

Mohamed Abouelalaa Mohamed Ali

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Personal Data

- Date of Birth: January 2nd, 1988.
- Nationality: Egyptian.

Education

- **Ph.D.** of Electronics and Communications Engineering, Egypt-Japan University of Science and Technology (E-JUST), Alexandria, Egypt and in channel with E-JUST center, Faculty of Information Science and Electrical Engineering, Kyushu University, Japan, October 2018.
 - ✓ **Thesis title:** Design and Development of Rectennas for Microwave Energy Harvesting, **GPA: Excellent** (3.85/4).
- **MSc.** of Electronics and Communications Engineering, Faculty of Engineering, Cairo University, March 2014.
 - ✓ **Thesis title:** Reconfigurable Planar Antennas for Wireless Communications Applications, **GPA: Very Good** (3.3/4).
- **B.Sc.** of Electronic and Electrical Communication Engineering, Faculty of Electronic Engineering, Menofia University, May 2009.
 - ✓ Last year grade: Excellent (85.5%).
 - ✓ Final grade: very good with Honor Degree (81.21%).

Skills

- Design Tools:
 - Computer Simulation Technology (CST) Microwave Studio.
 - ANSYS high-frequency structure simulator (HFSS).
 - Advanced Design System (ADS).
 - MATLAB.
 - Altium Designer
- Experimental Work:
 - Photolithographic technique for planar printed RF circuits fabrication
 - Dry fabrication on CNC machine
 - Mask generation for RF circuit fabrications using photo plotter
 - Antenna system measurements (vector network analyzer & antenna chamber& Sampling oscilloscopes, etc.)
- Language and Other Skills:
 - Arabic (Native).
 - English (very good) (Academic IELTS Score: 6.5).
 - Conference presentation, paper writing and project reporting.

Activities and rewards

- Worked in teamwork on the Novel Planar Antennas for the Most Recent Telecommunications Applications Project supported by NTRA from 2011 to 2014.
- Attending Research Quality Course, Clarivate (ISI), 2019.
- Reviewer for:
 - ✓ IEEE Antennas and Wireless Propagation Letters
 - ✓ IEEE Transactions on Microwave Theory and Techniques
 - ✓ IEEE Transactions on Instrumentation and Measurement
 - ✓ IET Microwaves, Antennas and Propagation
 - ✓ IET Electronics Letters,
 - ✓ IET Circuits, Devices & Systems,
 - ✓ IET Power Electronics
 - ✓ IEEE Transactions on Very Large Scale Integration (VLSI)
 - ✓ Applied Computational Electromagnetics Society (ACES)
 - ✓ Journal of Emerging and Selected Topics in Power Electronics
- Member in IEEE Antennas and Propagation Society, IEEE Microwave Theory and Techniques Society, IEEE Circuits and Systems Society, IEEE Electron Devices Society.
- Awarded for the best Assistant Researcher at Electronics Research Institute, Egypt, 2018.
- Awarded for the best paper at Asian Wireless Power Transfer Workshop (AWPT), Kyoto, Japan, 2022.
- Served as TPC reviewer for WPTCE2024 (IEEE Wireless Power Technology Conference and Expo).
- Member of the editorial board of the Journal of Electrical and Electronic Engineering, 2019-till now.
- Electronics Research Institute Excellence Scientific Award – Egypt, 2023.

Professional Experience

Researcher assistant

March 7th, 2010 – May 10th, 2014

- Electronics Research institute, National Research Center Buildings, Dokki, Giza, Egypt.

Assistant researcher

May 11th, 2014 – December 2018

- Electronics Research institute, Egypt.
- PhD student at Egypt-Japan University of Science and Technology, Egypt
- Special Research Student at Kyushu University, Fukuoka, Japan

Researcher

December 2018 – May 2024

- Electronics Research institute, Cairo, Egypt.

Associate Professor

June 2024 – Now

- Electronics Research institute, Cairo, Egypt.

Postdoc. EJEP program

December 2019 – August 2020

- Kyushu University, Fukuoka, Japan.

Postdoc. JSPS Research Fellow

November 2021 – November 2023

- Kyushu University, Fukuoka, Japan.

