Debatosh Guha

FNA FASc FNASc FNAE
IEEE Fellow
Abdul Kalam Technology Innovation National Fellow

Debatosh Guha is a Professor in Radio Physics and Electronics, University of Calcutta. He is an Adjunct Professor at the National Institute of Technology Jaipur, Abdul Kalam Technology Innovation National Fellow, INAE-DST, Govt. of India, and a Distinguished Lecturer of the IEEE. He is the former HAL Chair Professor of IIT Khargapur, Head of the Institute of Radio Physics and Electronics, and Director of the Centre for Research in Nanoscience and Nanotechnology, University of Calcutta.

He received the B. Tech. and M. Tech. degrees in Radio Physics and Electronics and Ph. D. in microwave engineering from the University of Calcutta in 1987, 1989, and 1994 respectively. He joined the same university as an assistant professor in 1994. He had undertaken his post-doctoral research at the Royal Military College of Canada, Kingston, Ontario. He has been connected to different European and North American universities and research institutes as a regular visitor and collaborator.

In recognition of his technical contributions to antenna engineering, Prof. Guha has been elected Fellow of IEEE, and also a Fellow of all four Indian National Academies for Science and Engineering which include Indian National Science Academy (INSA); Indian Academy of Sciences, Bangalore (IASc), the National Academy of Sciences, India (NASI), Allahabad; and Indian National Academy of Engineering (INAE). He is the founder of two flagship international conferences in India (AEMC since 2007, IAW since 2010) and gave leadership in establishing the largest yearly microwave conference in Asia (MAPCon in 2022). He served two most renowned antenna journals e.g. *IEEE Transactions on Antennas and Propagation* & *IEEE Antennas and Wireless Propagation Letters* as an Associate Editor. He has been serving several National Committees as chair/ member and at present, he is the Chair of two global committees of the IEEE Antennas and Propagation Society.

Office
Professor, Institute of Radio Physics and Electronics
University of Calcutta,
92 A. P. C. Road, Kolkata 700009

Contact/Info
Phone (+91) 8910269258
Email dguha@ieee.org
URL www.dguha.info
Linkedin https://www.linkedin.com/in/debatosh-guha-2b0a3615/

Education
- B. Sc. Honors in Physics from the University of North Bengal (1984 with 1st Rank)
- B. Tech. and M. Tech. in Radio Physics and Electronics from the University of Calcutta (1987; 1989 1st Rank)
- Ph. D. in Microwave Engineering from the University of Calcutta (1994)
- Post-Doctoral Research at Royal Military College of Canada, Ontario

Employments

University of Calcutta	**Teaching** Full Professor (July 2008- till date); Assoc. Professor (2004-08); Asst. Professor (1994-1998/ Sr. Grade 1998-2004) **Administration** Head, Institute of Radio Physics and Electronics (Dec. 2016- Nov. 2018) Director, Centre for Research in Nanoscience and Nanotechnology (Sept. 2017- Sept. 2019)
NIT Jaipur	**Adjunct Professor** at the National Institute of Technology Jaipur (2023-)
IIT Kharagpur	**HAL Chair Professor** at the Indian Institute of Technology Kharagpur (2015-2016)
RMC Canada	**Visiting Professor** at the Royal Military College of Canada, Kingston, Ontario (2004-2006)

HONORS & AWARDS

- Abdul Kalam Technology Innovation National Fellow (INAE-DST, Govt. of India)
- Fellow of IEEE (FIEEE)
- Fellow, Indian National Science Academy (FNA)
- Fellow, Indian Academy of Sciences (FASc)
- Fellow, The National Academy of Sciences, India (FNASc)
- Fellow, Indian National Academy of Engineering (FNAE)
- Fellow, West Bengal Academy of Science and Technology (FAScT)
- Fellow, Inst. of Electronics & Telecommunication Engineers (FIETE)
- IPCR Acharya P C Ray Memorial Award (Kolkata 2020)
- IETE Ram Lal Wadha Award (New Delhi 2016)
- IEEE AP-S RMTG Award (Chicago 2012)
- URSI Young Scientist Award (Lille, France 1996)

