



Program

# The 2017 34<sup>th</sup> National Radio Science Conference (NRSC)

*Organized by*

**Academy of Scientific Research and Technology  
The National Radio Science Committee (NRSC)**

and

**Arab Academy for Science, Technology and Maritime  
Transport (AASTMT)  
Port Said Campus, Port Said, Arab Republic of Egypt**

13-16 March 2017, Alexandria, Egypt

**NRSC2017 Program Summary**  
**AASTMT Abou Qir Main Campus – Alexandria**  
**Monday, March 13<sup>th</sup>, 2017**

9:00 – 10:00	<b>REGISTRATION</b>		
10:00 –11:30	<b>OPENING CEREMONY</b>		
11:30 –12:15	<b>Keynote Speech (1):</b> <b>The Progress of the Development in the Suez Canal Zone</b> <b>Gen. Kamel Al-Wazeer</b> <i>Chief, Engineering Authority,</i> <i>Egyptian Armed Forces</i> <b>Main Hall</b>		
12:15 –13:00	<b>Break</b>		
13:00 –13:45	<b>Keynote Speech (2):</b> <b>Overview of Some Future Trends in Antennas Research</b> <b>By: Prof. Yahia Antar</b> <i>Fellow IEEE and Vice President of International URSI</i> <i>Royal Military College, Canada</i> <b>Main Hall</b>		
13:45 –14:30	<b>Keynote Speech (3):</b> <b>Recent Research Trends in Wireless Multimedia Communications</b> <b>By: Prof. Said El-Khamy</b> <i>Life Fellow IEEE and President of Egypt's URSI National Radio Science Committee (NRSC)</i> <i>Faculty of Engineering, Alexandria University, Egypt</i> <b>Main Hall</b>		
14:30–15:30	<b>LUNCH</b>		
15:30–17:00	<b>Session C-1</b> <i>Cognitive Radio &amp; Compressive Sensing</i>	<b>Session B-1</b> <i>Dielectric and Nano Antennas</i>	<b>Session D-1</b> <i>Optical Devices &amp; Networks</i>
	<b>Room (A)</b>	<b>Room (B)</b>	<b>Room (C)</b>

## Tuesday, March 14th, 2017

10:00–11:30	<b>Session C-2</b> <i>Secure Communications</i>	<b>Session B-2</b> <i>Antenna Array Design</i>	<b>Session K-1</b> <i>Medical Devices &amp; Imaging</i>
	<b>Room (A)</b>	<b>Room (B)</b>	<b>Room (C)</b>
11:30 –12:00	<b>Invited Talk: C-INV1</b> <i>Prof. El Sayed Saad</i>	<b>Invited Talk: B-INV</b> <i>Prof. Ahmed Attiya</i>	<b>Invited Talk: D-INV1</b> <i>Prof. Abdelmoneim Nasser</i>
	<b>Room (A)</b>	<b>Room (B)</b>	<b>Room (C)</b>
<b>BREAK</b>			
12:30 - 14:00	<b>Session C-3</b> <i>4G Systems</i>	<b>Session B-3</b> <i>UWB Antennas</i>	<b>Session D-2</b> <i>MEMS &amp; Sensors</i>
	<b>Room (A)</b>	<b>Room (B)</b>	<b>Room (C)</b>
14:00 –14:30	<b>Invited Talk: C-INV2</b> <i>Prof. Rowayda Sadek</i>	<b>Invited Talk: H-INV</b> <i>Prof. Imbaby I. Mahmoud</i>	<b>Invited Talk: D-INV2</b> <i>Prof. Daa Khalil</i>
	<b>Room (A)</b>	<b>Room (B)</b>	<b>Room (C)</b>
14:30 -16:00	<b>Session C-4</b> <i>Wireless Networks</i>	<b>Session H-1</b> <i>Waves in Plasma &amp; Nodular Spectroscopy</i>	<b>Session C-5</b> <i>Modulation &amp; Coding</i>
	<b>Room (A)</b>	<b>Room (B)</b>	<b>Room (C)</b>
<b>LUNCH</b>			

