CURRICULUM VITAE

NAME: ALI FARAHBAKHSH

Associate Professor at Graduate University of Advanced Technology, Kerman, Iran

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FIELDS OF INTEREST

- Millimeter-waves array antenna design
- Gap waveguide technology
- Microstrip array antenna design
- Antenna measurement and anechoic chambers
- Radar systems
- Electromagnetic wave propagation
- Electromagnetic complex media
- Photonic and photonic crystal devices
- Optimization

EDUCATION

- PhD., **Iran University of Science and Technology**, Tehran, Iran, (2011-2016). GPA=17.07/20
  Thesis Title: “Design of Anechoic Chamber to Minimize the Absorber Usage”
  Supervisor: Dr. M. Khalaj-AmirHossieni, Iran University of Science and Technology, (email: khalaja@iust.ac.ir)
- M.Sc., **University of Sistan & Balouchestan** , Zahedan, Iran (Sep.2007- July.2010)**,** GPA= 17.11 / 20.
  Thesis Title: "Reduction of mutual coupling in microstrip array antenna".
  Supervisor: Dr. S. Mohana, University of Sistan & Balouchestan, (email: mohana@hamoon.usb.ac.ir)
- B.Sc., **Shahid Bahonar University**, Kerman, Iran (2003-2007), GPA = 17.01 / 20

Supervisor: Dr. S. Talebi**,** Shahid Bahonar University of Kerman, (email: siamak.talebi@uk.ac.ir)

- Diploma, Allameh-helli school (National Organization for Development of Exceptional Talents), Kerman, Iran, GPA = 18.06 / 20

TEACHING COURSES

- Scattering of electromagnetic waves
- Electromagnetic wave propagation in complex media
- Propagation of the radio waves
- Microwave 2
- Printed circuit antenna
- Radar systems
- Metamaterials
- Field and wave electromagnetics

PUBLICATIONS

Conference papers:

1. A. Farahbakhsh, D. Zarifi, M. Mrozowski, "Reconfigurable Phase Shifter Based on Groove Gap Waveguide Technology for Radar Applications", accepted in 25th International Microwave and Radar Conference, Poland, 2024.
2. D. Zarifi, A. Farahbakhsh, M. Mrozowski, "A Compact Cross-Shaped Groove Gap Waveguide-Based 3-dB Directional Coupler", accepted in 25th International Microwave and Radar Conference, Poland, 2024.
3. A Farahbakhsh, D Zarifi, AU Zaman, "Single Layer Antenna based on Gap Waveguide Technology with Dual-Circular Polarization for 60-GHz Band", 2023 17th European Conference on Antennas and Propagation, Florence, Italy, (EuCAP2023).
4. D Zarifi, A Farahbakhsh, AU Zaman, "A Dual-Circularly Polarized Gap Waveguide-Based Linear Array Antenna for 60 GHz-Band", 2023 17th European Conference on Antennas and Propagation, Florence, Italy, (EuCAP2023).
5. R. Askarzadeh, A Farahbakhsh, "Single Layer Sequential-Phased Slot Antenna Array Based On Ridge and Groove Gap Waveguide", 2023 17th European Conference on Antennas and Propagation, Florence, Italy, (EuCAP2023).
6. A Farahbakhsh, D Zarifi, AU Zaman, "A Single Layer Dual-Polarization Array Antenna Based on Parallel Plate Gap Waveguide", 2022 16th European Conference on Antennas and Propagation, Madrid, Spain, (EuCAP2022).
7. D Zarifi, A Farahbakhsh, AU Zaman, "A 60 GHz-Band 4× 4 Butler Matrix Based on Ridge Gap Waveguide", 2022 16th European Conference on Antennas and Propagation, Madrid, Spain, (EuCAP2022).
8. AJ Alazemi, A Farahbakhsh, D Zarifi, "Design of A Dual-Circularly Polarized Antenna Using Gap Waveguide Based on Contactless Sliding Mechanism", 2022 16th European Conference on Antennas and Propagation, Madrid, Spain, (EuCAP2022).
9. A. K. Khandani and A. Farahbakhsh, "Ka-Band Planar Magic-T Based on E-plane Groove Gap Waveguide for Monopulse Antenna System," 2020 14th European Conference on Antennas and Propagation (EuCAP 2020), Copenhagen, Denmark, 2020, pp. 1-3, doi: 10.23919/EuCAP48036.2020.9135782.
10. D. Zarifi, A. Farahbakhsh and A. U. Zaman, "A V-Band Low Sidelobe Cavity-Backed Slot Array Antenna Based on Gap Waveguide," 2020 14th European

Conference on Antennas and Propagation (EuCAP 2020), Copenhagen, Denmark, 2020, pp. 1-3.

