

# Abhishek Sharma

Postdoctoral Fellow

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## Research Interest

Metamaterials/Metasurfaces, Antennas, Electromagnetic Theory, Optics, Integrated Circuits.

## Work and Research Experience

**International Associate** - Advanced Electronics Group, National Institute of Standards and Technology, USA. 11/2023 – Present

**Postdoctoral Fellow** - High Performance Intergrated Circuits Laboratory, Department of Electrical and Computer Engineering, Stevens Institute of Technology, Hoboken, New Jersey, USA. 04/2023 – Present

- **Areas of research:** Dielectric antennas and fibers, mm-wave wireless interconnects, re-configurable/spatiotemporal metasurfaces, bio-sensing, Cryo-CMOS.

**Postdoctoral Fellow** - Creative Research in Applied Electromagnetics Laboratory, Department of Electrical Engineering, City University of Hong Kong, Hong Kong SAR, China. 06/2019 – 06/2022

- **Areas of research:** Huygens' metasurfaces, dielectric metasurfaces, beam scanning antennas.

**Project Scientist** - Department of Electrical Engineering, Indian Institute of Technology Kanpur, UP, India. 03/2019 – 05/2019

- **Areas of research:** MIMO antennas, material characterization, microwave sensors.

**Graduate Research Assistant** - Department of Electrical Engineering, Indian Institute of Technology Kanpur, UP, India. 12/2013 – 12/2018

- **Areas of research:** Dielectric resonator antennas, MIMO antennas.
- **Teaching Assistant Courses:** Introduction to electronics (UG), computational electromagnetics (PG), electromagnetic theory (UG), advanced electromagnetic theory (PG), microwave measurement & design (PG), microwave circuits (PG), monolithic microwave integrated circuit (PG).

**Visiting Research Student** - Department of Electrical and Electronic Engineering, University of Manchester, Manchester, UK. 01/2016 – 02/2016

- **Advisor:** Prof. Zhirun Hu.
- **Area of research** Substrate integrated waveguide fed dual-polarized dielectric resonator antennas.

## Education

**Doctor of Philosophy** - Department of Electrical Engineering, Indian Institute of Technology Kanpur, UP, India. 12/2013 – 02/2019

- **Thesis title:** Investigations on dual-band and wideband dielectric resonator antennas for MIMO applications.
- **Advisors:** Prof. Animesh Biswas & Prof. M. J. Akhtar.

**Master of Technology** - Department of Electronics and Communication Engineering, Netaji Subhas University of Technology - East Campus, Delhi, India (formerly, AIACTR). 2011 – 2013

Updated: Dec. 2023

- **Thesis title:** Some Investigations on Compact, Dual-Band and Broadband Patch Antenna.
- **Advisor:** Prof. B. K. Kanaujia.

**Bachelor of Technology (Major: Electronics & Communication)** - Department of Electronics and Communication Engineering, Shri Mata Vaishno Devi University, Jammu, India