## Wednesday, March 15th, 2017

10:00–11:30	<b>Session C-6</b> <i>Advanced Signal processing for Communications</i>	<b>Session B-4</b> <i>Antennas for Modern Communication Systems</i>	<b>Poster Session</b> <i>Student Projects</i>
	<b>Room (A)</b>	<b>Room (B)</b>	<b>Hall (2)</b>
11:30 –13:00	<b>ITU -Academia Activity Session</b>		<b>Poster Session - Student Projects</b>
	<b>Hall (1)</b>		<b>Hall (2)</b>
<b>BREAK</b>			
13:30 - 15:00	<b><i>Best Paper and Student Awards</i></b> <b>&amp;</b> <b>Closing Ceremony</b>		
	<b>Hall (1)</b>		
<b>LUNCH</b>			

## Thursday, March 16th, 2017

11:00 - 12:30	<b><i>Field Trip 1</i></b> <b>AASTMT Planetarium</b>
12:30 - 14:00	<b><i>Field Trip 2</i></b> <b>AASTMT Simulators Complex</b>
14:00 - 15:00	<b>LUNCH</b>
15:00 - 17:00	<b>Visit to The Library of Alexandria</b>

# NRSC2016 Technical Program

## INVITED KEYNOTE SPEAKERS SESSIONS

Monday, March 13<sup>rd</sup>, 2017

11:30 – 12:15

### Invited Talk I

#### Main Hall

Chair: *Prof. Ismail Abdel-Ghafar*

Inv.(1) *The Progress of the Developments in the Suez Canal Zone*  
*Gen. Kamel Al-Wazeer*  
*Chief, Engineering Authority, Egyptian Armed Forces*

13:00 – 13:45

### Invited Talk II

#### Main Hall

Chair: *Prof. Said E. El-Khamy*

Inv.(2) *Overview of Some Future Trends in Antennas Research*  
*Prof. Yahia Antar,*  
*Royal Military College of Canada, Canada*

13:45 – 14:30

### Invited Talk III

#### Main Hall

Chair: *Prof. El Sayed Mostafa*

Inv.(3) *Recent Research Trends in Wireless Multimedia Communications*  
*Prof. Dr. Said E. El-Khamy*  
*Alexandria University, Egypt*

15:30-17:00

Session C-1

**Room (A) COGNITIVE RADIO & COMPRESSIVE SENSING**

**Chair:** *Prof. Onsy Abdel Alim*

**Co-Chair:** *Prof. El-Sayed Mostafa Saad*

**C1 Forward – Backward Hard Thresholding Algorithm for Compressed Sensing**

*Wafaa A. Shalaby, Waleed Saad, Mona Shokair and Moawad I.*

**C2 Detection of Primary User Signal in Wideband Cognitive Radio Networks Exploiting DCT as Sensing Matrix**

*M. Abo-Zahhad, Sabah M. Ahmed, Mohammed Farrag, Khaled Ali*

**C3 Performance Analysis of Different Opportunistic Spectrum Access Based on Secondary Users Priority Using licensed Channels in Cognitive Radio Networks**