11. A. Farahbakhsh, D. Zarifi and A. U. Zaman, "D-Band Slot Array Antenna Using Combined Ridge and Groove Gap Waveguide Feeding Network", *13th European Conference on Antennas and Propagation (EuCAP 2019),* Krakow, Poland, 2019.
12. D. Zarifi, A. Farahbakhsh and A. U. Zaman, "A D-Band Center-Feed Linear Slot Array Antenna Based on Gap Waveguide", *13th European Conference on Antennas and Propagation (EuCAP 2019),* Krakow, Poland, 2019.
13. A. Farahbakhsh, D. Zarifi and A. U. Zaman, "A wideband high-gain and high-efficiency slot array antenna based on groove gap waveguide", *12th European Conference on Antennas and Propagation (EuCAP 2018),* London, 2018, pp. 1-3.
14. D. Zarifi, A. Farahbakhsh and A. U. Zaman, "A V-band branch guide 3-dB coupler based on gap waveguide for use in antenna array", *12th European Conference on Antennas and Propagation (EuCAP 2018),* London, 2018, pp. 1-3.
15. M. Akbari, A. Farahbakhsh, M. Farahani, A. R. Sebak and T. A. Denidni, "A sequential-phase feed antenna subarray based on ridge gap waveguide*", 2017 IEEE International Symposium on Antennas and Propagation & USNC/URSI National Radio Science Meeting,* San Diego, CA, 2017, pp. 2125-2126.
16. A. Farahbakhsh and D. Zarifi, "Analysis and design of metallic parabolic anechoic chamber", *2017 11th European Conference on Antennas and Propagation (EUCAP 2017),* Paris, 2017, pp. 3053-3056.
17. A. Farahbakhsh, D. Zarifi and A. U. Zaman, "Ridge gap waveguide slot antenna array with 30% bandwidth for 60-GHz applications*", 2017 11th European Conference on Antennas and Propagation (EUCAP 2017),* Paris, 2017, pp. 3050-3052.
18. D. Zarifi, A. Farahbakhsh and A. U. Zaman, "A Ridge Gap Waveguide fed apperture-coupled microstrip antenna array for 60 GHz applications*", 2017 11th European Conference on Antennas and Propagation (EUCAP 2017),* Paris, 2017, pp. 953-955.
19. A. Farahbakhsh, D. Zarifi, A. U. Zaman and P. Kildal, "Corporate distribution networks for slot array antenna based on groove gap waveguide technology", *2016 10th European Conference on Antennas and Propagation (EuCAP 2016),* Davos, Switzerland, 2016, pp. 1-3.
20. D. Zarifi, A. Farahbakhsh, A. U. Zaman and P. Kildal, "A high gain ridge gap waveguide fed slot antenna array for 60 GHz applications", *2016 10th European Conference on Antennas and Propagation (EuCAP 2016),* Davos, Switzerland, 2016, pp. 1-3.
21. A. Farahbakhsh, M. Khalaj-Amirhosseini and H. Oraizi, "Ellipsoid Anechoic Chamber for Radiation Pattern Measurments", *2015 IEEE 15th Mediterranean Microwave Symposium (MMS),* Lecce, Italy, 2015.
22. A. Farahbakhsh, S. Mohanna and S. Tavakoli, "Reduction of return loss and mutual coupling in two-dimensional microstrip array antennas by using hexagonal patches", *2nd International Conference on Mechanical and Electrical Technology (ICMET),* Singapore, September 2010.
23. A.Farahbaksh, S. Mohanna and S. Tavakoli, "Reduction of mutual coupling in microstrip array antennas using concave rectangular patches", *2009 international symposium on Antennas and propagation,* Bangkok, Thailand, October 2009.
24. A. Farahbakhsh, S. Mohanna, S. Tavakoli and M. Oukati Sadegh, "New Patch Configurations to Reduce the Mutual Coupling in Microstrip Array Antennas", *Antennas and Propagation Conference,* Loughborough, England, November 2009.
25. A. Farahbakhsh, S. Tavakoli and A. Seifolhosseini, "Enhancement of genetic algorithm and ant colony optimization techniques using fuzzy systems", IEEE International Advance Computing Conference, March 2009.

