

Faculty C.V.

1. Name and date of birth

Ali Bostani
31-07-1982

2. Academic Rank (*State whether full-time or part-time, and if part-time indicate non-academic activities and percentage of time devoted to them.*)

Full time assistant professor

3. Degrees (*Include fields, institution, and dates.*)

Ph.D. Electrical Engineering, McGill University, Montreal, Canada, Sep. 2008 – May.2012

Thesis topic:

Finite element analysis of evanescent mode of 3D periodic structures

M.Sc. Telecommunications, University of Quebec, EMT-INRS, Canada, 2007 - 2008

Thesis topic:

Design and fabrication of reconfigurable EBG Antenna.

B.Sc. Electrical Engineering, Shahid Beheshti University, Tehran Iran, 2000- 2005

4. Service at this Institution (*Number of years of service on this faculty, including date of appointment and dates of advancement in rank.*)

4 years at AUK, Appointed on January 6th, 2019.

5. **Professional Experience** (*Related experience in other institutions: include locations and dates.*)

Assistant Professor (College of Engineering and Applied Sciences)

AUK

2019-Present

Instructed over 1000 students in 10 different courses including instrumentation and measurement, Microelectronics, Signals and Systems, Antennas and Propagation, Digital design, Entrepreneurship I, Entrepreneurship II, Power Electronics, Engineering Ethics and Electromagnetics.

Supervised over 80 capstone students.

Assistant/ Associate Professor (Electrical Engineering Department)

AUM

2015-2018

Instructed over 1000 students in several courses several courses in Electrical and Computer Engineering department such as Linear Circuits I, Linear Circuits II, Electric and Magnetic Fields and Innovation and technologies.

Supervised 16 Senior project students.

Published several Journal and conference papers.

Member of the lab committee.

R&D Research Scientist (RF/Microwave specialist, Antenna Design)

SCP Science, Montreal, Canada

2012-2015

Designing high power, wideband antennas for Novawave microwave heating acid digestion system.

Designing a reflectometer using a dual bi-directional short section coupler to be used for measuring the reflected power from the Novawave applicators.

Designing a cylindrical microwave cavity for dielectric heating with a an axisymmetric E-field distribution.

Designing different RF traps to avoid microwave leakage from the Novawave microwave acid digestion system.

Senior Application Engineer (RF Specialist / FE Software developer)

EMWorks INC, Montreal, canada.

2011-2012

Giving consultation to Microwave companies for modeling and simulating their different high frequency applications.

Developing new features in the high frequency FE solver such as parametric study, optimization and adaptive meshing.

Antenna designing using the 3D high frequency simulation software, HFWorks.

FE Software Developer

McGill university ***(Montreal, Canada)***

2008– 2011

Developing a finite element (FE) code to characterize the RF passive components. The code features a novel technique that can analyze the evanescent mode of the periodic structures for the first time.

Reducing the computational cost of solving eigenvalue problems related to electromagnetic bandgap structures (EBG) analysis by two orders of magnitude.

Applying Model Order Reduction (MOR) in FE analysis of passband and stopband characteristics of periodic structures. This resulted in the computational complexity reduction for one order of magnitude.

Antenna Design Engineer

INRS-EMT ***(Montreal, Canada)***

2007-2008

Designing and fabricating a reconfigurable EBG antenna with the ability of beam scanning in azimuth plane.

Designing and analyzing an ultra wideband antenna with band rejection in wireless LAN frequencies to avoid interference.

Teaching Assistant

McGill University ***(Montreal, Canada)***

2008–2011

Several Course for under graduate of Electrical and Computer engineering including:

Electromagnetics
Fields and Waves Microelectronics

6. Consulting Experience

Microwavesoft
Founder,

2010-present

7. Professional Registration (State(s) in which registered.)

8. Publications Principal publication of last five years (give titles and references)

a) Refereed Journals.