INTERNATIONAL LEADERSHIP

- IEEE Distinguished Lecturer (2022-)
- Chair, IEEE AP-S Member and Geographic Activities (MGA) Committee (2023-)
- Chair, IEEE Technical Committee on Antenna Measurements (2022-)
- IEEE Fields Award Committee (2018-2019)
- Chair & Indian National Representative to URSI Commission B (2015-)

ACADEMIC LEADERSHIP

- Chair, IEEE Kolkata Section (2013-2014)
- Founding Chair, IEEE AP-MTT Kolkata Chapter (2004)
- Founder: IEEE Applied Electromagnetics Conference: Founding Chair 2007; General Chair 2009, 2011.
- Founder: IEEE Indian Antenna Week (International Workshop): Founding Chair 2010; General Chair 2011
- General Chair: IEEE Conference CALCON, Kolkata, India (2014)
- General Co-Chair: IEEE AP-S Industry Initiatives Committee Workshop, Ahmedabad, (2015)
- Founding Chair and Course Director: Advanced School of Antennas (IEEE-ASA since 2018)

GOVERNMENT & SOCIETAL RESPONSIBILITIES

- President, Indian National Academy of Engineering, Kolkata Chapter (2022-)
- Joint National Committee for COSPAR-URSI-SCOSTEP (2016-2021)
- Vice-President, West Bengal Academy of Science and Technology (2017-2020)
- Expert Committee of MeitY/DST, Govt. of India
- Member, DST-INSPRE Committee/ DST-SERB Programme Advisory Committee, Govt. of India
- Commission-B Lead: URSI Asia Pacific Radio Science Conference (AP-RASC) 2019
- Founders of Indian Conference on Antennas and Propagation (InCAP) 2018
- Founding member: Indian Radio Science Society (InRASS)

- Asia Liaison, 8th European Conf. EUCAP, Hague, The Netherlands (2014)
- Advisory/Program Committees:
  Track Chair (AP-S/URSI Symp. Signapore (2021) • General Chair (IEEE InCAP 2020, Kolkata (2020) • Antennas-Track Chair (AP-S/URSI Symp. Montreal (2020) • ACME, Italy (2014) • iWAT, Australia (2014) • IMaRC, India (2013) • 34th PIERS, Sweden (2013) • ACME, Finland (2013) • URSI- EMTS, Japan (2013) • Asia Pacific Conf. Antennas & Propagation, Singapore (2012)

Foreign Visit & Collaboration

University of Houston, TX • San Diego State University, California • Syracuse University, NY • Royal Military College of Canada, Ontario • Karlsruhe Institute of Technology, Germany • Technische Universität München, Germany • Sapienza Università di Roma, Italy • Università di Pisa, Italy • Queen Mary University of London, UK • University of Bath, UK • Chuo University, Japan • City University of Hong Kong • University of Glasgow, UK.

Invited & Keynote Talks (last 3 years)

2023

- Invited Talk "Some Challenges in Microstrip Antenna Design and State-of-the-art Solutions" Mediterranean Microwave Symposium , Tunisia, 1 Nov. 2023 (scheduled).
- Distinguished Lecture Series in Japan: "Mysteries in Dielectric Resonator Modes and Some Techniques for Advanced Antenna Designs" Kumamoto University, Kumamoto, Japan , 25 Aug. 2023 (scheduled).
- Distinguished Lecture Series in Japan: "Is antenna made of mathematics? - Search for a missing link between Maxwell's theory and Practice" Hokkaido University, Sapporo, Japan, 23 Aug. 2023 (scheduled).
- Invited Talk: 'Is it difficult to Measure an Antenna?', URSI School for Young Scientist, Sapporo, Japan, Aug. 19-20, 2023 (scheduled).
- Invited Talk: 'Elatronics- when and how?" NIT Jaipur, 29 April, 2023.
- Invited Talk: 'Is Antenna made of Mathematics?', IEEE APS SBC, IIT Kharagpur, March 29, 2023.
- Distinguished Lecture at SRM University 'Challenges in Antenna Research', Kattankulathur, Chennai, 25 March 2023.
- Distinguished Lecture at SASTRA Deemed University 'It is Antenna Engineering which transformed the Technology', Thanjavur, 25 March 2023.
- Distinguished Lecture at SASTRA Deemed University 'Metallodielectric Resonator Antenna and its Challenges' Thanjavur, 24 March 2023.
- Distinguished Lecture at DRDO, Bangalore Section of IEEE, 'In Search of Science behind Some Antenna Innovations' Bangalore, 23 March 2023.
- Invited Talk: 'Power of EM Simulation Tools: my little experience', at the Department of Electronics Engineering, Indian Institute of Technology, BHU, Varanasi, Jan. 6, 2023.