Journal papers:

1. **A. Farahbakhsh**, D. Zarifi and M. Mrozowski, "Design of mmWave Broadband Rotary Joint and 360° Beam-Steering Rotenna Based on Gap Waveguide Technology," in *IEEE Transactions on Antennas and Propagation*, doi: 10.1109/TAP.2025.3552222.
2. **A. Farahbakhsh**, D. Zarifi, A. Vosoogh, C. Bencivenni and M. Mrozowski, "A Wideband 8×8 Slot Array Antenna Using Gap Waveguide MLW Coaxial Line Technology for mmWave Applications," in *IEEE Antennas and Wireless Propagation Letters*, doi: 10.1109/LAWP.2025.3552962.
3. Davood Zarifi, **Ali Farahbakhsh**, Michal Mrozowski, "An All-Metal Broadband Low SLL slot array antenna for use in 5G Sub-6 GHz networks", Scientific Reports, vol 15, no. 1, pp. 6004, 2025.
4. D. Zarifi, **A. Farahbakhsh** and M. Mrozowski, "Design and Fabrication of an Extremely Broadband Waveguide Twist Based on Gielis Curves," in *IEEE Transactions on Microwave Theory and Techniques*, doi: 10.1109/TMTT.2025.3538622.
5. Davood Zarifi, **Ali Farahbakhsh**, Michal Mrozowski, "An ultrawideband monopulse feed with slant polarization for tracking radar systems", Scientific Reports, vol 15, no. 1, pp. 3593, 2025.
6. Abdullah J Alazemi, Davood Zarifi, **Ali Farahbakhsh**, "An 8–18 GHz ultrawideband gap waveguide folded bandpass filter for radar applications", AEU-International Journal of Electronics and Communications, pp. 155692, 2025.
7. R. Askarzadeh, **A. Farahbakhsh**, D. Zarifi and A. U. Zaman, "Wideband High-Efficiency Slot Array Antenna Based on Gap Waveguide Single-Layer Feeding Network," in *IEEE Antennas and Wireless Propagation Letters*, vol. 24, no. 2, pp. 519-523, Feb. 2025.
8. **A. Farahbakhsh**, D. Zarifi and A. Uz Zaman, "D-Band High-Gain Planer Slot Array Antenna Using Gap Waveguide Technology," in *IEEE Transactions on Antennas and Propagation*, vol. 73, no. 1, pp. 594-599, Jan. 2025,
9. A. K. Khandani, **A. Farahbakhsh**, D. Zarifi and A. Uz Zaman, "Millimeter wave Wideband and Low-loss Compact Power Divider Based on Gap Waveguide: For Use in Wideband Antenna Array System," in IEEE Access, doi: 10.1109/ACCESS.2024.
10. **A. Farahbakhsh**, D. Zarifi, & M. Mrozowski, "A gap waveguide-based mechanically reconfigurable phase shifter for high-power Ku-band applications". Sci Rep 14, 17358 (2024)
11. M. Rabbanifard, D. Zarifi, **A. Farahbakhsh** and M. Mrozowski, "Design of Compact and Wideband Groove Gap Waveguide-Based Directional Couplers," in IEEE Access, vol. 12, pp. 86346-86354, 2024
12. D. Zarifi, **A. Farahbakhsh** and M. Mrozowski, "Improved Bandwidth of Microstrip Wide-Slot Antenna Using Gielis Curves," in IEEE Access, vol. 12, pp. 74777-74783, 2024
13. A. J. Alazemi, **A. Farahbakhsh** and D. Zarifi, "A Wideband Gap Waveguide-Fed 16-Element Circularly Polarized Patch Antenna Array," in *IEEE Access*, 2023.