*Ahmed T. El-Toukhey, Abdelhady A. Ammar, Mohsen M. Tantawy, Ibrahim F. Tarrad*

**C4 Impact of Harvesting and Scanning Powers on Secondary User Utility in Spectrum Leasing Cognitive Radio Networks**

*Heba A.Tag El-Dien, Rokaia M. Zaki*

**C5 Automated Testbed for Spectrum Allocation in Hostile Environment Based on USRP Cognitive Radio System**

*Asmaa M. Saafan, Hesham M. El-Badawy*

15:30-17:00

Session B-1

**Room (B) DIELECTRIC AND NANO ANTENNAS**

**Chair:** *Prof. Hadia El-Hennawy*

**Co-Chair:** *Prof. Ahmed Attia*

**B1 A Rhombic Nano-antenna for Infrared Detection Applications**

*N. A. Eltresy, H. A. Malhat, and S. H. Zainud-Deen*

**B2 Performance of Nanoantenna-Coupled Geometric Diode with Infrared Radiation**

*H. A. El-Araby, H. A. Malhat, and S. H. Zainud-Deen.*

**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**

*S. Abdelhamied, S. H. Zainud-Deen, and H. A. Malhat*

**B4 Low Profile Perforated Folded Transmit array for Polarization Diversity**

*W. M. Hassan, H.A. Malhat, S.H. Zainud-Deen, and A.M. Attiya*

**B5 Circularly Polarized Chamfer-shaped DRA Array**

*Abdelhady M.A., Noha Al-Shalaby, S. Gaber.*

15:30-17:00

Session D-1

**Room (C) OPTICAL DEVICES & NETWORKS**

**Chair:** *Prof. Daaa Khalil*

**Co-Chair:** *Prof. Abdel Moneim Abdel Bary*

**D1 Digital N x N Multimode Interference Couplers**

*Tarek A. Ramadan*

**D2 Simulation of FDM-Based Next Generation Passive Optical Networks**

*Rodaina G. A. Gallo, Ziad A. El-Sahn, Masoud B. Alghoniemy, and*

**D3 Silicon Photonic Mid-infrared Grating Coupler Based on Silicon-insulator Technology**

*Michael Gad, Aya Zaki and Yasser M. Sabry*

**D4 Theoretical and Experimental Analysis of the Fabrication Tolerance on Deeply Etched Silicon/Air Bragg Micromirrors**

*Mohamed N. Ali, Yasser M. Sabry, Frédéric Marty, Tarek Bourouina, Daaa Khalil, Khaled A. Kirah*

Tuesday, March 14<sup>th</sup>, 2017

10:00-11:30

Session C-2

**Room (A) SECURE COMMUNICATIONS**

**Chair:** *Prof. Magdy El-Soudani*

**Co-Chair:** *Prof. Rowayda Sadek*

**C6 On Signal Reconstruction Algorithms and Speedup Opportunities**

*Manal E. Helal, Hussein Hamed Ghouz*

**C7 Design of Image Encryption Algorithm Based on Different Chaotic Mapping**

*Mohamed A. Mokhtar, Nayra M. Sadek, Amira G. Mohamed*

**C8 Robust Image Hiding in Audio Based on Integer Wavelet Transform and Chaotic Maps Hopping**

*Said E. El-Khamy, Noha O. Korany, Marwa H. El-Sherif.*

**C9 Performance Evaluation of SAR in Presence of Multiplicative Noise Jamming**

*Mohamed A. Ammar, Hossameldin A. Hassan, Mohamed S. Abdel-Latif, and Sherif A. Elgamel*

**C10 Statistical Representation for Iris Anti-Spoofing Using Wavelet-Based Feature Extraction and Selection Algorithms**