2022

- IEEE Distinguished Lecture: 'Mysteries in Dielectric Resonator Modes and Some Techniques for Advanced Antenna Designs' at Università La Sapienza, Rome, Nov. 28, 2022.
- IEEE Distinguished Lecture: 'Is Antenna made of mathematics?' at *Università di Pisa*, APS/MTTS Chapter for Central and Southern Italy, 25 November 25, 2022
- CSIR Foundation Day Lecture at CSIR-Central Scientific Instruments Organisation (CSIR-CSIO), Chandigarh, October 7, 2022.
- IEEE Distinguished Lecture: 'ELECTRODYNAMICS Revisited from a Different Perspective' at AP- S Madras Chapter, Satyabhama Institute of Technology, Sept 27, 2022.
- IEEE Distinguished Lecture: 'Advances in Antenna Engineering and New Insights' at AP- S Madras Chapter, Pondicherry University, Sept 26, 2022.
- IEEE Distinguished Lecture: 'Science to Engineering and Engineering to Science: Journey as an Antenna Engineer' at AP- S and MTT-S Kerala Chapter, Trivandrum, Sept 24, 2022
- Invited Talk 'Have you ever thought?' in IEEE Workshop on Women in Microwave Engineering at IIT Kanpur, September 17, 2022.
- Distinguished Lecture (online), IEEE AP-S Montreal Section Chapter: 'Mysteries in Dielectric Resonator Modes and some Techniques for Advanced antenna Designs", 6 April, 2022
- Invited Talk: 'Sources of Cross-Polarized Radiations of a microstrip patch: are all of them known to us?', *IEEE Workshop on Advancement in Antennas and Microwave Technologies*, 16 March, 2022, SAC, Ahmedabad, India.

- Invited Talk: 'Some challenges in Antenna Design more insight and experience', *Intl. workshop on Modern Antenna Design and its Challenges*, 23 February 2022, Mizoram University, Aizawl, India.

2021

- Keynote Talk: 'Power and Beauty of Simulation Tools: My Experience in Engineering Research', *IEEE Intl. Conf. Applied Electromagnetics, Signal Processing and Communication* (AESPC-2021), 26 – 28 Nov. 2021, Bhubaneswar, India.
- Invited talk: "Engineering Research in Academia: How to Address the Challenges", IEEE Student Branch, S. L. N. College of Engineering, Raichur, 2 September 2021.
- Invited talk: 'Research- an art of addressing challenges' NIT Mizoram Lecture Series (online), June 28, 2021.
- Fellow Inaugural talk at Indian Academy of Sciences, Bangalore: 'Science to engineering and engineering to science: a journey over the last 25 years', June 18, 2021.
- Invited talk: 'Microstrip Patch as Mode-Specific Meta-element: New Concept for Advanced Antenna & Array Design' May 23-26, 2021 at China Microwave Week- International Conference on Microwave and Millimeter Wave Technology (ICMMT2021), Nanjing, China.
- Tutorial Talk: Modern Antennas for Present and Futuristic Wireless Communication Technology, March 8-12, 2021, NIT, Sikkim.
- Keynote Talk: Electronic Systems: WEBINAR-FET-JU R&D Expo, Feb. 27, 2021, Jadavpur University, Kolkata.
- National Science Day Lecture: 'Innovative Mind', Feb. 25, 2021, CMSDS, DRDO, Kolkata.
- Special Lecture: 'The Art of Writing Technical Papers' February 18, 2021, Knowledge Sharing Webinars Series, CESC, Kolkata.