Teaching Experience

Lecturer

- Teaching Antennas and Wave propagation course at Akhbar Elyom Academy University.
- Teaching Electronics (1), Electronics (2), Measurements and Instrumentations, Analog Electronics at Pyramids higher institute for engineering and technology.

Associate Professor

- Teaching Electromagnetic Fields course at Shoubra Faculty of Engineering, Benha University.
- Teaching Elements of Semiconductors course at Shoubra Faculty of Engineering, Benha University.
- Teaching Computer course at Faculty of Biotechnology, Badr University in Cairo (BUC).

Research interest

- Microwave planar antennas, reconfigurable antennas, beam forming and MIMO antenna arrays, energy harvesting, and wireless power transfer.

List of Publications

Journals:

- [1] B. Gyawali, **Mohamed Aboualalaa**, A. Barakat and R. K. Pokharel, "Design of Miniaturized Sub-6 GHz Rectifier With Self-Impedance Matching Technique," **IEEE Transactions on Circuits and Systems I: Regular Papers**, vol. 71, no. 7, pp. 3413-3422, July 2024.
- [2] **Mohamed Aboualalaa**, and Ramesh K. Pokharel, "Reliable Multiple Cascaded Resonators WPT System Using Stacked Split-Ring Metamaterial Passive Relays," **IEEE Transactions on Instrumentation and Measurement**, vol. 72, pp. 1-10, 2023.
- [3] **Mohamed Aboualalaa**, Hesham Mohamed, Thamer A. H. Alghamdi, and Moath Alathbah "A Pattern Reconfigurable Antenna Using Eight-Dipole Configuration for Energy Harvesting Applications," **Sensors**, 23(20):8451, 2023.
- [4] **Mohamed Aboualalaa**, and Islam Mansour, "Dual-band End-fire Four-element MIMO Antenna Array Using Split-ring Structure for mm-wave 5G Applications," **IEEE Access**, vol. 11, pp. 57383-57390, 2023.
- [5] **Mohamed Aboualalaa**, Islam Mansour, and Ramesh K. Pokharel, "Energy Harvesting Rectenna Using High-Gain Triple-Band Antenna for Powering