2006 - 2010

## Publications

### Journal Papers

23. **Abhishek Sharma**, Caleb Romero, Yanghyo Rod Kim, "Millimeter-Wave Ceramic Antennas and Fibers for Extremely High Temperature Applications", *IEEE Microwave Magazine* 2024. **Accepted**.
22. **Abhishek Sharma**, Alex M. H. Wong, "Bipartite dielectric Huygens' metasurface for anomalous refraction", *Physica Scripta*, 98(11), 115539, 2023.
21. Anirban Sarkar, **Abhishek Sharma**, Animesh Biswas, M. Jaleel Akhtar, "Compact CRLH leaky-wave antenna using TE<sub>20</sub> mode substrate integrated waveguide for broad space radiation coverage", *IEEE Transactions on Antennas and Propagation*, 68(10), pp. 7202-7207, 2020.
20. Nilesh Kumar Tiwari, **Abhishek Sharma**, Surya Prakash Singh, M. Jaleel Akhtar, Animesh Biswas, "Novel analysis of the size and orientation dependent resonance phenomenon of the microstrip line coupled complementary split-ring resonator", *International Journal of RF and Microwave Computer-Aided Engineering, Wiley*, 30(2), e22038, 2020.
19. K. K. Katare, Sandhya Chandravanshi, **Abhishek Sharma**, Animesh Biswas, M. J. Akhtar, "Anisotropic metasurface based beam-scanning dual-polarized fan-beam integrated antenna system", *IEEE Transactions on Antennas and Propagation*, 67(8), pp. 5652-5657, 2019.
18. Anirban Sarkar, **Abhishek Sharma**, Animesh Biswas, M. J. Akhtar, "EMSIW based compact high gain wide full space scanning LWA with improved broadside radiation profile", *IEEE Transactions on Antennas and Propagation*, 67(8), pp. 5652-5657, 2019.
17. **Abhishek Sharma**, Anirban Sarkar, Animesh Biswas, M. J. Akhtar, "Equilateral triangular dielectric resonator based co-radiator MIMO antennas with dual-polarisation", *IET Microwaves, Antennas & Propagation*, 12(14), pp. 2161-2166, 2018.
16. **Abhishek Sharma**, Anirban Sarkar, Animesh Biswas, M. J. Akhtar, "A-shaped wideband dielectric resonator antenna for wireless communication systems and its MIMO implementation", *International Journal of RF and Microwave Computer-Aided Engineering, Wiley*, 28(8), e21402, pp. 1-9, 2018.
15. **Abhishek Sharma**, Anirban Sarkar, Animesh Biswas, M. J. Akhtar, "Compact dual-band hybrid dielectric resonator antenna loaded with magnetic-LC resonator", *Journal of Electromagnetic Waves and Applications*, 32(10), pp. 1298-1305, 2018.
14. **Abhishek Sharma**, Anirban Sarkar, Animesh Biswas, M. J. Akhtar, "Dual-band multiple-input multiple-output antenna based on half split cylindrical dielectric resonator", *Journal of Electromagnetic Waves and Applications*, 32(9), pp. 1152-1163, 2018.
13. Anirban Sarkar, **Abhishek Sharma**, Animesh Biswas, M. J. Akhtar, "Eighth-mode SIW based compact high gain leaky-wave antenna", *International Journal of RF and Microwave Computer-Aided Engineering, Wiley*, e21611, 2018.
12. Anirban Sarkar, Soumava Mukherjee, **Abhishek Sharma**, Animesh Biswas, M. J. Akhtar, "SIW Based Quad-beam Leaky-wave Antenna With Polarization Diversity for Four Quadrant Scanning Applications", *IEEE Transactions on Antennas and Propagation*, 66(8), pp. 3918-3925, 2018.
11. **Abhishek Sharma**, Anirban Sarkar, Animesh Biswas, M. J. Akhtar, "Substrate Integrated Waveguide fed Dual-Frequency Dual-Linearly-Polarized Dielectric Resonator Antenna", *International Journal of Microwave and Wireless Technologies, Cambridge*, 10(4), pp. 505-511, 2018.
10. Anirban Sarkar, Moitreyia Adhikary, **Abhishek Sharma**, Animesh Biswas, M. J. Akhtar, Zhirun Hu, "Composite right/left-handed based compact and high gain leaky wave antenna using complementary spiral ring resonator on HMSIW for Ku-Band applications", *IET Microwaves, Antennas and Propagation*, 12(8), pp. 1310-1315, 2018.
9. Anirban Sarkar, **Abhishek Sharma**, Animesh Biswas, M. J. Akhtar, "TE<sub>20</sub> mode SIW based high gain eight-beam leaky-wave antenna for multi-directional radiation coverage", *International Journal of RF and Microwave Computer-Aided Engineering, Wiley*, 28(9), e21427, pp. 1-8, 2018.
8. Anirban Sarkar, **Abhishek Sharma**, Moitreyia Adhikary, Animesh Biswas, M. Jaleel Akhtar, "Bi-directional SIW leaky-wave antenna using TE<sub>20</sub> mode for frequency beam scanning", *IET Electronics Letter*, 53(15), pp. 1017-1019, 2017.