*Waleed S-A. Fathy, Hanaa S. Ali, Imbaby I. Mahmoud*

10:00-11:30

Session B-2

**Room (B) ANTENNA ARRAY DESIGN**

**Chair:** *Prof. Mohamed Aboul Dahab*

**Co-Chair:** *Prof. Essmat Abd Elfatah*

**B6 Multilayer Graphene-Only Transmit Array Antenna (MGOT) For Terahertz Applications**

*W. M. Hassan*

**B7 Sidelobe Reduction and Resolution Enhancement by Random Perturbations in Periodic Antenna Arrays**

*Tarek Sallam, Ahmed Attiya*

**B8 Super Thinned Concentric Ring Arrays Using Iterative L1 Optimization**

*Said E. El-Khamy, and Magdy A. Abdelhay*

**B9 Compact Cascaded Branch Line Coupler Using T-Sections**

*Hesham. A. Mohamed, and Ashraf S. Mohra*

**B10 Generator Optimization for Thinned Fractal Hexagonal and Pentagonal Antenna Arrays Using Ant Colony Algorithm**

*Said E. El-Khamy, Ahmed S. Eltrass, Huda Fawzy EL-Sayed*

10:00-11:30

Session K-1

**Room (C) MEDICAL DEVICES & IMAGING**

**Chair:** *Prof. Hamdy El-Mikati*

**Co-Chair:** *Prof. Khaled Shehata*

**K1 An Improved Planar Electrode for Dielectric Parameters Extraction**

*Sameh Sherif, Yehya H. Ghallab, Hamdy Abdelhamid, Ahmed Seddik,*

**K2 Medical Image Fusion Techniques Based on Combined Discrete Transform Domains**

*Heba M. El-Hoseny, El-Sayed M. El.Rabaie, Wael Abd Elrahman, and Fathi E Abd El-Samie*

**K3 Compressive Sensing MRI Using Dual Tree Complex Wavelet Transform with Wavelet Tree Sparsity**

*Mohamed Ragab, Osama A. Omer, Hany S. Hussien*

11:30 – 12:00

**INVITED TALK BY NRSC MEMBERS (1)**

**Room (A)**

**Chair:** *Prof. Magdy El-Soudani*

**C-INV1** *Optimization Algorithms: A Survey*

*Prof. El Sayed M. Saad and Shahira M. Habashy  
Helwan University, Egypt*

**Room (B)**

**Chair:** *Prof. Saber H. Zainud-Deen*

**B-INV** *Asymmetric Double-Grating-Gated Plasmonic for Terahertz*

*Prof. Ahmed M. Attiya  
Electronics Research Institute, Egypt*

**Room (C)**

**Chair:** *Prof. Daa Khalil*

**D-INV1** *Fabrication and Characterization of Nano-Sensors*

*Prof. Abdelmoneim A. Nasser, I.G. Mors, A.M. ElShaer, H. Abuklil ,  
and  
AASTMT, Egypt*

