

2019 36th National Radio Science Conference (NRSC 2019)

**Port Said, Egypt
16 – 18 April 2019**



**IEEE Catalog Number: CFP19427-POD
ISBN: 978-1-7281-0742-4**

**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:	CFP19427-POD
ISBN (Print-On-Demand):	978-1-7281-0742-4
ISBN (Online):	978-1-7281-0741-7

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

College of Engineering and Technology, AASTMT, Port Said Branch	viii
Welcome to NRSC2019 at AASTMT-Port Said	xi
NRSC2019 Conference Scope	xiii
A Concise Report on the Activities of Egypt's National URSI Committee (NRSC)	xiv
2019 36 th National Radio Science Conference (NRSC) Committees	xvii
2019 36 th National Radio Science Conference Board of Referees	xviii
Honored Egyptian Pioneers of Radio Science in NRSC2019	xix
NRSC2019 Program Summary	xxiii
NRSC2019 Technical Program	xxv

Abstracts of Keynote Speeches

KS-1 Number of Beams Extension for Butler Matrix Linear Array and Compact Two-Dimensional Planar	KS-1
KS-2 Massive MIMO for 5G	KS-2
KS-3 RF Sigma-Delta ADC: Realizing the Cognitive Radio Dream	KS-3

Abstracts of Special Session

SS-1 The Digital Transformation Challenges and Opportunities	SS-1
SS-2 ICT Does It Dominate the World Now? TheTop Tech. 2019 Trends	SS-2
SS-3 Memristors: New Innovation Trends in Future of Electronics	SS-3
SS-4 An Industrial Design Approach, Implementation, and Application Perspectives for Surveillance Radar Systems	SS-4
SS-5 Wireless Communication Channels: The Backbone of the Global Maritime Distress and Safety System	SS-5
SS-6 COMSOL Multi-Physics; A Powerful Tool for Electromagnetic Devices Modeling	SS-6
SS-7 Women in URSI	SS-7
SS-8 Fiber Optics Crucial to Future Datacom Transmission	SS-8

Commission B: Fields and Waves

B1 Synthesized-Beam Planar Antenna Array for Earth Remote Sensing Using SAR Systems <i>M. Abo El-Hassan, K. F. A. Hussein, Kamal. H. Awadalla</i>	1
B2 Shaped Beam Circularly Polarized Circular Array for SAR and Satellite Applications <i>M. Abo El-Hassan, K. F. A. Hussein, Kamal. H. Awadalla</i>	11
B3 Design of Dual-Band Coupled Resonators Using Complementary Split Ring Resonators Defected Ground Structure (CSRRs-DGS) for Wireless Power Transfer Applications <i>Mahmoud M. A. El-Negm, Hany A. Atallah, Adel B. Abdel-Rahman</i>	22
B4 Single and Multiple Beams Synthesis Using Particle Swarm Optimization and Wavelet Based Method of Moments for Different Array Geometries <i>Doaa M. Azzam, Hend Malhat, Saber Zainud-Deen</i>	28
B5 Linearly Polarized SIW Horn Antenna Integrated with MM for Gain Enhancement and Polarization Conversion <i>Noha A. Elshalaby, Mona M. Badawy, Hend A. Malhat, Saber Zainud-Deen</i>	36
B6 Circularly Polarized Reconfigurable Water Based Microstrip Antenna <i>M.M. Abdelbary, Hend Malhat, Saber Zainud-Deen</i>	44

B7	Thermally Tuneable Terahertz InSb Patch Microstrip Antenna	52
	<i>Esraa A. El-Refaay, Hend Malhat, Saber Zainud-Deen</i>	
B8	Sinusoidally Modulated Stub-Loaded Microstrip Leaky Wave Antenna	60
	<i>Basma M. Yousef, Ahmed M. Attiya, A. A. Shaalan</i>	
B9	Electronic Beam Switching Using Graphene-Based Frequency Selective Surface	68
	<i>Ahmed M. Mabrouk, Hend Malhat, Saber Zainud-Deen</i>	
B10	Dielectric Resonator Antenna Loaded with Metamaterial Polarizer for Circular Polarization	76
	<i>Mona M. Badawy, Hend Malhat, Saber Zainud-Deen</i>	
B11	Plasma Planar Helical Antenna	84
	<i>Shaymaa M. Gaber, Noha A. El-Shalaby, Saber Zainud-Deen</i>	

