

# **2017 34th National Radio Science Conference (NRSC 2017)**

**Alexandria, Egypt  
13-16 March 2017**



**IEEE Catalog Number: CFP17427-POD  
ISBN: 978-1-5090-5536-4**

**Copyright © 2017 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:	CFP17427-POD
ISBN (Print-On-Demand):	978-1-5090-5536-4
ISBN (Online):	978-1-5090-4611-9

**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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# Contents

<a href="#"><u>College of Engineering and Technology, AASTMT, Port Said Branch</u></a> .....	<a href="#"><u>vii</u></a>
<a href="#"><u>Welcome to NRSC2016 at AASTMT-Port Said</u></a> .....	<a href="#"><u>x</u></a>
<a href="#"><u>NRSC2017 Conference Scope</u></a> .....	<a href="#"><u>xii</u></a>
<a href="#"><u>Invited Papers by Members of the NRSC Committee</u></a> .....	<a href="#"><u>xiii</u></a>
<a href="#"><u>A Concise Report on the Activities of Egypt's National URSI Committee (NRSC)</u></a> .....	<a href="#"><u>xiv</u></a>
<a href="#"><u>2017, 34<sup>th</sup> National Radio Science Conference Committees</u></a> .....	<a href="#"><u>xvii</u></a>
<a href="#"><u>2017, 34<sup>th</sup> National Radio Science Conference Board of Referees</u></a> .....	<a href="#"><u>xviii</u></a>
<a href="#"><u>Honored Egyptian Pioneers of Radio Science in NRSC2016</u></a> .....	<a href="#"><u>xix</u></a>
<a href="#"><u>NRSC2017 Program Summary</u></a> .....	<a href="#"><u>xxiii</u></a>
<a href="#"><u>NRSC2017 Technical Program</u></a> .....	<a href="#"><u>xxv</u></a>
<b><i>Abstracts of KeyNote Speeches</i></b>	
<a href="#"><u>Inv1. Overview of Some Future Trends in Antenna Research</u></a> .....	<a href="#"><u>1</u></a>
<a href="#"><u>Inv2. Recent Research Trends in Wireless Multimedia Communications</u></a> .....	<a href="#"><u>2</u></a>
<b><i>Abstracts of Invited Papers By Memebers of NRSC Committee</i></b>	
<a href="#"><u>B-Inv. Asymmetric Double-Grating-Gated Plasmonic for Terahertz Detection</u></a> .....	<a href="#"><u>3</u></a>
<a href="#"><u>C-Inv1. Optimization Algorithms: A survey</u></a> .....	<a href="#"><u>4</u></a>
<a href="#"><u>C-Inv2. Internet of Things Technologies: A Survey</u></a> .....	<a href="#"><u>5</u></a>
<a href="#"><u>D-Inv1. Nano-Sensors: Fabrication, Characterization, and Modelling</u></a> .....	<a href="#"><u>6</u></a>
<a href="#"><u>D-Inv2. MEMS Based Swept Laser Source for IR Imaging</u></a> .....	<a href="#"><u>7</u></a>
<a href="#"><u>H-Inv. WSNs for Nuclear Material Detection and Localization</u></a> .....	<a href="#"><u>8</u></a>
<b><i>Commission B: Fileds and Waves</i></b>	
<a href="#"><u>B1. A Rhombic Nanoantenna for Infrared Detection Applications</u></a> .....	<a href="#"><u>9</u></a>
<a href="#"><u>B2. Performance of Nanoantenna-Coupled Geometric Diode with Infrared Radiation</u></a> .....	<a href="#"><u>15</u></a>
<a href="#"><u>B3. Comparative Study on the Transmission Gain between on-Chip Cylindrical Dielectric Resonators Antenna and on-Chip Circular Microstrip Patch Antenna for 60-GHz Communications</u></a> .....	<a href="#"><u>22</u></a>
<a href="#"><u>B4. Low Profile Perforated Folded Transmitarray for Polarization Diversity</u></a> .....	<a href="#"><u>30</u></a>
<a href="#"><u>B5. Circularly Polarized Chamfer-shaped DRA Array</u></a> .....	<a href="#"><u>38</u></a>
<a href="#"><u>B6. Multilayer Graphene-Only Transmitarray Antenna (MGOT) For Terahertz Applications</u></a> .....	<a href="#"><u>43</u></a>
<a href="#"><u>B7. Sidelobe Reduction and Resolution Enhancement by Random Perturbations in Periodic Antenna Arrays</u></a> .....	<a href="#"><u>49</u></a>
<a href="#"><u>B8. Super Thinned Concentric Ring Arrays Using Iterative L1 Optimization</u></a> .....	<a href="#"><u>56</u></a>
<a href="#"><u>B9. Compact Cascaded Branch Line Coupler using T-Sections Conversion</u></a> .....	<a href="#"><u>64</u></a>
<a href="#"><u>B10. Generator Optimization for Thinned Fractal Hexagonal and Pentagonal Antenna Arrays Using Ant Colony Algorithm</u></a> .....	<a href="#"><u>71</u></a>
<a href="#"><u>B11. Realization OF Multi-band Antenna for WiMAX and RFID by Etching Two Interlaced Triangles from Delta Resonator</u></a> .....	<a href="#"><u>79</u></a>
<a href="#"><u>B12. Compact, Quasi Self-Complementary (QSC) Ultra-Wide Band (UWB) Antenna Integrated with Bluetooth</u></a> .....	<a href="#"><u>87</u></a>