12:30-14:00

**Session C-3**

**Room (A) 4G SYSTEMS**

**Chair:** *Prof. Hesham El-Badawy*

**Co-Chair:** *Dr. Ziad A.El-Sahn*

**C11 An Enhanced Fuzzy Logic Optimization Technique Based on User Mobility for LTE Handover**

*Mohamed Saeed, Mona El-Ghoneimy, Hanan Kamal*

**C12 PAPR Reduction for Downlink LTE System Based on DCT and Hyperbolic Tangent Companding Noise Cancellation**

*Mohamed A. Aboul-Dahab, Esam A. A. Hagrass, and Ehab EL-Henawy*

**C13 Performance Enhancement Based Resource Allocation Scheme Using Soft Frequency Reuse for LTE Femtocell Networks**

*Eman S. Attia, Sami A. El-Dolil and Mohammed Abd-Elnaby*

**C14 Performance of a LTE System Employing Practical Cognitive Femtocells**

*Walid R. Ghanem , Mohamed Shalaby, Mona Shokair, and Nagy W.*

**C15 Hybrid Precoding Performance in Downlink Mm-Wave Massive MU-MIMO Systems**

*George A. Georgui, Yasmine A. Fahmy*



12:30-14:00

**Session B-3**

**Room (B) UWB ANTENNAS**

**Chair:** *Prof. Hamdy El-Mikati*

**Co-Chair:** *Prof. Saber H. Zainud-Deen*

**B11 Realization OF Multi-band Antenna for WiMAX and RFID by Etching Two Interlaced Triangles from Delta Resonator**

*Mahmoud M. A. El-Negm Yousef and Adel B. Abdel-Rahman*

**B12 Compact, Quasi Self-Complementary (QSC) Ultra-Wide Band (UWB) Antenna Integrated with Bluetooth**

*Ahmed Shaker*

**B13 Controllable WLAN Band Rejection of Ultra Wideband Monopole Antenna Using PIN Diodes and Two C-Shaped Conductor**

*Mohamed I. Ahmed, Ashraf S. Mohra*

**B14 Wide Band Shaped Beam Array of U-slot Patches for High Resolution SAR and Satellite Communications**

*M. Abo El-Hassan, K. F. A. Hussein, A. E. Farahat, K. H. Awadalla*

12:30-14:00

**Session D-2**

**Room (C) MEMES AND SENSORS**

**Chair:** *Prof. Mohamed El-Said Nasr*

**Co-Chair:** *Prof. Amr Bioumy*

**D5 Performance Enhancement of Low-Cost MEMS Inertial Sensors Using Extensive Calibration Technique**

*Abdalla Eldesoky, Ahmed .Kamel, M. Elhabiby, and Hadia Elhennawy*

**D6 Multimode Spot-Size Converter for Optical MEMS Applications**

*Abdelrahman A. Maher, Mazen Erfan, Yasser M. Sabry, and Daa Khalil*

**D7 Distortion of Gaussian Beams Reflected Off-axis on Curved Mirrors in the MEMS Scale**

*Yasser M. Sabry, Daa Khalil, and Tarik Bourouina*

**D8 Organic Field Effect Transistor Based on Polyaniline – Dodecylbenzene Sulphonic Acid for Humidity Sensor**

*Karim Amer, Shaker Ebrahim, Mohamed Feteha, Moataz Soliman, Ahmed El-Shaer*

14:00 – 14:30

**INVITED TALK BY NRSC MEMBERS (2)**

**Room (A)**

**Chair:** *Prof. Magdy El-Soudani*

**C-INV2** *Internet of Things Technologies: A Survey*

*Prof. Rowayda Sadek*

*Helwan University, Egypt*

**Room (B)**

**Chair:** *Prof. Kamal Awadalla*

**H-INV** *WSNs for Nuclear Material Detection and Localization*

*Prof. Imbaby I. Mahmoud and Asmaa A. Abd El Hamid*

*Egyptian Atomic Energy Authority, Egypt*

**Room (C)**

**Chair:** *Prof. Ahmed Attia*

**D-INV2** *MEMS Based Swept Laser Source for IR Imaging*

*Prof. Daa Khalil*

*Ain Shams Univ. and Si-War Systems, Egypt*

14:30-16:00

**Session C-4**

**Room (A) WIRELESS NETWORKS**

**Chair:** *Prof. Hesham El-Badawy*

**Co-Chair:** *Prof. Rowayda Sadek*

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**C16 Proposed Intermittent Cluster Head Selection Scheme for Efficient Energy Consumption in WSNs**

*Abd Elwahab Fawzy, Asmaa Amer, Mona Shokair, and Waleed Saad*

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**C17 Distributed Resource Allocation for D2D Communication Networks Using Auction**

*F. W. Zaki, S. Kishk, and N. H. Almofari*

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**C18 Game Theoretic Utility Optimization Based Power Control on Cognitive Sensor Network**

*A.Abdelaziz.Salem and Mona Shokair*

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**C19 A New Visualization Technique to Design a Wideband LNA**

*A.A.A. Nasser, M. R. M. Rizk, Ehab Abou-Bakr, El-Sayed A. ElBadawy, and Amr M. Mahros*

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14:30-16:00

Session H-1

**Room (B) NUCLEAR SPECTROSCOPY**

**Chair:** *Prof. Imbaby Mahmoud*

**Co-Chair:** *Dr. Hanaa Shaker*

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**H1 Development of Pileup Recovery Algorithms by Peak Detection Method of Digital Gamma Ray Spectroscopy**

*Manar M. Ouda, Mohamed S. El-Tokhy, Mohamed Amal-Eldin, Sherief Hashima, Nesreen. Ziedan, and Imbaby I. Mahmoud*

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**H2 Noise Reduction Algorithm Based on Wavelet Transform and Its Effect on Efficient Pileup Correction Algorithms for Digital Gamma Ray Spectroscopy**

*Kamel S. Gerges, Asmaa Abd EL Tawab, Galal A. M. Atlam, Imbaby I. Mahmoud, and B. A. Abozalam*

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14:30-16:00

Session C-5

**Room (C) MODULATION & CODING**

**Chair:** *Prof. Magdy El-Soudani*

**Co-Chair:** *Prof. Ihab Badran*

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**C20 Damping Shift Keying (DSK): A New Modulation Space for Single Carrier Communications**