- Internet-of-Things (IoT) Devices in a Smart Office,” **IEEE Transactions on Instrumentation and Measurement**, vol. 72, pp. 1-12, 2023.
- [6] Islam Mansour, Marwa Mansour, **Mohamed Aboulalaa**, “Compact and efficient wideband rectifier based on π network with wide input power ranges for energy harvesting,” **AEU International Journal of Electronics and Communications**, vol. 160, p. 154516, 2023.
- [7] Marwa Mansour, Islam Mansour, and **Mohamed Aboulalaa** “Class-F power oscillator based on complementary split ring resonator for sub-6 GHz fifth generation and multistandard applications.” **International Journal of Circuit Theory and Applications** 51(4), pp. 1570-1578, 2023.
- [8] Islam Mansour, Marwa Mansour, **Mohamed Aboulalaa**, Ahmed Allam, Adel B. Abdel-Rahman, Ramesh K. Pokharel, and Mohammed Abo-Zahhad “Dual-Band VCO Using High Quality Factor Two Orthogonally Located Inductors in 0.18- μ m CMOS Technology,” **IEEE Microwave and Wireless Components Letters**, vol. 32, no. 12, pp. 1431-1434, Dec. 2022.
- [9] **Mohamed Aboulalaa**, Islam Mansour and Ramesh K. Pokharel, “Experimental Study of Effectiveness of Metasurface for Efficiency and Misalignment Enhancement of Near-Field WPT System,” **IEEE Antennas and Wireless Propagation Letters**, vol. 21, no. 10, pp. 2010-2014, Oct. 2022.
- [10] Islam Mansour, Marwa Mansour, **Mohamed Aboulalaa**, Ahmed Allam, Adel B. Abdel-Rahman, Ramesh K. Pokharel, and Mohammed Abo-Zahhad “Ku-Band Low Phase Noise VCO Using High-Quality Factor Transformer in 0.18- μ m CMOS Technology,” **IEEE Microwave and Wireless Components Letters**, vol. 32, no. 10, pp. 1207-1210, Oct. 2022.
- [11] Islam Mansour, Marwa Mansour, **Mohamed Aboulalaa**, “K-band low phase noise Class-C VCOs using DGS inductor in CMOS technology” **Microelectronics Journal**, vol. 122, 2022.
- [12] Islam Mansour, Marwa Mansour, **Mohamed Aboulalaa**, Ramesh K. Pokharel, “Design of low phase noise K-band VCO using high quality factor resonator in 0.18 μ m CMOS technology,” **International Journal of RF and Microwave Computer-Aided Engineering**, 32(4), 2022.
- [13] Islam Mansour, Marwa Mansour, **Mohamed Aboulalaa**, Ahmed Allam, Adel B. Abdel-Rahman, Ramesh K. Pokharel, and Mohammed Abo-Zahhad “A Multiband VCO Using a Switched Series Resonance for Fine Frequency Tuning Sensitivity and Phase Noise Improvement,” **IEEE Transactions on Very Large Scale Integration (VLSI) Systems**, vol. 29, no. 12, pp. 2163-2171, Dec. 2021.
- [14] **Mohamed Aboulalaa**, Islam Mansour, Adel B. Abdelrahman, Ahmed Allam, Mohamed Abo-zahhad, Hala Elsadek, and Ramesh K. Pokharel, “Dual-band CPW Rectenna for Low Input Power Energy Harvesting Applications,” **IET Circuits, Devices & Systems**, vol. 14, no. 6, pp. 892-897, Sept. 2020.
- [15] **Mohamed Aboulalaa**, Islam Mansour, Adel Barakat, Kuniaki Yoshitomi, and Ramesh K. Pokharel, “Improvement of Magnetic Field for Near Field WPT System using Two Concentric Open-Loop Spiral Resonators,” **IEEE Microwave and Wireless Components Letters (MWCL)**, vol. 30, no. 10, pp. 993-996, Aug. 2020.
- [16] Islam Mansour, **Mohamed Aboulalaa**, Ahmed Allam, Adel Bedair, Ramesh K. Pokharel, “Analysis and Implementation of High-Q CT Inductor for Compact and Wide-Tuning Range Ku-Band VCO,” **IEEE Microwave and Wireless Components Letters (MWCL)**, vol. 30, no. 8, pp. 802-805, July 2020.
- [17] **Mohamed Aboulalaa**, Islam Mansour, Hala Elsadek, Adel Bedair, Ahmed Allam, Kuniaki Yoshitomi, Ramesh K. Pokharel, “Independent Matching Dual-Band Compact Quarter-Wave Half-Slot Antenna for Millimeter-Wave Applications,” **IEEE Access**, vol. 7, pp. 130782-130790, 2019.
- [18] Islam Mansour, **Mohammed Abou Alalaa**, Ahmed Allam, Adel B. Abdel-Rahman, Mohammed Abo-Zahhad and Ramesh K. Pokharel, “Dual Band VCO based on High Quality factor Switched Interdigital Resonator for Ku band using 180 nm CMOS Technology,” **IEEE Transactions on Circuits and Systems II: Express Briefs**, vol. 65, no. 12, pp. 1874-1878, Dec. 2018.

- [19] **Mohamed Aboulalaa**, Adel B. Abdel-Rahman, Ahmed Allam, H. A. Elsadek, and R.K. Pokharel, "Design of a Dual-Band Microstrip Antenna With Enhanced Gain for Energy Harvesting Applications," **IEEE Antennas and Wireless Propagation Letters**, vol. 16, pp. 1622-1626, 2017.
- [20] **Mohamed Aboulalaa**, H. A. Elsadek, and E. A. Abdallah, "Quad reconfigurable antenna using dual-patch elements," **Microwave and Optical Technology Letters**, vol. 57, No. 12, pp. 2876-2883, Dec. 2015.
- [21] **Mohamed Aboulalaa**, H. A. Elsadek, and E. A. Abdallah, "Compact multi-band dual reconfigurable folded planar monopole antenna," **Microwave and Optical Technology Letters**, vol. 57, No. 7, pp. 1557-1565, July 2015.
- [22] **Mohamed Aboulalaa**, H. A. Elsadek, and E. A. Abdallah, "Compact multi-band frequency reconfigurable planar monopole antenna for several wireless communication applications," **Journal of Electrical Systems and Information Technology**, vol. 1, pp. 17-25, May 2014.
- [23] **Mohamed Aboulalaa**, H. A. Elsadek, E. A. Abdallah, and E. A. Hashish, "Pattern and frequency reconfigurable monopole disc antenna using PIN diodes and MEMS switches," **Microwave and Optical Technology Letters**, vol. 56, No. 1, pp. 187-195, January 2014.