7. **Abhishek Sharma**, Animesh Biswas, "Wideband multiple-input-multiple-output (MIMO) dielectric resonator antenna", *IET Microwaves, Antennas and Propagation*, 11(4), pp. 496-502, 2017.
6. **Abhishek Sharma**, Animesh Biswas, "Wideband stacked maltese cross-shaped DR antenna for WiMAX and WLAN applications", *IET Microwaves, Antennas and Propagation*, 11(2), pp. 247-252, 2017.
5. Sachin Kumar, **Abhishek Sharma**, Binod K. Kanaujia, Mukesh K. Khandelwal and A.K. Gautam, "Dual-Band Stacked Circularly Polarized Microstrip Antenna for S and C Band Applications", *International Journal of Microwave and Wireless Technologies*, 8(8), pp. 1215-1222, 2016.
4. Anil Kumar Singh, Ravi Kumar Gangwar, Binod Kumar Kanaujia and **Abhishek Sharma**, "Design and Analysis of Cavity backed Annular Ring Microstrip Antenna for Personal Wireless Communication", *Wireless Personal Communication*, 83(4), pp. 2647-2656, 2015.
3. Sachin Kumar, Binod K. Kanaujia, **Abhishek Sharma**, M. K. Khandelwal and A. K. Gautam, "Single-Feed Cross Slot loaded Compact Circularly Polarized Microstrip Antenna for Indoor WLAN Applications", *Microwave and Optical Technology Letters*, 56(6), pp. 1313-1317, 2014.
2. B S Sharma, D N Gupta, **A Sharma**, A Jain, "Modulation instabilities and group velocity dispersion in partially stripped magnetoplasma channels", *Plasma Physics and Controlled Fusion*, 56(7), 075011, 2014.
1. Vipin Kakkar, **Abhishek Sharma**, T.K. Manglam and Pallavi Kar, "Fingerprint Image Enhancement using Wavelet Transform and Gabor Filtering", *Acta Technica Napocensis, Electronica- Telecommunicatii*, 52(4), 17-25, 2011.

### Conference Papers

34. Caleb Romero, **Abhishek Sharma**, Yanghyo Rod Kim, "Extremely High Temperature Millimeter-Wave Ceramic Fiber Communications", APMC, Taiwan, 2023. **Presented**.
33. **Abhishek Sharma**, Alex M. H. Wong, "Metasurface-enabled full 360° azimuth surface-level beam scanning antenna system", *2022 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting (AP-S/URSI)*, Denver, 2022, pp. 455-456.
32. **Abhishek Sharma**, Alex M. H. Wong, "Floquet mode circulation using a coarsely discretized dielectric Huygens' metasurface", *2022 3rd URSI Atlantic and Asia Pacific Radio Science Meeting (AT-AP-RASC)*, Gran Canaria, Spain, 2022, pp. 1-4.
31. **Abhishek Sharma**, Alex M. H. Wong, "Dimer Dielectric Huygens' Metasurface: Realizing Perfect Anomalous Reflection at 60 GHz", *2021 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting*, pp. 203-204, 2021.
30. **Abhishek Sharma**, Chu Qi, K. A. Oyesina, Alex M. H. Wong, "Coarsely discretized Huygens' metasurface: Manipulating EM waves with simplicity", *IEEE International Conference on Electronics, Computing and Communication Technologies 2021 (IEEE CONECCT 2021)*, Bangalore, India, 9-11 July 2021, pp. 1-6.
29. **Abhishek Sharma**, Alex M. H. Wong, "Sparsely Discretized Refracting Dielectric Huygens' Metasurface at 28 GHz", *2020 Asia-Pacific Microwave Conference (APMC)*, Hong Kong, 8-11 Dec. 2020, pp. 1027-1029.
28. **Abhishek Sharma**, Alex M. H. Wong, "Controlling Wavefront using a Coarsely Discretized Dielectric Huygens' Metasurface", *2020 IEEE International Symposium on Antennas and Propagation and North American Radio Science Meeting*, Montréal, Québec, Canada, 5-10 July 2020, pp. 753-754.
27. **Abhishek Sharma**, Alex M. H. Wong, "Towards Efficient EM Wave Manipulation Using a Discrete Dielectric Huygens' Metasurface", *14th European Conference on Antennas and Propagation (EuCAP 2020)*, Copenhagen, Denmark, March 15-20, 2020.
26. **Abhishek Sharma**, Anirban Sarkar, Animesh Biswas, M. J. Akhtar, "Millimeter-Wave Quad-Port Multiple-Input Multiple-Output Dielectric Resonator Antenna Excited Differentially by TE<sub>20</sub> Mode Substrate Integrated Waveguide", *2019 URSI Asia Pacific Radio Science Conference*, Mar. 9-15, 2019, in New Delhi, India.
25. N. K. Tiwari, **Abhishek Sharma**, S. P. Singh, M. J. Akhtar, A. Biswas, "Non-Invasive Dielectric Characterization of Chemical Solvents using Microstrip-Fed Dielectric Resonator based Sensor", *2019 URSI Asia Pacific Radio Science Conference*, Mar. 9-15, 2019, in New Delhi, India.
24. Moitreya Adhikary, Sunil Kumar Sahoo, Anirban Sarkar, **Abhishek Sharma**, Animesh Biswas, M. J. Akhtar, "Active Integrated Empty SIW Cavity Backed Slot Antenna for Increased EIRP", *2018 IEEE Indian Conference on Antennas and Propagation (InCAP)*, Dec. 16-19, 2018, Hyderabad, India.
23. Sunil Kumar Sahoo, **Abhishek Sharma**, Animesh Biswas, M. J. Akhtar, "Radiation Characteristic Improvement of Ku-Band SIW Horn Antenna using Probe-Feeding Technique", *2018 IEEE Indian Conference on Antennas and Propagation*, Dec. 16-19, 2018, in Hyderabad, India.

