ZEESHAN QAMAR, PH.D.

3211 Willena Rd, Melissa, TX, 75454
+1 (405) 8391259 | zeeshanqam@gmail.com
linkedin.com/in/zq-nov1086
Immigration status: US Permanent Resident

ACADEMIC QUALIFICATION

Ph.D. in Electronic Engineering, City University of Hong Kong, Kowloon, Hong Kong. **(2014-2017)**
(**CGPA:** 4.15 / 4.3, **US Equivalent GPA:** 4.00 /4.00)
Dissertation: Enhanced Components for Butler Matrix.

M.Sc. in Electrical Engineering, COMSATS University, Islamabad Pakistan. **(2011-2013)**
(**CGPA:** 3.3 / 4.0, **US Equivalent GPA:** 3.38 /4.00)
Thesis: Microstrip Phased Array Optimization using Meta-materials.

B.Sc. in Electrical (Telecommunication) Engineering, COMSATS University, Islamabad, Pakistan. **(2006-2010)**
(**CGPA:** 3.23 / 4.0, **US Equivalent GPA:** 3.23 /4.00)
Final Year Project: Planar Monopole Staircase Antenna for Ultra-Wide Band (UWB) and its 5 GHz Dual Notched Band Characteristics.

AWARDS / ACHIEVEMENTS

- 2016/17: Research Tuition Scholarship by School of Graduate Studies, City University of Hong Kong.
- 2016/17: Outstanding Academic Performance Award by School of Graduate Studies, City University of Hong Kong.
- 2015/16: Outstanding Academic Performance Award by School of Graduate Studies, City University of Hong Kong.
- 2014-2017: Postgraduate Studentship covering the studies towards the Ph.D. degree at City University of Hong Kong.
- 2011: Research Productivity Award by Department of Electrical Engineering, COMSATS University Islamabad in Pakistan-China International Business Forum.
- 2011: Awarded Honorarium for Best Performance by Department of Electrical Engineering, COMSATS University Islamabad, Pakistan.
- 2010: Winner in Category (Explore-a-Vision) of 2nd All Pakistan IEEE – GIKI ElectroniX Olympiad.

WORKING EXPERIENCE

Senior Research Associate **(15th October 2025 – Present)**
Phased Array Radar Research and Development Group, Advanced Radar Research Center, The University of Oklahoma, Norman,OK, 75454.

- Actively contributing to the development of research proposals and scholarly publications aimed at obtaining continued funding support.
- Working on a project focused on electromagnetic simulation, material modeling and characterization, antenna design, and RF system analysis to support research and development activities for sugar cane and other crop applications.
- Designing and modeling the antenna arrays and radome for the Dual-Doppler 3D Mobile Ka-band Rapid-Scanning Volume Imaging Radars (KaRVIR) for Earth System Science, ensuring optimal performance, low-loss signal transmission, and environmental durability. These state-of-the-art radars will provide unique capabilities to close critical observational gaps in the atmospheric science community.
- Serving as a mentor / advisor to Master and PhD students at the University of Oklahoma, providing guidance on advanced antenna design and RF measurement techniques.
- Expecting to be assigned to an undergraduate course (3613 - Electromagnetic Fields I) in the ECE Department at the University of Oklahoma during the spring semester.

Senior Antenna Design Engineer **(27th September 2021– 30th June 2025)**
Base Station Antenna, Outdoor Wireless Networks, ANDREW An Amphenol Company, 2601 Telecom Pkwy, Richardson, Tx, 75082.

- Designed and implemented a digital phase shifter circuit for base station phased array antennas using Menlo Microsystems' Ideal Switches, achieving precise phase control, low insertion loss, high isolation, and reliable beam steering for advanced 5G/6G wireless systems.
- Developed a meta-lens for low-band antenna arrays in base station systems, achieving improved gain, enhanced directivity, and optimized array-level performance.
- Designed mantle cloaking structures to provide electromagnetic transparency for mMIMO antenna arrays, enhancing

base station system performance.
- Designed a Luneburg lens using cylindrical 3D metamaterial structures for advanced beam-steering applications, demonstrating performance comparable to or exceeding existing solutions from competitors such as MATSING.
- Developed MATLAB code for 3D antenna radiation pattern analysis, enabling precise evaluation of base station KPIs including gain, directivity, side-lobe levels (SLL), (HPBW), 10-dB beamwidth and sector efficiency to optimize angular coverage and sector performance in base station system.
- Designed back-radiated grid structures to mitigate interference caused by Passive Intermodulation (PIM) in RF systems, enhancing signal integrity and overall system performance.
- Full-lifecycle RF design: from simulation and schematic capture to layout, fabrication, testing, and production support.
- Operated NSI spherical near-field antenna measurement systems for antenna validation up to 4 GHz, including gain, beamwidth, efficiency, sidelobe suppression, and cross-polarization analysis.
- Extensive hands-on experience with RF and microwave test equipment, including spectrum analyzers, vector network analyzers (VNAs) and RF signal generators.