Research Contribution

- **A new class of metalodielectric** hybrid subarray has been introduced with the aim of achieving maximum advantage out of minimum feed and element requirements [IEEE TAP, 69 (7), 3778 - 3787, 2021]. • A novel concept of 'open cavity resonant antenna' along with an AI-based theory has been introduced as an improved variant of the traditional Fabry-Perot cavity [IEEE AWPL, 20 (5) 678-682, 2021]. This design is under progress at ISRO for realizing a unique feed in satellite-borne reflectors.
- **The first-time solution** to the long-standing issue of high cross-polar fields across the skewed radiation planes of any microstrip antenna [*IEEE TAP*, 68 (6), 4950 - 4954, 2020], [*IEEE AWPL*, 19 (1), 99-103, 2020]. This indeed solves the major shortcoming in SAR antennas and is already in process for the practical applications.
- Reported the **glue-free mount for Dielectric Resonator Antennas** [*IEEE AWPL*, 16, 2440-2443, 2017] for the first time. This is going to solve the major weakness of using this antenna on highly vibrating platforms like air-borne and space-borne systems.
- **Introduced a new radiating mode** ($HEM_{12\delta}$) in cylindrical shaped Dielectric Resonator Antenna (DRA) and successfully resolved the challenges of its excitation by innovating a series of novel feeds [*IEEE TAP*, 60 (1), 71-77, 2012]. This overall approach enables cylindrical DRA qualified for on-chip implementation.
- **Conceived and introduced Defected Ground Structure (DGS)** integration techniques to planar antennas for mitigating cross-polarized radiations and mutual coupling in array elements [*IEEE AWPL*, 4, 455-458, 2005]. This has been eventually established it as an attractive and industry-qualified technique.

Areas of interest

Metasurface and metaelement induced antenna designs; Solutions to cross-polarization issues of printed antenna and arrays; AI based advanced solutions to antenna engineering; Dielectric Resonator Antenna and hybrid subarray; Defected Ground Structure-integration techniques; Fabry-Perot and open resonant cavity antennas (Theory for pattern synthesis and Advanced feed design for large reflectors)

Industry and Research Collaborations

- HCL Technologies Limited, Chennai, India (2021-)
- University of Glasgow, UK (2021-)
- Indian Institute of Technology Kharagpur (2017-)
- Indian Space Research Organization (ISRO) (2007-)
- Spotwave (www.spotwave.com), Canada (2005-2007)
- Royal Military College of Canada, Ontario (2004-)

Ph. D. Supervised

22 (Awarded 16; Submitted 01, Under progress 05)

BOOKS (authored & edited)

- 2022: **IEEE Press-Wiley (USA)**
  Defected Ground Structure (DGS) Based Antennas: D Guha, C. Kumar, and S. Biswas,

- 2011: **Wiley Int. Sci. (UK)**
  Microstrip and Printed Antennas: D. Guha and Y. Antar (Ed.)

JOURNAL PAPERS (72 in **IEEE**; 7 in IEE / IET; 15 in Elsevier/Wiley/)