22. Anirban Sarkar, Moitreyia Adhikary, **Abhishek Sharma**, Animesh Biswas, M. J. Akhtar, "Electronically Tunable High Gain Leaky-wave Antenna using Eighth-mode SIW", *IEEE International Microwave and RF Conference 2018*, Nov. 28-30, 2018, in Kolkata, West Bengal, India.
21. Moitreyia Adhikary, Anirban Sarkar, **Abhishek Sharma**, Animesh Biswas, M. J. Akhtar, "TE<sub>20</sub> Mode Air Filled SIW Based Balun Bandpass Filter", *2018 International Symposium on Antennas and Propagation (ISAP-2018)*, Oct. 23-26, 2018, in Busan, South Korea.
20. Anirban Sarkar, **Abhishek Sharma**, Animesh Biswas, M. J. Akhtar, "EMSICC Based CRLH Compact Leaky-wave Antenna with Enhanced Broadside Efficiency", *2018 International Symposium on Antennas and Propagation (ISAP-2018)*, Oct. 23-26, 2018, in Busan, South Korea.
19. **Abhishek Sharma**, Anirban Sarkar, Animesh Biswas, M. J. Akhtar, "Differentially-driven dielectric resonator antenna using TE<sub>20</sub> mode substrate integrated waveguide", *2018 International Symposium on Antennas and Propagation (ISAP-2018)*, Oct. 23-26, 2018, in Busan, South Korea.
18. **Abhishek Sharma**, Anirban Sarkar, Animesh Biswas, M. J. Akhtar, "A  $\pm 45^\circ$  dual-polarized equilateral triangular dielectric resonator antenna", *6th IEEE Applied Electromagnetics Conference (AEMC-2017)*, Dec. 19-22, 2017, Aurangabad, Maharashtra, India.
17. **Abhishek Sharma**, Anirban Sarkar, Animesh Biswas, M. J. Akhtar, "Dual-Polarized Dielectric Resonator Antenna excited in HEM<sub>126</sub> mode with enhanced Port-to-Port Isolation", *6th IEEE Applied Electromagnetics Conference (AEMC-2017)*, Dec. 19-22, 2017, Aurangabad, Maharashtra, India.
16. Anirban Sarkar, Moitreyia Adhikary, **Abhishek Sharma**, Animesh Biswas, M. J. Akhtar, "TE<sub>20</sub> Mode SIW based Bi-directional Leaky-wave Antenna", *6th IEEE Applied Electromagnetics Conference (AEMC-2017)*, Dec. 19-22, 2017, Aurangabad, Maharashtra, India.
15. Anirban Sarkar, Moitreyia Adhikary, **Abhishek Sharma**, Animesh Biswas, M. J. Akhtar, "CRLH based Leaky-wave Antenna Using Modified Minkowski Fractal on SIW with Tunable Frequency Band", *6th IEEE Applied Electromagnetics Conference (AEMC-2017)*, Dec. 19-22, 2017, Aurangabad, Maharashtra, India.
14. **Abhishek Sharma**, Anirban Sarkar, Moitreyia Adhikary, Animesh Biswas, M. J. Akhtar, "SIW fed MIMO DRA for future 5G applications", *2017 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting*, Jul. 9-14, 2017, San Diego, California, USA.
13. Jyoti Roat, **Abhishek Sharma**, Animesh Biswas, M. J. Akhtar, "Substrate integrated waveguide fed circularly polarized elliptical dielectric resonator antenna array", *2017 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting*, Jul. 9-14, 2017, San Diego, California, USA.
