Nafati Aboserwal
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OBJECTIVE: seek a challenging position as Antenna Design Engineer, IC Package Design, or Packaging Development/Engineering. Obtaining this position will help me develop my future career in Electrical Engineering and will allow me to utilize my academic and professional skills.

CURRENT RESEARCH EXPERIENCE (University of Oklahoma, Norman, OK)

Postdoctoral Researcher, Department of Electrical and Computer Engineering, Advance Radar Research center (ARRC), January 2015 - present

SUMMARY

Good knowledge in Electromagnetics, Antennas, and RF/Microwave Systems; hardworking, collaborative team player, and eager to contribute to the industry after the intensive accumulation of theoretical concepts specializing in Antennas design (dipoles, monopoles, circular antennas, arrays, and patch antennas), and Microwave Circuits design (Couplers, Filters, Dividers); using Ansoft HFSS, ADS, and Matlab.

EDUCATION

- **Ph.D. Degree; Electrical Engineering, 2014**, GPA: 3.92/4
  Arizona State University, Tempe, USA
- **M.S. Degree; Electrical Engineering, 2012**, GPA: 4.00/4
  Arizona State University, Tempe, USA
- **B.S. Degree; Electrical Engineering, 2002**, GPA: 79/100
  Al Mergheb University, Al kohms, Libya

RESEARCH EXPERIENCE

Advanced Radar Research Center (ARRC) at University of Oklahoma, Norman OK, 01/15 – present
Postdoctoral Researcher
Research interest: Active high performance phased array antennas for weather radar, edge diffractions and discontinuities impact on the array performance, high performance micro-strip antenna elements with low cross-polarization, and dual-polarized, higher modes and surface waves characteristics of printed antennas, edge diffractions characterization using GO/UTD, radiation patterns characterization of the OERWG probe, horn antenna with low cross polarization and adjustable beam width for reflectarray antenna application, ground reflections effect.

Advanced Helicopter Electromagnetics (AHE) program Arizona State University, Tempe AZ, 01/10-12/14
Graduate Research Assistant
Research interest: Gain and loss factor for conical horns and impact of ground plane edge diffractions on radiation patterns of uncoated and coated circular aperture antennas.

- Programmed a Matlab code for calculating the edge diffraction contributions of conical horn and aperture antennas which are in free space or mounted on perfectly conducting ground planes.
- Programmed a Matlab code for calculating the impedance wedge diffraction contributions of aperture antennas mounted on coated perfectly conducting ground planes.
- More accurate loss factors, to account for amplitude and phase tapering over the conical horn aperture, are derived which improve the prediction of the conical horn gain.
- New formulas for the design of optimum gain conical Horns, based on the more accurate spherical aperture phase distribution, are derived.
- Exact closed-form solution is obtained to evaluate a known integral representation of the Maliuzhinets function using the *tanh-sinh quadrature* rule.

- Microwave Attenuation and Cross Polarization Due to Dust Storms, Abo-Njeem region (Libya)
- Modeled and simulated antennas with HFSS (Conical and pyramidal Horn Antennas, Circular and Rectangular aperture antennas, Biconical Antenna, Parabolic reflector antenna, Dipole Antennas).

TEACHING EXPERIENCE (Al Mergheb University, Fall 2003-Spring 2008)

- Circuits I /II
- Antenna
- Electromagnetic I/II
- Electronic Circuits
- Communication Circuits
- Digital Circuits

SKILLS

- Antennas design using Ansoft HFSS (High Frequency Structure Simulator) such as Dipoles, Monopoles, Circular Antennas, Patch Antennas, Arrays, and FSS (Frequency Selective Services) applications.
- RF/Microwave Circuits design using ADS (Advanced Design System) such as design of passive components (Couplers, Directional Couplers, Filters, Phase Shifter Dividers, Resonators, and Transformers).
- Working with RF/Microwave Instruments such as Signal Generator, Power Meter, and Spectrum Analyzer.
- Measuring S-parameters of RF/Microwave devices using VNA (Vector Network Analyzer).
- Fast Computational Modeling using Matlab such as MoM (Method of Moment) and FDTD (Finite Difference Time Domain).
- Good experience of using NSI spherical combined near/far field chamber and NSI 2000 software.
- Good experience of using VNA (Vector Network Analyzer).

ACADEMIC SUBJECTS

- Antenna theory covering design of most popular and practical currently used by many applications.
- Microwave Circuit Design covering design of RF/Microwave devices and Transmission lines.
- Advanced Engineering Electromagnetic covering in depth Electromagnetic theorems and principles.