Postdoctoral Research Fellow **(23rd April 2018 – 26th September 2021)**
Phased Array Radar Research and Development Group, Advanced Radar Research Center, The University of Oklahoma, Norman,OK, 75454.
- Designed, fabricated, and measured various antennas, antenna arrays and artificial dielectric structures, including Frequency Selective Surfaces (FSS).
- Performed material characterization and radome testing at microwave and millimeter-wave frequencies.
- Developed and analyzed a semiconductor substrate (like silicon) with periodic holes filled with conducting material to control the effective permittivity of the substrate for multiband phased array antenna.
- Extensive hands-on experience with RF and microwave test equipment, including spectrum analyzers, vector network analyzers (VNAs), RF signal generators, power meters, and custom-built test setups.
- Designed a Near-field and Far-field Scanner for measuring antennas in millimeter-wave frequencies.
- Designed a free-space Gaussian beam measurement setup for material characterization and radome testing in the microwave and millimeter-wave frequency range.
- Operated and calibrated NSI far-field antenna measurement systems for performance validation of antennas up to 18 GHz, including gain, efficiency, beamwidth, and cross-polarization characterization.
- Operated and calibrated NSI planar near-field antenna measurement systems for antenna validation for S-. C- and X-bands, including gain, beamwidth, efficiency, sidelobe suppression, and cross-polarization analysis.
- Hands-on experience in building antennas using both milling machine and photolithography
- Served as a mentor / advisor to Master and PhD students at the University of Oklahoma, providing guidance on advanced antenna design and RF measurement techniques.

Postdoctoral Research Associate **(20th November 2017 - 20th April 2018)**
Department of Materials Science and Engineering, City University of Hong Kong, Kowloon, Hong Kong.
- Conducted advanced research in beamforming network (Butler Matrix) focusing on novel high-performance solutions for wireless communication systems.
- Designed, fabricated, and measured RF/microwave components, including phase shifters and couplers, using semiconductor devices such as PIN diodes for switching and control, supported by full-wave EM simulations and performance validation with VNAs and spectrum analyzers.

Graduate Research and Teaching Assistant **(1st September 2014 – 1st October 2017)**
Department of Electronic Engineering, City University of Hong Kong, Kowloon, Hong Kong
- Conducted advanced research in beamforming network (Butler Matrix) focusing on novel high-performance solutions for wireless communication systems.
- Designed, fabricated, and measured RF/microwave components, including phase shifters and couplers, using semiconductor devices such as PIN diodes for switching and control, supported by full-wave EM simulations and performance validation with VNAs and spectrum analyzers.
- Published research findings in peer-reviewed IEEE journals and international conferences.
- Collaborated with multidisciplinary teams and provided mentoring to junior researchers and undergraduate students in the lab.

Research Associate Promoted to Lecturer **(19th July 2010 - 30th August 2013)**
Department of Electrical Engineering, COMSATS University, Islamabad, Pakistan.
- Designed and Fabricated various Microstrip patch antennas and Phased arrays such as Staircase Ultrawideband

antennas, Beamforming antenna using Corporate Feed Network, Fractal Multiband antennas.
- Lab demonstrator of undergraduate courses like Electronics, Microwave Engineering, Antenna Design & Radio-wave Propagation labs, where students trained to use RF equipment's such as spectrum analyzer, RF signal generators, VNAs etc.
- Developed a Photolithography Lab for PCB Fabrication, providing students with hands-on experience with the complete PCB fabrication process.
- Established an Antenna and Radio Wave Propagation Lab, guiding students from simulation to experimental evaluation. Students utilize VNAs, spectrum analyzers, and measurement setups to study impedance matching, radiation patterns, gain, and propagation effects, including multipath and free-space attenuation.
- Served as Pakistan Engineering Council (PEC) committee member for the affiliation and accreditation of engineering degrees, contributing to quality assurance and curriculum evaluation at a national level.
- Supervised Final Year Projects for undergraduate students in the Department of Electrical Engineering at COMSATS University Islamabad, providing guidance on project planning, technical design, implementation, and documentation.