<b>B13.</b> Controllable WLAN Band Rejection of Ultra Wideband Monopole Antenna Using PIN Diodes and Two C-Shaped Conductor.....	<a href="#">95</a>
<b>B14.</b> Wide Band Shaped Beam Array of U-slot Patches for High Resolution SAR and Satellite Communications .....	<a href="#">101</a>
<b>B15.</b> Novel On-Board Triplexer Antenna for Satellite Applications .....	<a href="#">111</a>
<b>B16.</b> RFID Tag for Railway Applications Based on Narrow-Band Absorbers.....	<a href="#">118</a>
<b>B17.</b> Quad-Band Perforated Rectangular Dielectric Resonator Antenna for Wireless Communications.....	<a href="#">124</a>
<b>B18.</b> Electromagnetic simulation for land imaging using fully polarimetric SAR system .....	<a href="#">132</a>

***Commission C: Radio-Communication Systems And Signal Processing***

<b>C1.</b> Forward – Backward Hard Thresholding Algorithm for Compressed Sensing.....	<a href="#">142</a>
<b>C2.</b> Detection of Primary User Signal in Wideband Cognitive Radio Networks Exploiting DCT as Sensing Matrix.....	<a href="#">152</a>
<b>C3.</b> Performance Analysis of Different Opportunistic Spectrum Access Based on Secondary Users Priority Using licensed Channels in Cognitive Radio Networks .....	<a href="#">160</a>
<b>C4.</b> Impact of Harvesting and Scanning Powers on Secondary User Utility in Spectrum Leasing Cognitive Radio Networks .....	<a href="#">170</a>
<b>C5.</b> Automated Testbed for Spectrum Allocation in Hostile Environment Based on USRP Cognitive Radio System .....	<a href="#">178</a>
<b>C6.</b> On Signal Reconstruction Algorithms and Speedup Opportunities .....	<a href="#">186</a>
<b>C7.</b> Design of Image Encryption Algorithm Based on Different Chaotic Mapping .....	<a href="#">197</a>
<b>C8.</b> Robust Image Hiding in Audio Based on Integer Wavelet Transform and Chaotic Maps Hopping.....	<a href="#">205</a>
<b>C9.</b> Performance Evaluation of SAR in Presence of Multiplicative Noise Jamming .....	<a href="#">213</a>
<b>C10.</b> Statistical Representation for Iris Anti-Spoofing Using Wavelet-Based Feature Extraction and Selection Algorithms .....	<a href="#">221</a>
<b>C11.</b> An Enhanced Fuzzy Logic Optimization Technique based on User Mobility for LTE Handover.....	<a href="#">230</a>
<b>C12.</b> PAPR Reduction for Downlink LTE System Based on DCT and Hyperbolic Tangent Companding Noise Cancellation.....	<a href="#">238</a>
<b>C13.</b> Performance Enhancement based Resource Allocation Scheme using Soft Frequency Reuse for LTE Femtocell Networks .....	<a href="#">246</a>
<b>C14.</b> Performance of a LTE System Employing Practical Cognitive Femtocells .....	<a href="#">256</a>
<b>C15.</b> Hybrid Precoding Performance in Downlink Mm-Wave Massive MU-MIMO Systems .....	<a href="#">265</a>
<b>C16.</b> Proposed Intermittent Cluster Head Selection Scheme for Efficient Energy Consumption in WSNs .....	<a href="#">275</a>
<b>C17.</b> Distributed Resource Allocation for D2D Communication Networks using Auction .....	<a href="#">284</a>
<b>C18.</b> Game Theoretic Utility Optimization Based Power Control on Cognitive Sensor Network .....	<a href="#">294</a>
<b>C19.</b> A New Visualization Technique to Design a Wideband LNA.....	<a href="#">301</a>
<b>C20.</b> Damping Shift Keying (Dsk): A New Modulation Space For Single Carrier Communication .....	<a href="#">309</a>
<b>C21.</b> Dithered Largest Spread Cubic Permutation Polynomial Interleavers for Turbo Codes .....	<a href="#">317</a>

