



Academic Curriculum Vitae

Personal Information

Full Name: Rashad Hassan Mahmud (Ph.D.)

Academic Title: Assistant professor in Communications Engineering, Salahaddin University-Erbil,
Physics Department

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Educations

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| 2012 - 2016 | PhD. in Communications Engineering
The University of Birmingham, UK
Title of PhD. Thesis: Synthesis of Waveguide Antenna Arrays Using the
Coupling Matrix Approach
Supervisors: Professor Michael J. Lancaster, and Dr. Fred Huang |
| 2008 - 2010 | Master in Electromagnetic Theory with top Grade
Salahaddin University-Erbil, Iraq
Title of M.Sc. thesis: Optimum Design Study of the Axial-Mode Helical
Antennas Operating in the Frequencies: 8, 10 and 12 GHz |
| 2004 - 2007 | Bachelor of Science in Physics with top Grade
Salahaddin University-Erbil, Iraq |

Academic Skills-Teaching and Research

- Highly developed research and analytical skills with the ability to conduct an innovative and independent research.
- Strong communication and leadership skills with the ability to supervise and motivate students, maximising performance and desired outcomes.
- Computer literate with extensive use of Windows packages, and advanced skills of Microsoft Office programs including MS word, MS Power Point, MS Excel and MS Visio.

Professional Skills

- Electromagnetic and Microwave engineering, analysis, and modeling
- Design, fabrication, and measurement of waveguide antennas and antenna arrays
- Design, synthesis, and optimization of direct and cross coupled waveguide filters
- Electromagnetic simulation tools including CST[®], and MATLAB[®]
- Hands-on experience with Milling machine for the fabrication of microwave circuits, soldering of surface mountable chips, and microwave testing equipments

Technical Experience

- **Antenna Design:** Helical antennas (Axial and Normal mode), Beam Scanning antennas for radar applications, Slotted waveguide planar antenna arrays, waveguide aperture antennas based solely on resonators, Filtering high gain and wide bandwidth planar antenna arrays based on the coupling matrix theory, 1×1 Filtering waveguide aperture antennas, 2×2 Filtering waveguide aperture antennas, 4×4 Filtering waveguide aperture antennas, and possible configurations for 8×8 Filtering waveguide aperture antennas, terahertz communication system and its components configured and packaged out of waveguide-layer structures, 300 GHz terahertz antennas, and recent focuses are on Metasurface Antennas and Sensors.
- **Filter and Coupler Designs:** Waveguide band-pass filter, Filtering multiple-ways waveguide power splitter, Filtering multiplexers.

Professional Experience

- 3/2016 – Present Lecturer in Physics* and Mechatronics#
College of Education, Salahaddin University-Erbil*
Faculty of Engineering, Tishk International University-Erbil
Responsibilities:
- Preparing and delivering of lectures and seminars
 - Supervision of final year project students
 - Marking and assessment of student assignments and exams
 - Supervision of the Electronics lab. In the 3rd year
 - Conducting an innovative research in the field of Microwave and Communications engineering
- 1/2012 - 3/2016 PhD student
Department of Electronic, Electrical, and Computer Engineering,
University of Birmingham, UK
Responsibilities:
- Achieve the research requirements.
 - Modelling, fabricating, and measuring novel microwave circuits.
 - Attending conferences publishing journal papers.
- 09/2010 - 01/2012 Assistant lecturer in Physics department
College of Education, Salahaddin University-Erbil
Responsibilities:
- Testing Physics instruments
 - Teaching electronics and electromagnetic
 - Ensuring that safety regulations are met
 - Writing specifications and technical reports

Scholarships and Awards

- 2012-2016 PhD scholarship, to study in the UK, granted by the Kurdistan Region-Iraq

Professional Development/ Additional Training

- CST Microwave Studio[®], CST Corporation, Nottingham UK, 12-13 May 2012
- Connector Care and S Parameter Measurement With Calibration Techniques, Rohde& Schwarz, Birmingham UK, 19 May 2013
- Introduction to Learning and Teaching in Higher Education for Postgraduates, University of Birmingham, Birmingham UK, 8 December 2012
- Advanced Design System[®], Agilent Technology, Wokingham UK, 4-6 March 2013

- Microwave Office[®], National Instruments, Newbury UK, 19-21 March 2013

Publications

[1] **R. H. Mahmud** and M. J. Lancaster, "High-Gain and Wide-Bandwidth Filtering Planar Antenna Array-Based Solely on Resonators," in *IEEE Transactions on Antennas and Propagation*, vol. 65, no. 5, pp. 2367-2375, May 2017, DOI: [10.1109/TAP.2017.2670443](https://doi.org/10.1109/TAP.2017.2670443)

[2] **R. H. Mahmud.**, H. N. Awl, Y. I. Abdulkarim, M. Karaaslan, and M. J. Lancaster, "Filtering two-element waveguide antenna array based on solely resonators," *AEU-International Journal of Electronics and Communications*, Vol. 121, 153232, 2020. <https://doi.org/10.1016/j.aeue.2020.153232>

[3] **R. H. Mahmud**, Lancaster MJ. A 2×2 Filtering subarray element antennas using all resonator structures. *IET Microw. Antennas Propag.* 2021;1–8. <https://doi.org/10.1049/mia2.12080>

[4] **R. H. Mahmud**, Tianhao He, Michael Lancaster, Yi Wang, Xiaobang Shang, "Micromachined Travelling Wave Slotted Waveguide Antenna Array for Beam-Scanning Applications," *Loughbrough Antennas and Propagation Conference, LAPC, UK, 2014*, pp.1-2.