COURSES / LABORATORY TAUGHT– ELECTRICAL & ELECTRONIC ENGINEERING

Courses (Total: 4):
- EEE362 – Microwave Engineering at COMSATS University, Pakistan. (Spring 2013)
- EEE463 - Antenna & Radio wave Propagation at COMSATS University, Pakistan. (Spring 2013)
- EEE261 - Electromagnetic Theory at COMSATS University, Islamabad, Pakistan. (Fall 2012)
- EEE121 - Electric Circuit Analysis I at COMSAS University, Islamabad, Pakistan. (Fall 2012)

Laboratory / Practical Sessions (Total: 6):
- EE1002 - Principles of Electrical Engineering at City University of Hong Kong. (Semester A [2015-2017])
- EE2301 - Basic Electronic Circuits at City University of Hong Kong. (Semester B [2016/17])
- EE3110 - Analogue Electronic Circuits at City University of Hong Kong. (Semester B [2015/16])
- EEE463 - Antenna & Radio wave Propagation at COMSATS University, Pakistan. (Fall [2010-2012], Spring 2011)
- EEE231 - Electronics I at COMSATS University, Islamabad, Pakistan. (Spring 2012)
- EEE232 - Electronics II at COMSATS University, Islamabad, Pakistan. (Spring 2012)

MENTORING AND ADVISING (TOTAL: 10)

- Syed S. Jehangir, PhD student at The University of Oklahoma, Norman, OK. (2019 - 2021)
- Tom Brachtenbach, MS student at The University of Oklahoma, Norman, OK. (2018 - 2020)
- Joel Love, MS student at The University of Oklahoma, Norman, OK. (2019 - 2020)
- Alex Stringer, BS student at The University Oklahoma, Norman, OK. (2020 - 2021)
- Elizabeth Joyce, BS student at The University Oklahoma, Norman, OK. (2020 - 2021)
- Khuda Burdi, BS student at The University Oklahoma, Norman, OK. (2020 - 2021)
- Muhammad Ali Babar Abbasi, BS Student at COMSATS University. Islamabad, Pakistan (2010 - 2011)
- Saleem Shahid, BS Student at COMSATS University, Islamabad, Pakistan (2010 - 2011)
- Ali Waqar Azeem, BS Student at COMSATS University, Islamabad, Pakistan (2010 - 2011)
- Hamza Nawaz, BS Student at COMSATS University, Islamabad, Pakistan (2010 - 2011)

SCIENTIFIC GRANT (TOTAL: 3)

- Jorge L. Salazar and **Z. Qamar**, Title: "Electromagnetic RF System Development and Design Support for Advanced Agricultural Applications" funded by Deere & Company, a Delaware corporation, with offices located at One John Deere Place, Moline, Illinois 61265 (Period: From 10/18/25 to 10/17/26).
- Jorge L. Salazar and **Z. Qamar**, Title: "Radio Frequency (RF) Wireless Sensor Development for Smart Roads" funded by Office of Research Administration, NP-OUORA, Prime Agency: State of Oklahoma,Department of Transportation, OK-TRAN (Period: From 02/14/20 to 02/13/21).
- M. Farhan Shafique and **Z. Qamar**, Title: Measurement of Antenna Radiation Pattern in Principle Planes" funded by Office of Research, Innovation and Commercialization (ORIC), Pakistan (Period: From 05/21/12 to 05/01/13).

TECHNICAL PAPER REVIEWER

- Reviewer of Journal IEEE Access.
- Reviewer of Electronics, Sensors, Symmetry, MDPI.
- Reviewer of IEEE Transactions on Antennas and Propagation.
- Reviewer of IEEE Antenna and Wireless Propagation Letters.
- Reviewer of IEEE Microwave and Wireless Components Letters.
- Reviewer of International Journal RF and Microwave Computer-Aided Engineering.

- Reviewer of 16th IEEE Annual Consumer Comm. & Networking Conference (CCNC) held on11-14 Jan. 2019.

MEMBERSHIP AND AFFILIATION

- IEEE Member since January 2011 (Member ID: 91148416); currently applying for Senior Member status.
- Antennas and Propagation Society (IEEE-APS) since Jan. 2011
- IEEE Young Professional since Jan. 2014
- Pakistan Engineering Council (PEC) Registered Engineer.
- PEC committee member in COMSATS University, Islamabad.