1. D. Dutta, **D. Guha**, and C. Kumar, "A Concept of Advanced Design Governed by Theoretically Predicted Current Distributions on the Ground Plane Beneath an Aperture-Fed Microstrip Antenna," ***IEEE Open J. Antennas and Propagat***., Vol. 4, pp. xx - xx, 2023 (in press).
2. Sk. Rafidul, **D. Guha**, and C. Kumar, "Sources of Cross-polarized Radiations in Microstrip Patches: Multi-Parametric Identification and Insights for Advanced Engineering," ***IEEE Antennas and Propagation Mag.***, Vol. 65, no. 2, pp. 92-103, April 2023.
3. Sk. Rafidul, P. Mishra, R. Bose, and **D. Guha**, "Uniformly Improved Cross-polar Discrimination in a Dielectric Resonator Antenna by Conduction Current Control," ***IEEE Trans. Antennas and Propagat***., Vol. 71, No. 3, pp. 2820- 2825, March 2023.
4. R. K. Chakraborty and **D. Guha** "DRA Induced Conduction Current on the Metallic Ground Plane: Interesting Observations on its Impact and Usefulness," ***IEEE Antennas and Propagation Mag***., vol. 65, no. 1, pp. 49-59, Feb. 2023.
5. C. Kumar, C. Sarkar, and **D. Guha**, "Radiating Mode Induced Cross-Polar Source in Microstrip Patch: Identification and Solution," ***IEEE Antennas and Wireless Propagation Letters***, Vol. 21, No. 10, pp. 2080- 2084, Oct. 2022.
6. D. Dutta, **D. Guha**, and C. Kumar, "Microstrip patch with grounded spikes: a new technique to discriminate orthogonal mode for reducing cross-polarized radiations," ***IEEE Trans. Antennas and Propagat.***, Vol. 70, No. 3, pp. 2295 - 2300, March 2022.
7. C. Sarkar, **D. Guha**, and C. Kumar, "Source of Cross-Polar Fields in a Triangular Patch: Insight and Experimental Proof," ***IEEE Antennas and Wireless Propagation Letters*** Vol. 20, No. 12, pp. 2437 - 2441, Dec. 2021.
8. P. Gupta, **D. Guha**, and C. Kumar, "Dual-Mode Cylindrical DRA: Simplified Design with Improved Radiation and Bandwidth," ***IEEE Antennas and Wireless Propagation Lett.***, Vol. 20, No. 12, pp. 2359 - 2362, Dec. 2021.
9. C. Sarkar, **D. Guha**, and C. Kumar, "Hybrid Subarray Using a New Concept of Feed for Advanced Antenna and Array Designs," ***IEEE Trans. Antennas Propagat***., vol. 69, no. 7, pp. 3778 - 3787, July 2021.
10. D. Dutta, **D. Guha**, and C. Kumar, "Mitigating Unwanted Mode in a Microstrip Patch by a Simpler Technique to Reduce Cross-Polarized Fields over the Orthogonal Plane," ***IEEE Antennas and Wireless Propagation Lett.***, Vol. 20, No. 5, pp. 678 - 682, May 2021.
11. K. Dutta, P. Mishra, S. Manna, A. Pal, and **D. Guha**, "Geometrical Optics Based Advanced Design of an Open Cavity Resonant Antenna," ***IEEE Antennas and Wireless Propagation Lett.***, Vol. 20, No. 3, pp. 322-326, March 2021.
12. C. Kumar, and **D. Guha**, "Higher Mode Discrimination in a Rectangular Patch: New Insight Leading to Improved Design with Consistently Low Cross-Polar Radiations," ***IEEE Trans. Antennas Propagat***., vol. 69, no. 2, pp. 708 - 714, Feb. 2021.
13. C. Kumar and **D. Guha**, "Mitigating Backside Radiation Issues of Defected Ground Structure Integrated Microstrip Patches," ***IEEE Antennas and Wireless Propagation Lett.***, Vol. 20, No. 12, pp. 2502 - 2506, Dec. 2020.
14. I. Pasha, C. Kumar, and **D. Guha**, "Mitigating High Cross-Polarized Radiation Issues over the Diagonal Planes of Microstrip Patches," ***IEEE Trans. Antennas Propagat***., vol. 68, no. 6, pp. 4950-4054, June 2020.
15. S. Choudhury, A. Mohan, P. K. Mishra, and **D. Guha**, "Reconfigurable Dual-Fed Horn with Pattern Switchability Realized by SIW Technology," ***IEEE Trans. Antennas Propagat***., Vol. 68 , No. 5, pp. 4072-4076, May 2020.