*Mostafa Salah, Osama A. Omer, and Usama Sayed Mohammed*

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**C21 Dithered Largest Spread Cubic Permutation Polynomial Interleavers for Turbo Codes**

*Mohamed S. Omeira, Ashraf D. Elbayoumy, Gamal M. Abdel-Hamid*

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**C22 New Code Assignment Strategy for Optical Communication Link Using Multi-Rate MC-DS-CDMA in Time-Frequency-wavelength (TFW) Domain Spreading**

*Tamer A. Moniem*

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**C23 Low Complexity MIMO Detection Technique For 1-bit ADC MIMO-CEM using Adaptive Sphere Decoding**

*Doaa Abdelhameed, Hany S. Hussien, Ehab Mahmoud Mohamed*

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Wednesday, March 15<sup>th</sup>, 2017

10:00-11:30

Session C-6

**Room (A) ADVANCED SIGNAL PROCESSING FOR**

**Chair:** *El-Sayed Mostafa*

**Co-Chair:** *Prof. Maha Sharkas*

**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**

*Amr K. Deklel, Mohamed A. Saleh, Alaa M. Hamdy, Elsayed M. Saad*

**C25 Detection and Estimation of FHSS Signals Using Enhanced Orthogonal Matching Pursuit**

*Hossam A. Emam, Sameh G. Salem, Mohamed H. Megahed, Gamal M. Abdel Hamed*

**C26 Performance Evaluation of EVS Coder Against the Change in the Spoken Language**

*Christina Gamal, Michael N.Mikhael, Hala A. Mansour*

**C27 Complexity Reduction for GPS Acquisition Algorithms Using Sparse Fourier Transform**

*Samar Soliman, Fatma Newagy, Ismail Hafez*

**C28 A New Approach for Designing a Smart Glove for Arabic Sign Language Recognition System Based on the Statistical Analysis of the Sign Language**

*Mina I. Sadek, Michael N.Mikhael, Hala A. Mansour*

10:00-11:30

Session B-4

**Room (B) ANTENNAS FOR MODERN COMMUNICATION SYSTEMS**

**Chair:** *Prof. Mohamed Aboul Dahab*

**Co-Chair:** *Prof. Ahmed Attia*

**B15 Novel On-Board Triplexer Antenna for Satellite Applications**

*Mohamed A. H. Oweis, W. Swelam, Mohamed H. Abd El Azeem*

**B16 RFID Tag for Railway Applications Based on Narrow-Band**

*S. I. Abd El-Rahman, A.M. Attiya, W. M. Hassan, H. Mahmoud, and H. M. Abd-El Kadeer*

**B17 Quad-Band Perforated Rectangular Dielectric Resonator Antenna for Wireless Communications**

*Hend A. Malhat, and Saber H. Zainud-Deen*

**B18 Electromagnetic Simulation for Land Imaging Using Fully Polarimetric SAR System**

*Eman M.El-Desouki, Khalid F.A. Hussien, Hadia M.El-Hennawy*

10:00 – 13:00

**POSTER SESSION - STUDENT PROJECTS**

**Hall (2)**

**Chair:** *Prof. Rowayda Sadek*

**Co-Chair:** *Dr. Ziad El Sahn*

**Poster** *Poster Session – Student Projects*

11:30 – 13:00

**ITU -ACADEMIA ACTIVITY SESSION**

**Hall (2)**

**Chair:** *Prof. Hadia El-Hennawy*

**Co-Chair:** *Prof. Mohamed Aboul Dahab*

**ITU-INV** *International Telecommunication Union (ITU) Perspectives for Academia*

*Prof. Sherif Geninah*  
*ITU Team, ITU-ASRT*

13:30 – 15:00

**CLOSING CEREMONY**

**Main Hall**

**Chair:** *Prof. Said El-Khamy*

*Prof. El-Sayed Mostafa*

*Prof. Hesham El-Badawy*

**ITU-INV** *Best Paper and Student Awards & Closing Ceremony*