SKILLS

- 10+ years' solid simulation experience on RF tools such as HFSS, CST and ADS.
- 5+ years' experience teaching undergraduate courses and conducting hands-on lab sessions, with a focus on RF systems, circuit and systems, antenna design, and electromagnetic theory.
- 10+ years' experience in RF testing and measurement, including vector network analyzers (VNAs), spectrum analyzers, signal generators, and manual/automatic probe stations.
- 7+ years' experience of using NSI Spherical Combined Near- and Far-field Chamber and NSI-2000 software in microwave frequencies.
- Good experience of using Near- and Far-field Scanner for measuring antennas in millimeter-wave frequencies.
- Experienced in using Altium Designer for RF development, including schematic capture, advanced PCB layout, and multi-layer board routing, with a strong focus on high-frequency performance and reliability.
- 3+ years' hands-on experience in building antennas using both milling machine and photolithography.
- Solid experience on other tools such as C++, Microwave Office, MATLAB, SolidWorks.
  Extensive hands-on experience on 3D fabrication using Makerbot and Formlab printers.

CO-CURRICURAL ACTIVITIES

- Served as organizer in PAK - CHINA Business Forum held from 23rd – 26th March 2013 in Pakistan.
- Attended one day short course on "MIMO for Wireless Communications" held on 26th December 2012 at COMSATS University, Islamabad.
- Coordinated a seminar on "What else an RF Engineer can do?" held on 21st March 2012 at COMSATS University, Islamabad, Pakistan.
- Served as organizer in PAK - CHINA Business Forum held from 15th – 18th April 2012 in Pakistan.
- Served as organizer in COMSATS Engineering Project Exhibition (CEPEX) held on 13th & 14th April 2011 at COMSATS University Islamabad, Pakistan.
- Volunteered as an Usher at the British Council event held on 7th February2012 in COMSATS University, Islamabad, Pakistan.
- Served as organizer in COMSATS Engineering Project Exhibition (CEPEX) held on 13th & 14th April 2011 at COMSATS University Islamabad, Pakistan.
- Served as instructor for the Antenna Design Workshop conducted from 19th –30th July 2010 at COMSATS University, Islamabad, Pakistan.
- Served as instructor for the PCB Workshop conducted from 13th –16th July 2010 at COMSATS University Islamabad, Pakistan.
- Participated in TechnoMoot 2010 national competition held on 10th & 11th May 2010 organized by COMSATS University Abbottabad Campus, Pakistan.
- Participated in Antenna Design Competition in NUTEC'10 held on 1st & 2nd May 2010 organized by FAST-NU Peshawar Campus, Pakistan.
- Served as organizer in COMSATS Engineering Project Exhibition (CEPEX) held on 2nd & 3rd April 2010 at COMSATS University Islamabad, Pakistan.

PATENTS AND INVENTION DISCLOSUREBBOTTABAD

- Inventors: **Zeeshan Qamar** and Chengcheng Tang. Title: Mantel Cloaking for Cable Rails and Cavity, CS Docket No. 7192, Status Filed
- Inventors: **Zeeshan Qamar**, Bo Wu and Chengcheng Tang. Title: Meta-surface based Flat Luneburg lens, CS Docket No. 7063, Status Filed
- Inventors: Xiangyang Ai, Chengcheng Tang, **Zeeshan Qamar** and Rui Ann. Title: Dielectric Loaded Dipole Antenna with Narrow width, CS Docket No. 6818, Status Filed
- Inventors: **Zeeshan Qamar** and Bjorn Lindmark. Title: Lens antenna using cylindrical meta-material, CS Docket No. 6422, Status Filed

- Inventors: Jorge Salazar, **Zeeshan Qamar**, Musharaf Zaman and Robert Palmer. "Road Smart Sensor for Autonomous Vehicle and Safety Transportation." Invention Disclosure No: 2021-016. Submitted to OU on Aug. 21st, 2020.
- Inventors: Jorge Salazar, Nafati Aboserwal and **Zeeshan Qamar**, "An Ultra-compact X-Band Dual-Polarized Slotted Waveguide Array Unit Cell for Large e-Scanning Radar Systems." Invention Disclosure No: 2021-15. Submitted to OU on Aug. 20th, 2020.
- Inventors: J. Salazar, R. Lebron, and **Zeeshan Qamar.** "A Novel Multipurpose Millimeter Wave RF Scanner for Antenna and Array Characterization." Invention Disclosure No: 2019-043. Status: Submitted to OU on March 8, 2019.