16. B. P. Kumar, **D. Guha**, and C. Kumar, "Reduction of Beam Squinting and Cross-Polarized Fields in a Wideband CP Element," ***IEEE Antennas and Wireless Propagation Lett.***, Vol. 19, No. 3, pp. 418-422, March 2020.
17. P. Gupta, **D. Guha**, and C. Kumar, "Higher Mode Based Wideband Antenna Design Using an Engineered Cylindrical Dielectric Resonator," ***IET Microwaves, Antennas and Propagations***, Vol. 14, No. 4, pp. 241-246, March 2020.
18. D. Ganguly, **D. Guha**, and Y. Antar, "Cross-Finned UWB Monopole for Wireless Applications: Design Insight and Characterization," ***AEÜ-Int. J. Electronics and Communications***, Vol. 116, March 2020.
19. C. Kumar and **D. Guha**, "Asymmetric and Compact DGS Configuration for Circular Patch with Improved Radiations," ***IEEE Antennas and Wireless Propagation Lett.***, Vol. 19, No. 2, pp. 355-357, Feb. 2020.
20. D. Dutta, Sk Rafidul, **D. Guha**, and C. Kumar, "Suppression of Cross-Polarized Fields of Microstrip Patch across All Skewed and Orthogonal Radiation Planes," ***IEEE Antennas and Wireless Propagation Lett.***, Vol. 19, No. 1, pp. 99-103, Jan. 2020.
21. C. Sarkar, C. Kumar, and **D. Guha**, "A User Friendly Glueless Solution for Dielectric Resonator Antenna using Probe Feeding Technique," ***IEEE Antennas Propagat. Mag.*** Vol. 61, No. 4, pp. 70-74, Aug. 2019.
22. S. Choudhury, A. Mohan, P. Mishra, and **D. Guha**, "Wideband Pyramidal Ridged Horn Design by SIW Technology," ***IEEE Antennas and Wireless Propagation Lett.***, Vol. 18, No. 7, pp. 1517-1521, June 2019 .
23. I. Pasha, C. Kumar, and **D. Guha**, "Application-Friendly Improved Designs of Single-Fed Circularly Polarized Microstrip Antenna," ***IEEE Antennas Propagat. Mag.*** Vol. 61, No. 3, pp. 80-89, June 2019.
24. I. Pasha, C. Kumar, and **D. Guha**, "Simultaneous Compensation of Microstrip Feed and Patch by Defected Ground Structure for Reduced Cross- Polarized Radiation," ***IEEE Trans. Antennas Propagat***., vol. 66, no. 12, pp.7348-7352, Dec. 2018.
25. C. Sarkar, **D. Guha**, C. Kumar, and Y. Antar, "New Insight and Design Strategy to Optimize Cross-Polarized Radiations of Microstrip Patch over Full Bandwidth by Probe Current Control," ***IEEE Trans. Antennas Propagat***., Vol. 66, No. 8, pp. 3902-3909, Aug. 2018.
26. S. Choudhury, A. Mohan, and **D. Guha**, "Wideband Quasi Omnidirectional Planar Inverted F-Antenna for Compact Wireless Systems," ***IEEE Antennas and Wireless Propagation Lett.***, Vol. 17, no. 7, pp. 1305-1308, July 2018.
27. S. Choudhury, A. Mohan, and **D. Guha**, "SIW-Induced Dualmode Dualband Loop Antenna: A New Design Insight and Guideline," ***Microwave and Optical Technol. Lett.,*** Vol. 60, no. 1, pp. 50-56, Jan. 2018.
28. C. Sarkar, **D. Guha**, and C. Kumar, "Glueless Compound Ground Technique for Dielectric Resonator Antenna and Arrays," ***IEEE Antennas Wireless Propagation Lett***., Vol. 16, pp. 2440-2443, 2017.
29. K. Dutta, **D. Guha,** and C. Kumar, "Theory of Controlled Aperture Field for Advanced Superstrate Design of a Resonance Cavity Antenna with Improved Radiations Properties," ***IEEE Trans. Antennas Propagat***., Vol. 65, no. 3, pp. 1399-1403, March 2017.
30. **D. Guha**, D.Ganguly, S. George, C. Kumar, M. T.Sebastian, and Y. Antar, "New Design Approach for Hybrid Monopole to Achieve Increased Ultra-Wide Bandwidth," ***IEEE Antennas Propagat. Mag.*** pp. 139-144, Feb. 2017.
31. C. Kumar and **D. Guha**, "Asymmetric Geometry of Defected Ground Structure for Rectangular Microstrip: A New Approach to Reduce its Cross-Polarized Fields," ***IEEE Trans. Antennas Propagat***., Vol. 64, No. 6, pp. 2503-2506, June 2016.
32. H. Gajera, **D. Guha,** and C. Kumar, "New Technique of Dielectric Perturbation in Dielectric Resonator Antenna to Control the Higher Mode Leading to Reduced Cross-Polar Radiations," ***IEEE Antennas Wireless Propagation Lett.***, Vol. 15, pp. 445-448, 2016.
33. C. Kumar, I. Pasha, and **D. Guha,** "Defected Ground Structure Integrated Microstrip Array Antenna for Improved Radiation Properties," ***IEEE Antennas Wireless Propagation Lett.***, Vol. 15, pp. 310-312, 2016.
34. K. Dutta, **D. Guha,** and C. Kumar, "Synthesizing Aperture Fields over the Superstrate of Resonance Cavity Antenna for Modifying its Radiation Properties," ***IEEE Antennas Wireless Propagation Lett.***, Vol. 15, pp. 1677-1680, 2016.
35. P. Gupta, **D. Guha**, and C. Kumar, "Dielectric Resonator Working as Feed as well as Antenna: New Concept for Dual Mode Dualband Improved Design," ***IEEE Trans. Antennas Propagat***., Vol. 64, No. 4, pp. 1497-1502, Apr. 2016.