12. Anirban Sarkar, Prasun Chongder, **Abhishek Sharma**, Moitreyia Adhikary, Animesh Biswas, M. J. Akhtar, "EMSICC-Based Compact Array Antenna Having Switchable Frequency Beam-Scanning Range in Microstrip Environment", *2017 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting*, Jul. 9-14, 2017, San Diego, California, USA.
11. Srikanth Sistla, Moitreyia Adhikary, **Abhishek Sharma**, Prasun Chongder, Anirban Sarkar, Animesh Biswas, Mohammad Jaleel Akhtar, "DRA with Rat-race Hybrid Fed pHEMT Differential LNA for X-band Receiver Front-end Application", *2017 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting*, Jul. 9-14, 2017, San Diego, California, USA.
10. Moitreyia Adhikary, Anirban Sarkar, **Abhishek Sharma**, Animesh Biswas, Mohammad Jaleel Akhtar, "Miniaturized SIW Filter Antenna with Loadable Sensor for Various Microwave Sensing Applications", *2017 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting*, Jul. 9-14, 2017, San Diego, California, USA.
9. **Abhishek Sharma**, Anirban Sarkar, Animesh Biswas, Robin Sloan, Zhirun Hu, "A Polarization Diversity Substrate Integrated Waveguide fed Rectangular Dielectric Resonator Antenna", *2016 Asia Pacific Microwave Conference (APMC-2016)*, Dec. 5-9, 2016, New Delhi, India.
8. Kranti Kumar Katore, **Abhishek Sharma**, Animesh Biswas, "Dielectric Resonator Based Pattern Reconfigurable Antenna", *2016 Asia Pacific Microwave Conference (APMC-2016)*, Dec. 5-9, 2016 New Delhi, India.
7. M.Warad, **Abhishek Sharma**, C.S. Prasad, Animesh Biswas, "A High Gain Aperture Coupled Cylindrical Dielectric Resonator Antenna with Metamaterial Superstrate", *2016 IEEE International Symposium on Antennas and Propagation/ USNC-URSI National Radio Science Meeting*, 26 June-1 July, 2016, Fajardo, Puerto Rico.
6. **Abhishek Sharma**, and Animesh Biswas, "Dual-Frequency Half Split Cylindrical Dielectric Resonator Antenna", *5th IEEE Applied Electromagnetics Conference (AEMC-2015)*, Dec. 18-21, 2015, IIT Guwahati, Guwahati, India.
5. **Abhishek Sharma**, and Animesh Biswas, "Wideband Omnidirectional Perforated Minkowski Fractal Dielectric Resonator Antenna", *5th IEEE Applied Electromagnetics Conference (AEMC-2015)*, Dec. 18-21, 2015, IIT Guwahati, Guwahati, India.
4. **Abhishek Sharma**, Soumava Mukherjee, and Animesh Biswas, "Dielectric Resonator loaded Substrate Integrated Waveguide Cavity backed Slot Antenna for enhanced bandwidth", *2015 International AP-S Symposium on Antennas and Propagation and North American Radio Science Meeting*, July 19-25, 2015, Vancouver, British Columbia, Canada.