14. A. J. Alazemi, D. Zarifi, **A. Farahbakhsh**, “A gap Waveguide-Fed Dual-Circularly polarized antenna array for K-band applicaions”, *AEU - International Journal of Electronics and Communications*, vol. 170, pp. 154855, 2023.
15. D. Zarifi, **A. Farahbakhsh** and A. U. Zaman, "A Millimeter-Wave Six-Port Junction Based on Ridge Gap Waveguide," in *IEEE Access*, vol. 11, pp. 68699-68705, 2023, doi: 10.1109/ACCESS.2023.3292448.
16. D. Zarifi, **A. Farahbakhsh** and A. U. Zaman, "A Gap Waveguide-Based D-Band Slot Array Antenna with Interdigital Feed Network," in *IEEE Transactions on Antennas and Propagation*, early access, 2023.
17. D. Zarifi, **A. Farahbakhsh** and A. U. Zaman, “Design of a dual-CP gap waveguide fed aperture array antenna”, IET Microwaves, Antennas & Propagation, early access, 2023.
18. D. Zarifi, **A. Farahbakhsh** and A. U. Zaman, “Design and development of broadband gap waveguide-based 0-dB couplers for Ka-band applications”, IET Microwaves, Antennas & Propagation, vol. 16, no. 11, pp. 718-724, 2022.
19. Alazemi, Abdullah J., **Ali Farahbakhsh**, and Davoud Zarifi, "A 12–20 GHz Wideband High-Power SP2T Switch Based on Gap Waveguide Technology" Sensors 21, no. 16: 5396, 2021.
20. Abdullah J Alazemi, Davoud Zarifi, **Ali Farahbakhsh**, “A broadband contactless gap waveguide microwave switch for X-and Ku-bands applications”, AEU-International Journal of Electronics and Communications, Volume 139, September 2021, 153929.
21. **A. Farahbakhsh**, "Wideband Rotary Joint Based on Gap Waveguide Technology," in *IEEE Transactions on Microwave Theory and Techniques*, vol. 69, no. 10, pp. 4385-4391, Oct. 2021, doi: 10.1109/TMTT.2021.3090988.
22. **A. Farahbakhsh**, "Ka-Band Coplanar Magic-T Based on Gap Waveguide Technology," in IEEE Microwave and Wireless Components Letters, vol. 30, no. 9, pp. 853-856, Sept. 2020, doi: 10.1109/LMWC.2020.3009925.
23. **A. Farahbakhsh**, D. Zarifi, “Miniaturization of patch antennas by curved edges”, AEU - International Journal of Electronics and Communications, Vol. 117, 2020.
24. D. Zarifi, **A. Farahbakhsh** and A. U. Zaman, "Design and Fabrication of Wideband Millimeter-Wave Directional Couplers With Different Coupling Factors Based on Gap Waveguide Technology," in IEEE Access, vol. 7, pp. 88822-88829, 2019.
25. **A. Farahbakhsh**, D. Zarifi and A. U. Zaman, “A mmWave Wideband Slot Array Antenna Based on Ridge Gap Waveguide with 30% Bandwidth”, *in IEEE Transactions on Antennas and Propagation*, vol. 66, no. 2, pp. 1008-1013, Feb. 2018.
26. **A. Farahbakhsh**, D. Zarifi and A. U. Zaman, “60 GHz Groove Gap Waveguide Based Wideband H-plane Power Dividers and Transitions: For Use in High Gain Slot Array Antenna”, *Transactions on Microwave Theory and Techniques*, vol. 65, no. 11, pp. 4111-4121, 2017.
27. **A. Farahbakhsh**, M. Khalaj Amirhosseini, “Using Metallic Ellipsoid Anechoic Chamber to Reduce the Absorber Usage”, *IEEE Transactions on Antennas and Propagation*, Vol. 63, No. 9, pp. 4229 – 4232, 2015.
28. M. Akbari, **A. Farahbakhsh** and A. Sebak, “Ridge Gap Waveguide Multilevel Sequential Feeding Network for High-Gain Circularly Polarized Array Antenna”, *in IEEE Transactions on Antennas and Propagation*, vol. 67, no. 1, pp. 251-259, Jan. 2019.
29. **A. Farahbakhsh** and D. Zarifi, “Design of a Metallic Parabolic Anechoic Chamber for the Compact Range Measurement,” *IET Electronic Letter*, vol. 53, no. 5, pp. 294-296, 2017.