C22. New Code Assignment Strategy for Optical Communication Link Using Multi-Rate MC-DS-CDMA in Time-Frequency-Wavelength (TFW) Domain Spreading .....	<a href="#">324</a>
C23. Low Complexity MIMO Detection Technique For 1-bit ADC MIMO-CEM using Adaptive Sphere Decoding.....	<a href="#">335</a>
C24. Transfer learning with long term artificial neural network memory (LTANN-MEM) and neural symbolization algorithm (NSA) for solving high dimensional multi-objective symbolic regression problems.....	<a href="#">343</a>
C25. Detection and Estimation of FHSS Signals Using Enhanced Orthogonal Matching Pursuit .....	<a href="#">353</a>
C26. Performance Evaluation of EVS Coder against the change in the Spoken Language .....	<a href="#">362</a>
C27. Complexity Reduction for GPS Acquisition Algorithms using Sparse Fourier Transform.....	<a href="#">371</a>
C28. A New Approach for Designing a Smart Glove for Arabic Sign Language Recognition System Based on the Statistical Analysis of the Sign Language.....	<a href="#">380</a>

#### ***Commission D: Electronics And Photonics***

D1. Digital N x N Multimode Interference Couplers.....	<a href="#">389</a>
D2. Simulation of FDM-Based Next Generation Passive Optical Networks .....	<a href="#">394</a>
D3. Silicon photonic mid-infrared grating coupler based on silicon-on–insulator technology.....	<a href="#">400</a>
D4. Theoretical and Experimental Analysis of the Fabrication Tolerance on Deeply Etched Silicon/Air Bragg Micromirrors.....	<a href="#">407</a>
D5. Performance Enhancement of Low-Cost MEMS Inertial Sensors Using Extensive Calibration Technique.....	<a href="#">415</a>
D6. Multimode Spot-Size Converter for Optical MEMS Applications .....	<a href="#">425</a>
D7. Distortion of Gaussian beams reflected off-axis on curved mirrors in the MEMS scale .....	<a href="#">433</a>
D8. Organic Field Effect Transistor Based on Polyaniline - Dodecylbenzene Sulphonic Acid for Humidity Sensor .....	<a href="#">440</a>

#### ***Commission H: Waves in plasmas***

H1. Development of Pileup Recovery Algorithms by Peak Detection Method of Digital Gamma Ray Spectroscopy .....	<a href="#">448</a>
H2. Noise Reduction Algorithm Based on Wavelet Transform and Its Effect on Efficient Pileup Correction Algorithms for Digital Gamma Ray Spectroscopy .....	<a href="#">455</a>

#### ***Commission K: Electromagnetic in Biology and Medicine***

K1. An Improved Planar Electrode for Dielectric Parameters Extraction .....	<a href="#">463</a>
K2. Medical Image Fusion Techniques Based on Combined Discrete Transform Domains .....	<a href="#">471</a>
K3. Compressive Sensing MRI Using Dual Tree Complex Wavelet Transform with Wavelet Tree Sparsity .....	<a href="#">481</a>

#### ***Authors Index***

[487](#)