36. **D. Guha** and C. Kumar, "Microstrip Patch versus Dielectric Resonator Antenna Bearing all Commonly Used Feeds: Experimental Investigations to Determine the Appropriate One Based on Practical Requirements" ***IEEE Antennas Propagat. Mag***., Vol. 58, No. 1, pp. 45-55, Feb. 2016.

37. **D. Guha**, C. Sarkar, S. Dey, and C. Kumar, "Wideband High Gain Antenna Realized from Simple Unloaded Single Patch," ***IEEE Trans. Antennas Propagat***., Vol. 63, No. 10, pp. 4562 - 4566, 2015.
38. S. Biswas, **D. Guha**, and C. Kumar, "Design of Aperture-Coupled Dielectric Resonator Antenna Free From Higher Order Modes and Harmonics," ***Microwave Opt. Technol. Lett.*** Vol. 57, No. 8, pp. 1980-1983, Aug. 2015.
39. **D. Guha**, H. Gajera, and C. Kumar, "Perturbation Technique to Improve Purity of Modal Fields in Dielectric Resonator Antenna Resulting in Reduced Cross-Polarized Radiation," ***IEEE Trans. Antennas Propagat***., Vol. 63, No. 7, pp. 3253 – 3257, July 2015.
40. C. Kumar and **D. Guha**, "Reduction in Cross-Polarized Radiation of Microstrip Patches using Geometry Independent Resonant-type Defected Ground Structure (DGS)," ***IEEE Trans. Antennas Propagat***., Vol. 63, No. 6, pp. 2767 – 2772, June 2015.
41. K. Dutta, **D. Guha**, C. Kumar, Y. Antar, "New Approach in Designing Resonance Cavity High Gain Antenna Using Nontransparent Conducting Sheet as the Superstrate," ***IEEE Trans. Antennas Propagat***., Vol. 63, No. 6, pp. 2807 – 2813, June 2015.
42. **D. Guha**, H. Gajera, and C. Kumar, "Cross-Polarized Radiation in a Cylindrical Dielectric Resonator Antenna: Identification of Source, Experimental Proof, and Its Suppression," ***IEEE Trans. Antennas Propagat***., Vol. 63, No. 4, pp. 1863 – 1867, Apr. 2015.
43. C. Kumar, M. I Pasha, and **D. Guha,** "Microstrip Patch with Non-Proximal Symmetric Defected Ground Structure (DGS) for Improved Cross-Polarization Properties over Principal Radiation Planes," ***IEEE Antennas Wireless Propagation Lett.***, Vol. 14, pp. 1412 – 1414, 2015.
44. **D. Guha**, P. Gupta, and C. Kumar, "Dualband Cylindrical Dielectric Resonator Antenna Employing $HEM_{11\delta}$ and $HEM_{12\delta}$ Modes Excited by New Composite Aperture," ***IEEE Trans. Antennas Propagat***., Vol. 63, No. 1, pp. 433 – 438, Jan 2015.
45. **D. Guha**, A. Bnaerjee, C. Kumar, Y. M. M. Antar, and M. T. Sebastian, "Design Guideline for Cylindrical Dielectric Resonator Antenna Using Recently Proposed $HEM_{12\delta}$ Mode" ***IEEE Antennas and Propagation Mag.*** , Vol. 56, No. 4, pp. 148-158, Aug. 2014.
46. D. Ganguly, **D. Guha**, S. Das, and A. Rojatkar, "Systematic Approach to Estimating Monocycle Pulse for Time Domain Studies of UWB Antennas Using Numerical Computations and Simulation Tools" ***IEEE Antennas and Propagation Mag.***, Vol. 56, No. 4, pp. 73-87, Aug. 2014.