Verma, P., Katal, N., Sharma, B., Chowdhury, S., Mehbodniya, A., Webber, J. L., & Bostani, A. (2022). Voltage Rise Mitigation in PV Rich LV Distribution Networks Using DC/DC Converter Level Active Power Curtailment Method. *Energies*, 15(16), 5901. 2022

Bostani, A. (2022) Design, Simulation and Fabrication of a U-Shaped Antenna Having Defected Ground For Wide Band Applications. Canadian Journal of IoT, and Smart Engineering Technologies (CJITSET) 2 (1), 5-9. 2022

Nakhaei-Kohani, R., Atashrouz, S., Hadavimoghaddam, F., Bostani, A., Hemmati-Sarapardeh, A., & Mohaddespour, A. (2022). Solubility of gaseous hydrocarbons in ionic liquids using equations of state and machine learning approaches. *Scientific Reports*, 12(1), 1-26. 2022

Sadabadi, H., Bostani, A., & Esmacili, A. S. Reconfigurable Modular Platform for Prolonged Sensing of Toxic Gases in Particle Polluted Environments. *Chemosensors Journal*, 9(11), 328. 2021

Nour, A. A., Bostani, A., & Awadhwai, G. A Tapered Fork-Shaped Antenna With Small Ground Plane for UWB Applications. International Journal of Interdisciplinary Telecommunications and Networking (IJITN), 13(1), 13-24, 2021.

Mohammad Ghannadian Mohammad Ali Seyedi Sharbiyani , Ali Bostani , Reza Dashti ,

Ali Reza Kamali " Impact Investigation on Each Method of Removing Load Imbalance in Distribution Networks" TEST Engineering & Management, Vol. 82, Pages 15487-15493, 2020.

Moghim, Seyed Morteza, Ali Bostani, and Abolfazl Elahimanesh. "Investigation of Power Networks and their Patterns by Mathematical methods in order to Voltage Stability Enhancement." *Journal of Physics: Conference Series*. Vol. 1391. No. 1. IOP Publishing, 2019.

Moghim, Seyed Morteza, Ali Bostani, Abolfazl Elahimanesh, and Sami Assad. "COMPARISON OF TWO STANDARD POWER NETWORKS FOR GENERATION AND LOAD PATTERNS IN POWER SYSTEM.", *The Science International Journal*, Vol. 31, Issue 3, Page 379-388, 2019.

A. Bostani , Seyed Morteza Moghim, Reza Dashti, & Seyed Mostafa Hashemi. "The Role of Preventive Major Maintenance in the Costs of Electric Energy Distribution Companies." *Indian Journal of Science and Technology* [Online], 11.19 (2018): n. pag. Web. 27 Jun. 2018

A. Bostani, "Design, Finite Element Analysis and Implementing a Reconfigurable Antenna with Beam Switching Operating at ISM Band", *Progress In Electromagnetics Research*, vol. 65, Issue. 1 pp. 69–73, 2017

A. Bostani, J.P. Webb, "Efficient Finite Element Eigen-analysis of 3D Periodic Structures over a Frequency Band", *IEEE Transactions on Microwave Theory and Techniques*, vol. 60, Issue. 9 pp. 2677–2683, 2012.

A. Bostani, J.P. Webb, "A sparse finite element method for modeling evanescent modes in the stopband of periodic structures", *IEEE Transactions on Magnetics*, vol. 47, no. 5 pp. 1186–1189, 2011.

A. Bostani, M. Jemai, A. B. Kouki , and A. Khebir, "Efficient Design and Analysis of an Ultra Wideband Planar Antenna with band rejection in WLAN Frequencies", *Antennas online journal*, Spring 2012.

M. A. Habib, A. Bostani, A. Djaiz, M. Nedil, M. C. E. Yagoub, and T. A. Denidni, "Ultra Wideband CPW-fed Aperture Antenna with WLAN Band Rejection", *Progress In Electromagnetics Research Journal*, vol. 106, pp.17-31, 2010.

b) Conferences

Sadabadi, H., Bostani, A., & Esmaeili, A. (2021). "3D Microwave Integrated Absorption Module for Toxic Gas Detection", *6th International Conference on Microfluidics*, March 26-27, 2021 at Las Vegas, USA.

H Sadabadi, A Bostani, A Esmaeili, "Detection of Toxic Gas in Dust-filled Environment Using Integrated Microwave-microfluidics", *3rd International Conference on Microelectronic Devices and Technologies (MicDAT '2020)* 21-23 October 2020

Girish Awadhwal , Ali Bostani, "Dual-Band CPW-Feed Antenna for WLAN/WIMAX Applications", *IEEE International Conference on Computational Electromagnetics (ICCEM)*, Singapore, 2020.