Conferences (Selected):

- [24] **Mohamed Aboulalaa**, Ramesh K. Pokharel, and Takana Kaho, "Extended Embedded Depth Using Cascaded Resonators Near-field WPT System with High Efficiency for Biomedical Implants," **IEEE MTT-S International Microwave Symposium (IMS)**, San Diego, USA, June 2023.
- [25] B. Gyawali, S. K. Thapa, **M. Aboulalaa**, A. Barakat and R. K. Pokharel, "Frequency Switching Dual Power Band Rectifier with Load-Modulation Technique," **IEEE Wireless Power Technology Conference and Expo (WPTCE)**, San Diego, CA, USA, June 2023.
- [26] **Mohamed Aboulalaa**, Islam Mansour and Ramesh K. Pokharel, "Dual-band Split-ring Antenna with High-gain Endfire Radiation Characteristics for 5G mm-wave Applications," **IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting (AP-S/URSI)**, Denver, CO, USA, pp. 1050-1051, July 2022.
- [27] B. Gyawali, S. K. Thapa, **M. Aboulalaa**, A. Barakat, K. Yoshitomi and R. K. Pokharel, "Design of Self-Impedance Matching Ultra-Wideband Rectification Circuit," **Asia-Pacific Microwave Conference (APMC)**, Yokohama, Japan, pp. 671-673, 2022.
- [28] B. Gyawali, R. K. Pokharel, S. K. Thapa, **M. Aboulalaa**, A. Barakat and K. Yoshitomi, "Broadband and Compact 3-Bit Digitally-Controlled Reconfigurable Rectification Circuit," **Wireless Power Week (WPW)**, Bordeaux, France, pp. 780-783, 2022.
- [29] S. Maoqiang, X. Jiang, **M. Aboulalaa**, A. Barakat, K. Yoshitomi and R. K. Pokharel, "Study of Metamaterial on Efficiency of DGS-based MISO-WPT system," **Wireless Power Week (WPW)**, Bordeaux, France, pp. 344-348, 2022.
- [30] Y. Ikeda, X. Jiang, **M. Aboulalaa**, A. Barakat, K. Yoshitomi and R. K. Pokharel, "Stacked Metasurfaces for Misalignment Improvement of WPT System Using Spiral Resonators," **51st European Microwave Conference (EuMC)**, London, United Kingdom, pp. 257-260, 2022.
- [31] Adel B. Abdel-Rahman and **Mohamed Aboulalaa**, "Improving Isolation Between Antenna Array Elements Using Lossy Microstrip Resonators," **13th European Conference on Antennas and Propagation (EuCAP)**, Poland, 2019.
- [32] Islam Mansour, Marwa Mansour, **Mohamed Aboulalaa**, Ahmed Allam, Adel B. Abdel-Rahman, Mohammed Abo-Zahhad and Ramesh K. Pokharel, "70% Improvement in Q-Factor of Spiral Inductor and its Application in Switched K-Band VCO Using 0.18 μM CMOS Technology," **Asia-Pacific Microwave Conference (APMC)**, Japan, November 2018.
- [33] Islam Mansour, **Mohamed Aboulalaa**, Nusrat Jahan, Adel Barakat, Ramesh K. Pokharel, Ahmed Allam, Adel B. Abdel-Rahman and Mohammed Abo-Zahhad