Commission C: Radio-Communication Systems and Signal Processing

C1	Performance of Single Carrier Cyclic Prefix Versus OFDM Over Wideband HF Ionospheric Channel	92
	<i>A. Atef. Ibrahim, Amr. M. Abdelaziz, Moaraz. M. Salah</i>	
C2	High Efficiency Modulation Technique for Visible Light Communication (VLC)	100
	<i>Amgad F. Aziz, Omar A. M. Aly, Usama S. Mohammed</i>	
C3	Assessment of Signal Strength in Indoor Optical Wireless Communications Using Diffuse Infrared Radiation	108
	<i>Hanaa. H. Qamar, K. F. A. Hussein, Mohamed. B. El-Mashade</i>	
C4	Efficient SLM Technique for PAPR Reduction in UFMC Systems	118
	<i>Sameh A. Fathy, Michael N. A. Ibrahim, Salah S. Elagooz, Hadia M. El-Hennawy</i>	
C5	Performance Enhancement of Convolution Noise Jamming Against SAR	126
	<i>Mohamed A. Ammar, Mohamed S. Abdel-Latif, Sherif A. Elgamel, Ahmed Azouz</i>	
C6	Spectral and Energy Efficiency for Massive MIMO Relaying Systems with Double Resolution ADC Receivers	135
	<i>Sahar Said, Waleed Saad, Mona Shokair, Sayed El-Araby</i>	
C7	MIMO SC-FDMA System Performance Investigation Under Realistic Channel Models	145
	<i>Mohamed Mostafa, Mohamed A. Abdelhamed, Fatma Newagy, Ismail Hafez</i>	
C8	Pilot Contamination Mitigation in Massive MIMO Systems Over Laplacian Local Scattering Spatial Correlation Channels	153
	<i>Waleed A. Ali, Wagdy R. Anis, Hamed A. Elshenawy</i>	
C9	Adaptive Soft Thresholding Based Energy Efficient Sensor Protocol for Wireless Sensor Network	163
	<i>Rania A. Ahmed, Zeinab A. Ahmed, Mohammed Abd-Elnaby, EL-Sayed M. El-Rabaie, Fathi E. Abd El-Samie</i>	
C10	Fuzzy Power Management for Internet of Things (IoT) Wireless Sensor Nodes	173
	<i>Mohamed Sherif Nabil, Mohamed Misbah ElKhatib, Ashraf Tammam</i>	
C11	Location-Based Interference Cancellation in Device-to-Device Communications in Millimeter Wave Beamforming	183
	<i>Ahmed Abdelreheem, Osama A. Omer, Hamada Esmail, Usama S. Mohamed</i>	

C12	Error Performance and Interference Avoidance Techniques for Cooperative Relay in Underlay D2D networks	190
	<i>Rna Ghallab, Mona Shokair, Ali Sakr, Atef A. El-Azam</i>	
C13	Emotion Recognition via Detrended Fluctuation Analysis and Fractal Dimensions	200
	<i>Mona M. El-Amir, Walid Al-Atabany, Mohamed A. Eldosoky</i>	
C14	A New Approach for Crowd Counting and Individuals Detection Using Thermal Video	N/A
	<i>Asmaa S. Hassaan, Mohamed M. Dessouky, Ayman El-Sayed</i>	
C15	Efficient Land Cover Classification Techniques of Fully-Polarimetric SAR Images	217
	<i>NH. Hamada, K. F. A. Hussein, A. A. Shaalan</i>	
C16	Ultrasound Speckle Noise Reduction Based on Motion Compounding Using Optimized Adaptive Rood Pattern Search	227
	<i>Ahmed F. Elnokrashy</i>	
C17	Backhaul Overhead Traffic Reduction in Dense MmWave Heterogeneous Networks Towards 5G Cellular Systems	234
	<i>Ahmed S. Mubarak, Osama A. Omer, Hamada Esmail, Usama S. Mohamed</i>	
C18	Proportional Traffic Splitting for Efficient LTE-WLAN Aggregation in Multi-RAT Heterogeneous Networks	242
	<i>Ahmed I. Abdulshakoor, Mahmoud M. Elmesalawy, Gamal A. Khalaf</i>	
C19	Optimal Downlink Resource Allocation for Joint Transmission CoMP-Enabled NOMA Networks: A Benchmark Implementation	249
	<i>Mohamad K. Awad, Mohammed W. Baidas, Ahmad A. El-Amine</i>	
C20	Compact Spread Spectrum LDACS Wavelet Based for DME Interference Mitigation	259
	<i>Emad Abd-Elaty, Salah El-Agoz, Abd-Elhalem Zekry</i>	
C21	Cooperative Sensing Using Maximum A Posterior as a Detection Technique in Cognitive Radio Network	266
	<i>Ahmed Tohamy, Usama S. Mohammed, Taha A. Khalaf</i>	
C22	Performance Analysis of a Wirelessly Powered Cognitive Radio Communication Network	273
	<i>Haitham H. Mahmoud, Mohammed M. Abdellatif</i>	
C23	I2-Minimization Recovery Algorithm for Compressive Sensing in Cognitive Radio Networks	281
	<i>Ahmed Ebian</i>	