Girish Awadhwal , Ali Bostani, “Two Port CPW Feed MIMO Antenna with Very Low Mutual Coupling for WLAN (5.5GHz) Applications”, IEEE International Conference on Computational Electromagnetics (ICCEM), Singapore,2020.

Ali Bostani, G. Awadhwal, “A Circular Symmetric UWB Antenna for enhancement of underground communications in Smart Cities”, 3rd Smart Cities Symposium, Bahrain ,2020.

Girish Awadhwal , Ali Bostani, “Dual-Band Slotted Ground Antenna Having Parasitic Elements for WIMAX Applications ”, IEEE International Conference on Computational Electromagnetics (ICCEM), Singapore,2020.

Girish Awadhwal , Ali Bostani, “Two Port Meandered Shape Patch MIMO Antenna for WIMAX (3.5GHz) Applications ”, IEEE International Conference on Computational Electromagnetics (ICCEM), Singapore,2020.

Girish Awadhwal, Amro A Nour, Ali Bostani, “A low profile dual band wideband patch antenna”, Numerical Electromagnetic and Multiphysics Modeling and Optimization for RF, Microwave, and Terahertz Applications (NEMO), 2017 IEEE MTT-S International Conference on.

Amro A Nour, Ali Bostani, “An electromagnetic band gap structure to stop the leakage from microwave cavities”, Numerical Electromagnetic and Multiphysics Modeling and Optimization for RF, Microwave, and Terahertz Applications (NEMO), 2017 IEEE MTT-S International Conference on.

Mansour, I.; AlKhashan, A.; Bostani, A.; Nour, A.: 'Design and Fabrication of a Dual Band Low Profile Antenna for Smart Tracking in Oil Fields', IET Conference Proceedings, 2018, p. 38 (6 pp.)38 (6 pp.).2018.
IET Digital Library, <https://digital-library.theiet.org/content/conferences/10.1049/cp.2018.1406>

A. Bostani, “Design, Finite Element Analysis and Fabrication of a 3D Periodic Structure to Read the Temperature of the Objects in Microwave Cavities”, International Workshop on Finite Elements for Microwave Engineering, Italy, 2016.

A. Bostani, J.P. Webb “A Model-Order Reduction Method for the Passband and Stopband Characteristics of Periodic Structures”, presented at the *IEEE European Microwave Conference*, Manchester, UK, 2011.

A. Bostani, J.P. Webb “A sparse finite element method for modeling evanescent modes in the stopband of periodic structures”, *IEEE Biennial Conference on Electromagnetic Field Computation*, Chicago, USA, 2010.

A. Bostani, T.A. Denidni "Design and fabricate an EBG reconfigurable Antenna with Beam scanning", *IEEE International Symposium on Antennas and Propagation*, South Carolina, USA, 2009.

A. Bostani, T.A. Denidni "Design of a New Ultra Wideband Antenna with Band Rejection in WLAN frequencies", *IEEE International Symposium on Antennas and Propagation*, San Diego, USA, 2008.

A. Bostani, A. Vakili, T.A. Denidni "A Novel Method to Measure and Correct the Odometry Errors in Mobile Robots", *IEEE CCECE*, Niagara Falls, 2008.

c) Books

Awadhwal G., Bostani A. (2018), "Microstrip Feed Slotted Ground Antenna with Parasitic Element for UWB Applications". In: Suparta W., Abdullah M., Ismail M. (eds) *Space Science and Communication for Sustainability*. Springer, Singapore, 2018

9. Membership in Professional Societies

IEEE

Senior member

since 2008

10. Patents, Honors and awards

" **System and method for uniform microwave heating** ", Granted US patent number: 14/579,305, 2014

"**RF Shielded Textiles**", Published US patent number: 62022324, 2015

11. Courses taught

a) Academic Courses

#	Course Title/Code	Credit Hours	Contact hours	Semester/ Year	University/ College	Enrollment
1	Entrepreneurship (ENGR210)	3	3	Fall 2021	AUK	71
2	Engineering Ethics (ENGR300)	3	3	Fall 2021	AUK	37