[5] **Mahmud, R. H.**, Salih, I. H., Awl, H. N., Shang, X., Wang, Y., Skaik, T., & Lancaster, M. J. (2021). Micromachined SU-8-Based Terahertz 8×8 Slotted Waveguide Antenna Array. *Journal of Infrared, Millimeter, and Terahertz Waves*, 1-15. <https://doi.org/10.1007/s10762-021-00830-6>

[6] Abdulkarim, Y.I.; Deng, L.; Karaaslan, M.; Dalgaç, Ş.; **R. H. Mahmud.**; Ozkan Alkurt, F.; Muhammadsharif, F.F.; Awl, H.N.; Huang, S.; Luo, H. The Detection of Chemical Materials with a Metamaterial-Based Sensor Incorporating Oval Wing Resonators. *Electronics* **2020**, *9*, 825. <https://doi.org/10.3390/electronics9050825>.

[7] Yadgar I. Abdulkarim, Halgurd N. Awl, Fahmi F. Muhammadsharif, Muharrem Karaaslan, **R. H. Mahmud**, Sattar O. Hasan, Ömer Işık, Heng Luo, Shengxiang Huang, "A Low-Profile Antenna Based on Single-Layer Metasurface for Ku-Band Applications", *International Journal of Antennas and Propagation*, vol. 2020, Article ID 8813951, 8 pages, 2020. <https://doi.org/10.1155/2020/8813951>

[8] **R. H. Mahmud** (2020) "Terahertz Microstrip Patch Antennas For The Surveillance Applications", *Kurdistan Journal of Applied Research*, 5(1), pp. 16-27. doi: <https://doi.org/10.24017/science.2020.1.2>.

- [9] N. Awl, H. and **R. H. Mahmud** (2019) "New Configuration of Microstrip Patch Antenna Arrays", *Zanco Journal of Pure and Applied Sciences*, 31(s4), pp. 30-33. doi: 10.21271/zjpas.31.s4.4.
- [10] N. Awl, H. and **R. H. Mahmud** (2019) "Novel Design of Microstrip Patch Antenna based on Two-Shape Structure", *Zanco Journal of Pure and Applied Sciences*, 31(s4), pp. 26-29. doi: 10.21271/zjpas.31.s4.3.
- [11] N. Awl, H. and **R. H. Mahmud** (2019) "Wide bandwidth Microstrip Patch Antenna Coupled with Step-Loaded Structure", *Zanco Journal of Pure and Applied Sciences*, 31(s4), pp. 34-37. doi: 10.21271/zjpas.31.s4.5.
- [12] G Mansour, G., Nugoolcharoenlap, E., **Mahmud, R. H.**, Tipppo, T., Akkaraekthalin, P., & Torrungrueng, D. (2021, September). Circularly Polarized Elliptical Patch Array Antennas for GPS. In *2021 Research, Invention, and Innovation Congress: Innovation Electricals and Electronics (RI2C)* (pp. 92-96). IEEE. DOI: [10.1109/RI2C51727.2021.9559799](https://doi.org/10.1109/RI2C51727.2021.9559799)
- [13] Awl, H. N., **Mahmud, R. H.**, Karim, B. A., Abdulkarim, Y. I., Karaaslan, M., Deng, L., & Luo, H. (2021). Double Meander Dipole Antenna Array with Enhanced Bandwidth and Gain. *International Journal of Antennas and Propagation*, 2021. <https://doi.org/10.1155/2021/9936781>
- [14] Star O. Hassan, **R. H. Mahmud.**, "Optimum Design Study of the Axial-Mode Helical Antennas Operating in the X-band Frequency, Published in Zanco Journal, Salahaddin University-Erbil
- [15] **R. H. Mahmud.** and Michael Lancaster, "Filtering Antennas With Enhanced Selectivity Using Dispersive Couplings ", in preparation to Submit to *IEEE Trans. Antennas and Propag.*
- [16] Halgurd Nawzad, **R. H. Mahmud.**, "Broadband High Gain Metasurface Antenna", in preparation to Submit to *IEEE antennas and wireless propagation letters*.
- [17] Mansour, G., **Mahmud, R.**, Nugoolcharoenlap, E., Tipppo, T., & Alimgeer, K. (2021, October). Synthesis and Design of Trisection Microstrip Bandpass Filters. In *The 7th International Conference on Engineering & MIS 2021* (pp. 1-5). <https://doi.org/10.1145/3492547.3492585>
- [18] N. Awl, H. and **R. H. Mahmud** (2022) "A New 2× 2-Element Subarray Antenna Synthesis Based on Waveguide Cavity Resonators", *Progress In Electromagnetics Research M*, Vol. 110, 133-143, 2022 [doi:10.2528/PIERM22030106](https://doi.org/10.2528/PIERM22030106).
- [19] Hamza, M.N., Abdulkarim, Y.I., Saeed, S.R., Altıntaş, O., **Mahmud, R.H.**, Appasani, B. and Ravariu, C., 2022. "Low-Cost Antenna-Array-Based Metamaterials for Non-Invasive Early-Stage

Breast Tumor Detection in the Human Body". Biosensors, 12(10), p.828.
<https://doi.org/10.3390/bios12100828>

[20] **Mahmud, R.H.**, Jarjees, R.S., Yu, Y., Nugoolcharoenlap, E., Skaik, T., Attallah, M.M. and Wang, Y., 2023. A Monolithically Printed Filtering Waveguide Aperture Antenna. IEEE Antennas and Wireless Propagation Letters.

[21] **Mahmud, R.H.**, Salih, I.H., Shang, X., Skaik, T. and Wang, Y., 2023. A filtering waveguide aperture antenna based on all-resonator structures. Microwave and Optical Technology Letters.

Professional Referees

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