Commission D: Electronics and Photonics

D1	Dual-Input Single-Inductor Dual-Output Power Management Unit using Energy-Recycling/Backup and SAR-Based ZCS	289
	<i>Mohamed A. Elhakim, Hesham A. Omran, Sameh A. Ibrahim</i>	
D2	A 3.3-mW Low Phase Noise VCDL for Factorial Delay-Locked Loops	299
	<i>Abdallah K. Mohamed, Sameh A. Ibrahim, Mohy Eldin A. Abo-Elsoud</i>	
D3	Comparative Design of NMOS and PMOS Capacitor-less Low Dropout Voltage Regulators (LDOs) Suited for SoC Applications	305
	<i>Mahmoud H.Kamel, Zaynab K.Mahmoud, Salma W.Elshaeer, Rawaan Mohamed, Asmaa Hassan, Ahmed I.A.Galal</i>	

D4	A 0.35 mW 8-bit 140MS/s Asynchronous Hybrid ADC for Low Energy Radio Applications	315
	<i>Mahmoud Y. Mohamed, Emad Hegazi, Mohamed El-Nozahi</i>	
D5	Design and Implementation of Parallel Branches for Concatenated BCH and LDPC Coding on FPGA	324
	<i>Ahmed Mahdy, Mohamed Helmy, Mohamed Hassan</i>	
D6	Blocker Tolerant Sigma Delta ADC	333
	<i>Salsabeel H. Ahmed, Mohammed El-Nozahi, Mohamed Abouelatta, H.F. Ragai</i>	
D7	Ultra-High Bit Rate All-Optical Half Subtractor Based on Photonic Crystal	341
	<i>Tamer S. Mostafa, Nazmi A. Mohammed, El- Sayed M. El- Rabaie</i>	
D8	A Novel Physical Modelling of FGMOSFET Used in Circuit Simulators for Low-Power Systems and Optical Devices Applications	350
	<i>Ahmed H. Hassan, Y. Ismail, A. M. Nassar, H. Abd Elhamid, H. S. Ayoub, Y. H. Elbasha</i>	
D9	Ultra-Low Power High Sensitivity Photoplethysmography Sensor Based on Inverted Cascode Transimpedance Amplifier Using Quasi-Floating Gate	360
	<i>Hesham Ibrahim, Mohamed Atef, Elsayed Esam M.Khaled</i>	
D10	A 2.8-mW Sub-Harmonic Injection-Locked Frequency Multiplier in 130-nm CMOS for 2.4-GHz WLAN Applications	368
	<i>Mostafa A. Essawy, Khaled M. Salem, Hesham A. Omran, Sameh A. Ibrahim</i>	
D11	97 dB Dynamic Range CMOS Image Sensor Based on Diode Connected Load	378
	<i>Abeer Elsayed, Mohamed Atef, Mohamed Abdelgawad</i>	
D12	On the Detection of Volatile Organic Compounds (VOCs) Using Machine Learning and FTIR Spectroscopy for Air Quality Monitoring	386
	<i>Michael M.Y.R. Riad, Yasser M. Sabry, Daaa Khalil</i>	
D13	Charge-Steering Flip-Flop for Ultra-High-Speed Wireline Applications	393
	<i>Khaled M. Hassan, Sameh A. Ibrahim</i>	

Commission K: Electromagnetic in Biology and Medicine

K1	Evaluation of Vascular Status and Detection of Diseases Using Non-invasive Bio-impedance Analysis	402
	<i>Yomna H. Shash, Mohamed A. A. Eldosoky, Mohamed T. Elwakad</i>	
K2	The Availability to Target Different Nuclei in Ultrahigh MRI Using Dual Band RF Coil	410
	<i>Hassan M. Ahmed, Ahmed M. Soliman,</i>	
K3	Electromagnetic Sensor Using Plasmonic Different Nano Structure Array Models	417
	<i>K. H. Baz, Mohamed E. Harb, A. M. Elshaer</i>	
K4	A Dual Ring Interstitial Monopole Antenna with Spherical Heating Pattern for Hepatic Tumor Microwave Ablation	425
	<i>Mazen M. Yassin, Emad Tammam, Ahmed A. Ibrahim, Ashraf M. Said, Ahmed I. Galal</i>	