3. **Abhishek Sharma**, Binod K. Kanaujia and Sachin Kumar, "Compact Microstrip Antenna loaded with T-Shaped Slots", *International Conference on Microwave and Photonics (ICMAP 2013)*, Dec. 13-15, 2013, ISM Dhanbad, India.
2. **Abhishek Sharma**, Sachin Kumar, Binod K. Kanaujia and M. K. Khandelwal, "Truncated Compact Circular Microstrip Antenna loaded with Asymmetric Slits", *International Conference on Microwave and Photonics (ICMAP 2013)*, Dec. 13-15, 2013, ISM Dhanbad, India.
1. A. K. Singh, R. K. Gangwar, Binod K. Kanaujia and **Abhishek Sharma**, "Effect of Cylindrical Cavity Enclosure on Resonance Frequency of Annular Ring Microstrip Antenna", *International Conference on Microwave and Photonics (ICMAP 2013)*, Dec. 13-15, 2013, ISM Dhanbad, India.

## Non-referred Contributions and Talks

4. M. Abdelbaky, **Abhishek Sharma**, Alex M. H. Wong, "Towards the experimental demonstration of a 360° surface-level scanning cylindrical metasurface", *The 23rd IEEE (HK) AP/MTT Postgraduate Conference*, City University of Hong Kong, HKSAR, China, Nov. 2022.
3. **Abhishek Sharma**, "Investigations on Dual-Band and Wideband Dielectric Resonator Antennas for MIMO Applications", *Departmental Open Seminar*, Department of Electrical Engineering, IIT Kanpur, Jun. 2018.
2. **Abhishek Sharma**, "Dielectric Resonator Antennas for MIMO Applications", *Research Scholar Day (poster presentation)*, Department of Electrical Engineering, IIT Kanpur, Sep. 2017.
1. **Abhishek Sharma**, "Wideband and Dual-Band Dielectric Resonator Antennas", *State of the Art Seminar*, Department of Electrical Engineering, IIT Kanpur, Oct. 2015.

## Awards and Grants

- Young Scientist Award** - Received URSI-InRaSS Young Indian Radio Scientist Award in 2019 URSI Asia Pacific Radio Science Conference, New Delhi, India (Mar. 9-15, 2019). 2019
- Institute Travel Grant** - Received institute travel grant from IIT Kanpur, India for presenting a paper in 2015 IEEE APS/URSI Symposium, Vancouver, Canada. 2015

## Editorial Services

- Review Editor** - Frontiers in Antennas and Propagation 12/2023- Present
- Associate Editor** - IET Electronics Letters 07/2021- Present

## Professional/Volunteer Activities

- Young Professional Committee Member** - International Conference on Microwave, Antenna and Communication - MAC2023, MNNIT Allahabad, U.P., India. Mar. 2023
- Session Chair** - 2020 Asia-Pacific Microwave Conference, Hong Kong. Dec. 2020
- Chair** - IEEE MTT-S Student Branch Chapter, IIT Kanpur. 04/2016-03/2017
- Treasurer** - IEEE MTT-S Student Branch Chapter, IIT Kanpur. 03/2015-03/2016

## Reviewers

### Journals

- **IEEE**: IEEE Antennas & Wireless Propagation Letters, IEEE Transactions on Antennas & Propagation, IEEE Transactions on Microwave Theory and Techniques, IEEE Access, IEEE Sensors Journal, IEEE Sensors Letters, IEEE Open Journal of Antennas and Propagation, IEEE Transactions on Vehicular Technology, IEEE Systems Journal, IEEE Transactions on Circuits and Systems II: Express Briefs, Canadian Journal of Electrical and Computer Engineering.
- **Nature**: Scientific Reports.
- **IET**: IET Microwaves, Antennas & Propagation, IET Electronics Letters, IET Micro and Nano Letters.
- **Optica**: Optics Express, Optics Continuum, Optics Letters.

- **IOP:** Journal of Physics D: Applied Physics, Journal of Optics, Flexible and Printed Electronics, Engineering Research Express, Nanotechnology, Physica Scripta.
- **AIP:** Journal of Applied Physics.
- **Taylor & Francis:** Waves in Random and Complex Media.
- **Wiley:** International Journal of RF and Microwave Computer-Aided Engineering, Microwave and Optical Technology Letters, International Journal of Circuit Theory and Applications, Chinese Journal of Electronics.
- **IETE:** IETE Technical Review.
- **Springer:** MAPAN.
- **Hindwai:** International Journal of Antennas and Propagation.

## Conferences

- **2023:** IEEE APS/URSI.
- **2022:** IEEE Microwave, Antennas, and Propagation Conference (MAPCON).
- **2021:** International Conference on Electronics, Computing and Communication Technologies, Cross Strait Radio Science and Wireless Technology Conference, Indian Conference on Antennas and Propagation, IEEE International Microwave and RF Conference.
- **2020:** URSI Regional Conference on Radio Science, Asia-Pacific Microwave Conference.
- **2019:** IEEE International Microwave and RF Conference.

## Professional Memberships

- Senior Member, URSI (2021 - Present).
- Member, IEEE (APS+MTT-S) (2019–Present).
- Member, Optical Society of America (2020–Present).
- Member, Virtual Institute for Artificial Electromagnetic Materials and Metamaterials (Metamorphose VI AISBL) (2021–Present).
- Graduate Student Member, IEEE (APS+MTT-S) (2013–2018).
- Student Member, European Microwave Association (Nov 2014–Dec 2018).