.Pitsillides*

---

**Author index . . . . . 97**