47. **D. Guha**, A. Banerjee, C. Kumar, and Y. Antar, "New Technique to Excite Higher Order Radiating Mode in a Cylindrical Dielectric Resonator Antenna," ***IEEE Antennas and Wireless Propagation Lett.***., Vol. 13, pp. 15-18, 2014.
48. C. Kumar and **D. Guha**, "Defected Ground Structure (DGS)-Integrated Rectangular Microstrip Patch for Improved Polarization Purity with Wide Impedance Bandwidth," ***IET Microwaves, Antennas and Propagations,*** Vol. 8, No. 8, pp. 589-596, June 2014.
49. **D. Guha**, S. Biswas, and C. Kumar, "Printed Antenna Designs Using Defected Ground Structures: A Review of Fundamentals and State-of-the-Art Developments," ***Forum for Electromagnetic Research Methods and Application Technologies (FERMAT),*** Vol. 2, pp. 1-13, Mar-Apr-007, 2014.
50. S. Biswas, **D. Guha**, and C. Kumar, "Control of Higher Harmonics and Their Radiations in Microstrip Antennas Using Compact Defected Ground Structures," ***IEEE Trans. Antennas Propagat***., Vol. 61, No. 6, pp. 3349-3353, June 2013.
51. S. Biswas and **D. Guha**, "Isolated open-ring defected ground structure to reduce mutual coupling between circular microstrips: characterization and experimental verification," ***Progress in Electromagnetics Research M***, Vol. 29, pp. 109-119, 2013.
52. S. Biswas and **D. Guha**, "Stop-Band Characterization of an Isolated DGS for Reducing Mutual Coupling between Adjacent Antenna Elements and Experimental Verification for Dielectric Resonator Antenna Array," ***AEÜ-Int. Journal Electronics and Communications*****,** Vol. 67, pp. 319-322, 2013.
53. C. Kumar and **D. Guha**, "Linearly polarized elliptical microstrip antenna with improved polarization purity and bandwidth characteristics," ***Microwave Opt. Technol. Lett.*** Vol. 54, No. 10, pp. 2309-2314, Oct. 2012.

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CONFERENCE ARTICLES: 160+ (*not listed here*)

PATENTS

1. **Patent Application No 201731000973** (India)
   Inventor: D. Guha, C. Sarkar, C. Kumar, S. Biswas
   Title: Novel Dielectric Resonator Antenna and Array Structure to avoid adhesive or glue
2. **Patent Application No.: KOL/201831003527** (India)
   Inventor(s): S. Choudhury, A. Mohan, and D. Guha
   Title: A Millimeter Wave Horn Antenna
3. **Patent Application No.: KOL/201831037619** (India)
   Inventor(s): S. Choudhury, A. Mohan, and D. Guha
   Title: A Substrate Integrated Waveguide based Multi-Horn Antenna
4. **Patent Application No.: 201931008444** (India)
   Inventors: D. Guha, M. Pasha, and C. Kumar.
   Title: Microstrip Patch with Reduced Cross Polarized Radiations over Entire Skewed Radiation Planes

STUDENTS' PROFILE

- Fellow of Indian National Academy of Engineering (1)
- Professor/Departmental Head at Central and State Universities/ Institutes in India (5)
- Scientist Engineers at ISRO Labs and Centres (5)
- Engineers in the leading US Industries (2)
- Group Head in a Multi-national Industry in India (1)
- Post-Doctoral Researchers at the Universities in the US, Canada, Italy (6)