30. D. Zarifi, **A. Farahbakhsh** and A. U. Zaman, "A Gap Waveguide-Fed Wideband Patch Antenna Array for 60-GHz Applications," *IEEE Transactions on Antenna and Propagation*, vol. 65, no. 9, September 2017.
31. Hassan Abdollahy, **Ali Farahbakhsh**, Mohammad Hossein Ostovarzadeh, "Mechanical reconfigurable phase shifter based on gap waveguide technology", AEU - International Journal of Electronics and Communications, Volume 132, April 2021, 153655.
32. **A. Farahbakhsh** and M. Khalaj-Amirhosseini, "Design of Nonuniform Metallic Anechoic Chamber for Radiation Pattern Measurement", *Progress In Electromagnetics Research M*, Vol. 58, 65-72, 2017.
33. **A. Farahbakhsh**, M. Khalaj Amirhosseini, "Analytic Method to Retrieve Antenna Free-Space Radiation Pattern Above Ground Plane", *IEEE Antennas and Wireless Propagation Letters*, Vol 14, pp. 731-734, 2015.
34. **A. Farahbakhsh**, M. Khalaj Amirhosseini, "Metallic Spherical Anechoic Chamber for Antenna Pattern Measurement", *IOP science Chinese Physics B*, Vol. 25, No. 8, 2016.
35. **A. Farahbakhsh**, D. Zarifi and A. Abdolali, "Using MATLAB to Model Inhomogeneous Media in Commercial Computational Electromagnetics Software", *Applied Computational Electromagnetics Society Journal*, Vol. 30, No. 9, 2015.
36. D. Zarifi, **A. Farahbakhsh**, A. Uz Zaman, and P.-S. Kildal, "Design and Fabrication of a High-Gain 60-GHz Corrugated Slot Antenna Array with Ridge Gap Waveguide Distribution Layer", *IEEE Transactions on Antennas and Propagation*, Vol. 64, No. 7, 2016.
37. **A. Farahbakhsh** and Gh. Moradi, "Design a low mutual coupling microstrip array antenna with non-regular polygonal patches", *IEICE Electron. Express*, Vol. 7, No. 17, pp.1271-1275, (2010) .
38. D. Zarifi, **A. Farahbakhsh** and M. Soleimani, "Evaluation of profiles of an inhomogeneous chiral slab using state transition matrix method", *Applied Physics A*, pp. 1-9, 2015.
39. Sh. Mohanna, **A. Farahbakhsh**, S. Tavakoli, and N. Ghassemi, "Reduction of Mutual Coupling and Return Loss in Microstrip Array Antennas Using Concave Rectangular Patches," *International Journal of Microwave Science and Technology*, vol. 2010, Article ID 297519, 5 pages, 2010.
40. **A. Farahbakhsh**, Gh. Moradi, Sh. Mohanna, "Reduction of mutual coupling in microstrip array antenna using polygonal defected ground structure", *Applied Computational Electromagnetics Society Journal* 26 (4), 334-339.
41. Sh. Mohana, **A. Farahbakhsh** and S. Tavakoli, "Mutual Coupling Reduction in Two-Dimensional Array of Microstrip Antennas Using Concave Rectangular Patches", *journal of telecommunication*, May 2010.
42. D. Zarifi, **A. Farahbakhsh**, A. Abdolali, M. Soleimani, "Reconstructing Constitutive Parameters of Inhomogeneous Planar Layered Chiral Media Based on the Optimization Approach", *Progress In Electromagnetics Research M* 29.
43. D. Zarifi, **A. Farahbakhsh**, A. Abdolali, M. Soleimani, "Analysis of different terminated inhomogeneous planar layered chiral media", *Journal of Electromagnetic Waves and Applications* 26 (11-12), 1658-1666.
44. **A. Farahbakhsh**, M. Mosalanejad, Gh. Moradi, Sh. Mohanna, "Using polygonal defect in ground structure to reduce mutual coupling in microstrip array antenna", *Journal of Electromagnetic Waves and Applications* 28 (2), 194-201.
45. **A. Farahbakhsh**, D.Zarifi, A. Abdolali, M. Soleimani, "Technique for inversion of an inhomogeneous bianisotropic slab through an optimisation approach", *Microwaves, Antennas & Propagation, IET* 7 (6), 436-443.
46. M. Mosalanejad, **A. Farahbakhsh**, Gh. Moradi, "Dual band microstrip antenna with non-regular polygonal patch for satellite applications", IEICE Electronics Express 9 (16), 1290-1296.

47. H. Mokhtari Torshizi, **A. Farahbakhsh**, "designing and simulating waveguide combiner 16: 1 for high power applications in frequency range of 8-12 GHz with wave transducer", International Journal of Engineering & Applied Sciences, Vol. 7, No. 1, 2015.

WORK EXPERIENCES

- **Gdansk University of Technology**, guest associate professor, Since Feb. 2024.
- **Graduate University of Advanced Technology**, associate professor, Since Sep. 2016.
- **Kerman Science and Technology Park,** head manager of incubation centers in Kerman province, April 2021 to October 2022.
- **Chalmers University of Technology, (Sweden),** visiting researcher in the Antenna group (April – September 2015, March 2016, July-August 2018).
- **Intelligent Boards Electronic Company (IBECo.),** head of R&D department, April 2007 to Sep. 2016.

HONOR AND AWARDS

- Best antenna engineer silver award from antenna group in Chalmers University of Technology, Sweden, 2015.
- Best entrepreneur award from Graduate University of Advanced Technology, Kerman, Iran, 2019.
- Best entrepreneur award from Graduate University of Advanced Technology, Kerman, Iran, 2020.
- Best researcher award from Graduate University of Advanced Technology, Kerman, Iran, 2022.

OTHER SKILLS

- **Programming Languages**: Matlab, Visual-Basic, Delphi, C++, Pascal
- **Electromagnetic Software**: CST, HFSS, FEKO, ADS, Comsol
- **Electronic Design**: DXP Altium Designer, TI (Texas Instrument) CCS, Proteus, AVR Studio, Keil
- **Language skill:** Persian (Native), English