- “Design of Multi-layers DGS Resonator for Phase Noise Improvement of K-Band VCOs in 0.18 μm CMOS Technology,” **IEEE 61st International Midwest Symposium on Circuits and Systems (MWSCAS)**, Canada, August 2018.
- [34] **Mohamed Aboualalaa**, Islam Mansour, Mohamed Mansour, Adel Bedair, Ahmed Allam, Hala Elsadek, Kuniaki Yoshitomi, Ramesh K. Pokharel, “Dual-band Rectenna Using Voltage Doubler Rectifier and Four-Section,” **IEEE MTT-S Wireless Power Transfer Conference**, Montreal, Canada, June 2018.
- [35] **Mohamed Aboualalaa**, A. B. Abdel-Rahman, A. Allam, R. K. Pokharel, K. Yoshitomi and H. Elsadek, “Compact 24GHz half-slot antenna for energy combining,” **International Applied Computational Electromagnetics Society Symposium (ACES)**, Denver, CO, USA, pp. 1-2, March 2018.
- [36] **Mohamed Aboualalaa**, Adel B. Abdel-Rahman, Ahmed Allam, H. A. Elsadek, and R.K. Pokharel, “Compact Coplanar Stripline-Fed Folded Strip Dipole Antenna for Millimeter Energy Combining,” **IEEE 17th Annual Wireless and Microwave Technology Conference (WAMICON)**, April 2016.
- [37] **Mohamed Aboualalaa**, H. A. Elsadek, and E. A. Abdallah, “Effects of human head on frequency reconfigurable PIFA antenna performance and SAR calculations,” **IEEE MTT-S International Conference on Numerical Electromagnetic and Multiphysics Modeling and Optimization (NEMO)**, Ottawa, ON, Canada, pp. 1-3, 2015.
- [38] **Mohamed Aboualalaa**, H. A. Elsadek, and E. A. Abdallah, “Dual reconfigurable antenna using capacitive coupling slot and parasitic square ring,” **IEEE 25th Annual International Symposium on Personal, Indoor, and Mobile Radio Communication (PIMRC)**, Washington, DC, USA, 2014, pp. 1918-1920, September 2014.
- [39] **Mohamed Aboualalaa**, H. A. Elsadek, and E. A. Abdallah, and E. A. Hashish, “PIFA Frequency Reconfigurable Antenna,” **IEEE international symposium on antenna and propagation Society AP-S**, Tennessee, USA, July 2014.
- [40] **Mohamed Aboualalaa**, H. A. Elsadek, E. A. Abdallah, and E. A. Hashish, “Frequency reconfigurable microstrip monopole disc antenna,” **Proceedings of IEEE International Symposium of Antennas and Propagation Society (APSURSI)**, Florida, USA, July 2013.
- [41] **Mohamed Aboualalaa**, H. A. Elsadek, E. A. Abdallah, and E. A. Hashish, “Broad band microstrip disc antenna with dual reconfigurability,” **Asia-Pacific Microwave Conference (APMC)**, Kaohsiung, Taiwan, 2012.
- [42] **Mohamed Aboualalaa**, H. A. Elsadek, E. A. Abdallah, and E. A. Hashish, “Controllable pattern reconfigurable microstrip disc antenna,” **IEEE International Symposium on Antenna and Propagation Society AP-S**, Chicago, USA, July 2012.

Patents:

- [1] Electronics Research Institute, Inventors: **Mohamed Aboualalaa**, Hala Elsadek and Esmat Abdallah, “Quad Reconfigurable Antenna with Two Patches”, Patent No. 30802, June 2022.

Book chapters:

- [1] **Mohamed Aboualalaa**, H. Elsadek, R. K. Pokharel, Chapter Title: WPT, recent techniques for improving system efficiency, Book Title: Wireless Power Transfer–Recent Development, Applications and New Perspectives. InTech Open Science, ISBN 978-1-83968-802-7, 2021.
- [2] **Mohamed Aboualalaa**, H. Elsadek, Chapter Title: Rectenna Systems for RF Energy Harvesting and Wireless Power Transfer, Book Title: Recent Wireless Power Transfer Technologies. InTech Open Science, ISBN 978-1-83880-222-6, 2019.