PUBLICATION (H-INDEX: 13 WITH 675 CITATIONS)

Journals (In Preparation: 3, Under Review: 2, Published: 21)

- J. L. Salazar-Cerreno, **Z. Qamar**, E. A. Oblitas, and L. F. Moncada-Calmet, "A Modular and Multipurpose mmWave Measurement System for Antenna Evaluation, Active Antenna Array Calibration, Material Characterization, and Radome Testing," IEEE Open Journal of Antennas and Propagation (IEEE OJAP), 2025. **(Under Review)**
- J. L. Salazar-Cerreno, **Z. Qamar**, B. Brachtenbach, and J. Love, "An Automated Three-Probes System for Testing and Characterizing Anisotropic and Engineered Structures," IEEE Access, 2025. **(Under Review)**
- **Z. Qamar**, J. L. Salazar, and A. Oblitas, "A Smart Sensor System for Real-Time Monitoring and Detection of Ice and Water on Roadways" Sensors, MDPI, 2025. **(In Preparation)**
- **Z. Qamar** and J. L. Salazar-Cerreno, "Development and Characterization of Multi-Layer Radome for Enhanced Ka-Band Antenna Performance, IEEE Antennas and Wireless Propagation Letters, 2026. **(In Preparation)**
- **Z. Qamar** and J. L. Salazar-Cerreno, "An Ultra-Compact Ka-Band Dual-Polarized Slotted Waveguide Array for the Ka-Band Rapid-Scanning Volume Imaging Radars (KaRVIR) for Earth System Science," IEEE Transactions on Antennas and Propagation, 2026. **(In Preparation)**
- N. R. C. Ramos, N. Aboserwal, **Z. Qamar**, and J. L. Salazar-Cerreno, "Improved Analytical Model for a Proximity Coupled Microstrip Patch Antenna (PC-MSPA)", IEEE Transaction on Antennas and Propagation, Early Access, May 2021**.**
- **Z. Qamar**, J. L. Salazar, and N Aboserwal, "An ultra-wide band radome for high-performance and dual-polarized radar and communication systems", IEEE Access, October 2020.
- N. Aboserwal, J. L. Salazar-Cerreno, and **Z. Qamar**, "An Ultra-Compact X-Band Dual-Polarized Slotted Waveguide Array Unit Cell for Large E-Scanning Radar Systems" IEEE Access, November 2020
- S. S. Jehangir, **Z. Qamar**, N. Aboserwal, and J. L. Salazar, "Application of the mixing theory in the design of a high-performance dielectric substrate for microwave and mm-wave systems", IEEE Access, October 2020.
- **Z. Qamar**, N. Aboserwal and J. L. Salazar-Cerreno, "An accurate method for designing, characterizing,and testing a multi-layer radome for mm-wave applications", IEEE Access, January 2020.
- N. Aboserwal, N. R. C. Ramos, **Z. Qamar** and J. L. Salazar-Cerreno, "An accurate analytical model to calculate the impedance bandwidth of a proximity coupled microstrip patch antenna (PC-MSPA)", IEEEAccess, February 2020.
- J. L. Salazar, **Z. Qamar**, S. Shahrokh, B. Weng and H. Sigmarsson, "Frequency agile microstrip patch antenna using an anisotropic artificial dielectric layer (AADL): Modeling and design", IEEE Access, December 2019.
- L. Gao, **Z. Qamar**, H. Zhang and S. Y. Zheng, "Wideband arbitrary phase-difference coupled-line coupler with tight coupling coefficient and small phase variation", IET Microwaves, Antennas & Propagation, August 2018.
- Q. P. Chen, **Z. Qamar**, S. Y. Zheng, Y. L. Long and D. Ho, "Design of a compact wideband butler matrixusing vertically installed planar structure", IEEE Transaction on Components, Packaging and Manufacturing Technology, Early Access, July 2018.
- S. Y. Zheng, Z. L. Su, Y. M. Pan, **Z. Qamar** and D. Ho, "New dual-/tri-band bandpass filters and diplexerwith large frequency ratio", IEEE Transaction on Microwave Theory and Techniques, Early Access, May2018.
- **Z. Qamar**, S. Y. Zheng, W. S. Chan and D. Ho, "Coupling coefficient reconfigurable wideband branch line coupler topology with harmonic suppression", IEEE Transaction on Microwave Theory and Techniques, April 2018.
- **Z. Qamar**, S. Y. Zheng, W. S. Chan and D. Ho, "Coupling coefficient range extension technique for broadband branch-line couplers", Journal of Electromagnetic Waves and Applications, January 2018.
- **Z. Qamar**, W. S. Chan and D. Ho, "Wide bandwidth arbitrary phase difference branch line coupler", Microwave and Optical Technology Letters, September 2017.
- **Z. Qamar**, S. Y. Zheng, W. S. Chan and D. Ho, "An equal-length multi-way differential meta-material phase shifter", IEEE Transaction on Microwave Theory and Techniques, January 2017.
- **Z. Qamar**, U. Naeem, S. A. Khan, M. Chongcheawchamnan and M. F. Shafique, "Mutual coupling reduction for high-performance densely packed patch antenna arrays on finite substrate", IEEE Transactions on Antennas and Propagation, March 2016.
- M. F. Shafique, **Z. Qamar**, L. Riaz, R. Saleem and S. A. Khan, "Coupling suppression in densely packedmicrostrip arrays using metamaterial structure", Microwave and Optical Technology Letters, March 2015.