PUBLICATIONS

JOURNAL PAPERS

- N. **Aboserwal**, C. A. Balanis and C. R. Birtcher, "Coated Ground Plane Edge Diffractions and Amplitude Patterns of Circular Apertures, "IEEE Antenna and Wireless Propagation Letters", Vol. 14, PP. 221-224, 2015.
- N. **Aboserwal**, C. A. Balanis and C. R. Birtcher, "Impact of Finite Ground Plane Edge Diffractions on Radiation Patterns of Aperture Antennas, "Progress In Electromagnetics Research B.", Vol. 55, PP. 1-21, 2013.
- N. **Aboserwal**, C. A. Balanis and C. R. Birtcher, "Conical Horn: Gain and Amplitude Patterns," IEEE Trans. Antennas Propagat., Vol. 61, No. 7, PP. 3427-3433 July 2013.

CONFERENCE PAPERS

- N. **Aboserwal**, C. A. Balanis and C. R. Birtcher, "Coated Ground Plane Edge Diffractions and Amplitude Patterns of Coated Circular Apertures," 2014 IEEE Antennas and Propagation International Symposium," Memphis, TN, July 6-12, 2014.
- N. **Aboserwal** and C. A. Balanis, "Closed-Form Expression of the Maliuzhinets Function Using Tanh-Sinh Quadrature Rule," 2014 IEEE Antennas and Propagation International Symposium," Memphis, TN, July 6-12, 2014.
- N. **Aboserwal**, C. A. Balanis and C. R. Birtcher, "Amplitude Patterns of Aperture Antennas Mounted on Circular and Square Ground Planes," 2013 IEEE Antennas and Propagation International Symposium," Orlando, FL, July 7-13, 2013.
- N. **Aboserwal**, C. A. Balanis and C. R. Birtcher, "Improved Gain and Loss Factor Formulas for a Conical Horn," 2013 IEEE Antennas and Propagation International Symposium," Orlando, FL, July 7-13, 2013.

RELEVANT COURSE WORK

EEE 541: Electromagnetic Fields/Guided Waves- Arizona State University- by **C. A. Balanis**

Polarization and magnetization; dielectric, conducting, anisotropic, and semiconducting media, duality, uniqueness and image theory; plane wave functions, waveguides, resonators, and surface guided waves.

EEE 543: Antenna Analysis and Design - Arizona State University- by **C. A. Balanis**

Antenna synthesis and continuous sources, impedances, broadband antennas, frequency independent antennas, miniaturization, aperture antennas, horns, reflectors, and measurement techniques.

EEE 641: Advanced Electromagnet Field Theory- Arizona State University- by **C. A. Balanis**

Cylindrical wave functions, waveguides and resonators; spherical wave functions and resonators; scattering from planar, cylindrical and spherical surfaces; Green's functions.

EEE 643: Advanced Topics in Electromagnetic Radiation, Scattering and Communication- Arizona State University- by **C. A. Balanis**

High-frequency asymptotic techniques: Modal Solutions (MS), Geometrical Optics (GO), Physical Optics (PO), Geometrical Theory of Diffraction (GTD), Physical Theory of Diffraction (PTD), Radar Cross Section (RCS), Radiation and Scattering from Complex Structures.

EEE 545: Microwave Circuit Design - Arizona State University – by **James Aberle**

Analyzed and designed RF filters comprised of lumped and distributed elements with ADS.

EEE 506: Computational Methods- Arizona State University – by **Bruno Walfert**

Covers interpolation, solution of nonlinear equations and systems, numerical differentiation, numerical integration, numerical solution of ordinary and partial differential equations.

EEE540 Fast Computational Electromagnetics- Arizona State University – by **George Pan**

Method of moments, finite difference time-domain, and finite element methods implemented using fast algorithms (wavelets, FMM, Nystrom) to gain high efficiency.

EEE 547: Microwave Solid State Circuit Design I - Arizona State University – by **James Aberle**

Analyzed and designed RF amplifiers, oscillators and mixers with ADS.

- Designed the LNA to achieve over the frequency range of 5650 to 5925 MHz, a noise figure that is less than 0.7 dB, and 13.0 dB of transducer gain with no more than ± 0.2 dB gain ripple, using ADS.
- Designed a frequency tripler to convert a 1970 MHz sinusoidal signal at a power of 20 dBm to a 5910 MHz sinusoidal signal, using ADS

OTHER CONTRIBUTIONS IN BOOKS

- Writing Matlab codes attached with Advanced Engineering Electromagnetics book, 2nd edition [C. A. Balanis]
- Part of my dissertation is included in the Antenna Theory: Analysis and Design book, 4th Edition [C. A. Balanis]

ACADEMIC HONOR AND AWARDS

- Libyan government scholarship award to study aboard (2008).
- Ranked first in 2002 class (B.Sc. degree).