3	Power Electronics (ELEG 471)	3	3	Fall 2021	AUK	36
4	Electromagnetics (ELEG300)	3	3	Summer 2021	AUK	37
5	Instrumentation and Measurement- (ELEG323)	3	3	Summer 2021	AUK	74
6	Entrepreneurship (ENGR210)	3	3	Spring 2021	AUK	38
7	Digital Design (ELEG210)	3	3	Spring 2021	AUK	36
8	Signals and Systems (ELEG320)	3	3	Spring 2021	AUK	39
9	Instrumentation and Measurement- (ELEG323)	3	3	Fall 2020	AUK	73
10	Electronics (ELEG270)	3	3	Fall 2020	AUK	37
11	Signals and Systems (ELEG320)	3	3	Fall 2020	AUK	38
12	Antennas and Propagation (ELEG 450)	3	3	Summer 2020	AUK	31
13	Electronics (ELEG270)	3	3	Spring 2020	AUK	58
14	Signals and Systems (ELEG320)	3	3	Spring 2020	AUK	87
15	Instrumentation and Measurement- (ELEG323)	3	3	Fall 2019	AUK	57
16	Electronics (ELEG270)	3	3	Fall 2019	AUK	56
17	Signals and Systems (ELEG320)	3	3	Fall 2019	AUK	29

18	Instrumentation and Measurement- (ELEG389)	3	3	Spring 2019	AUK	28
19	Electronics (ELEG270)	3	3	Spring 2019	AUK	28
20	Signals and Systems (ELEG320)	3	3	Spring 2019	AUK	28
21	Introduction to Optics (EE412)	3	3	Spring 2018	AUM	>59
22	Electric and Magnetic Fields (EE311)	3	3	Fall 2015 Spring 2016 Fall 2016 Spring 2017 Summer 2017 Fall 2017 Spring 2018	AUM	>480
23	Linear Circuit Analysis II / EECE 202	3	3	Summer 2015 Fall 2015 Spring 2016 Fall 2016 Spring 2017 Summer 2017 Fall 2017 Spring 2018 Summer 2018	AUM	>600
24	Linear Circuit Analysis I / EECE 201	3	3	Fall 2015	AUM	>60
25	ENGR132 (Innovative and Technology)	1	1	Summer 2016	AUM	>60
26	Electric and Magnetic Fields	3	3	Fall 2011 Spring 2012 Fall 2013 Spring 2013	McGill	>300
27	Fields and Waves	3	3	Fall 2012 Fall 2013	McGill	>70
28	Electronics II	3	3	Spring 2012 Spring 2013	McGill	>100

- b) Intensive professional short courses
- c) Community Service courses

12. Other Duties *(Assigned committee/ administration duties performed during the academic year with average hours per week. Indicate which carry extra compensation.)*

- a) Department
- b) College level
- Member of the research forum on the college of Engineering and Applied Sciences.
- Member of the ABET SSR team and was in charge of the appendices along with Dr. Khalid Sultan.
- In charge of the IEEE student branch
- Several independent studies in summer
- Supervised several capstone groups and helped many other groups in their prototyping
- Organized Capstone exhibition with the presence of 104 exhibitor students and over 500 visitors
- c) Institution level
- Member of the university Professional development committee
- d) Outside the institution
- Reviewer of several journals such as Microwave Theory and Technics, Antennas and Propagations, Energies and more

13. Research
Research Grants

KFAS Grant, Kuwait "Advanced Cloud-Enabled Distributed Fault Diagnosis of Smart-Grids with Applications in Health Monitoring of Photovoltaic and Virtual Power Plant" --- 2022 – Under review

KFAS Grant, Kuwait "Development of an Ultra-Sensitive Toxic Gas Sensor Using Integrated Microfluidic-Microwave Technology with Applications in Oil and Gas Industry, Project code (CN19-35EC-01)" ---- 2019-2021—Project Accomplished

NRC Grant, Canada “ Development of RF Shielded Textile”--- 2014-2015- Project Accomplished

14. Participation in Specific Programs *Specific program/ workshops in which faculty member has participated to improve teaching and professional competence during last five years.*