- **Z. Qamar** and H. C. Park, "Compact waveguided metamaterials for suppression of mutual coupling in microstrip array", Progress in Electromagnetics Research, October 2014.
- **Z. Qamar**, L. Riaz, M. Chongcheawchamnan, S. A. Khan and M. F. Shafique, "Slot combinedcomplementary split ring resonators for mutual coupling suppression in microstrip phased arrays" IET Microwaves, Antennas & Propagation, July 2014.
- K. S. Alimgeer, S. A. Khan, **Z. Qamar** and S. M. Abbas, "Planar monopole staircase antenna for ultra- wide band", Przeglad Elektrotechniczny Electrical Review, January 2013.
- K. S. Alimgeer, S. A. Khan, **Z. Qamar** and S. M. Abbas, "Planar monopole UWB antenna with 5GHz dual notched band characteristics", Przeglad Elektrotechniczny Electrical Review, January 2012.
- A. W. Azim, S. A. Khan, **Z. Qamar**, K. S. Alimgeer and S. M. Ali, "Current distribution dynamics in microstrip patch antenna arrays", International Journal of Future Generation of Communication & Networking, September 2011.

Conferences (Published: 6)

- **Z. Qamar**, W. S. Chan and D. Ho, "Design technique for meta-structure planar directional couplers witharbitrary coupling ratios", 21st International Conference on Microwave, Radar and Wireless Communications (MIKON), Krakow, Poland, May 2016.
- **Z. Qamar,** "Circularly polarized dual band microstrip patch antennas with multiple techniques", IEEE Fly-by-Wireless Workshop, Montreal, Canada, June 2011.
- K.S. Alimgeer, S. A. Khan, **Z. Qamar**, and M. Zubair "Parametric trend analysis of miniature slotted antenna with dual-band characteristics", Proceedings on the 2nd National Conference on Telecommunications, Arequipa, Peru, May 2011.
- K. S. Alimgeer, S. M. Abbas, H. Zahra, **Z. Qamar**, and S. A. Khan, "Multi-band resonance generation by feed Manipulation in micro-strip antenna", 4th World Congress Aviation in the XXI Century, Vol 2, Pages 22.72 – 22.81, Kyiv, Ukrain, September 2010.
- T. Brachtenbach, A. Stringer, J. Love, **Z. Qamar**, Jorge L. Salazar, "A novel free-space gaussian beam method for the characterization of anisotropic materials", in 2020 IEEE International Symposium on Antennas and Propagation and North American Radio Science Meeting, Montréal, Québec, Canada, 5- 10 July 2020.
- N. R. C. Ramos, N. Aboserwal, **Z. Qamar**, J. L. Salazar, "Assessment of the impedance bandwidth of aproximity-coupled microstrip patch antenna", in 2020 IEEE International Symposium on Antennas and Propagation and North American Radio Science Meeting, Montréal, Québec, Canada, 5-10 July 2020.

REFERENCES

Dr. Jorge L. Salazar-Cerreno, Postdoctoral Advisor/ Professor, OU/ ARRC **salazar@ou.edu, +1 (405) 922-7848**
Dr. Robert Palmer, Dean/Director, NWC/ARRC **rpalmer@ou.edu, +1 (405) 325-6319**
Dr. Nafati Aboserwal, Principal Antenna Eng., Chaos Industries **nafati.aboserwal@chaosinc.com, +1 (480) 334-5299**
Dr. Abdul Wasy Zia, Professor / Head of AMML, Heriot-Watt University, UK **a.zia@hw.ac.uk, +44 131 451 3882**