Name **Koushik Dutta**

Date of Birth 17-09-1976

Residence 2A Dhirendra Apartment,
Panchasayar Road, Jalpole, Garia
Kolkata 700 094

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Academic Qualifications

- Ph. D. (Tech.) in Radio Physics and Electronics, University of Calcutta, 2017
- M. Tech. in Radio Physics and Electronics, University of Calcutta, 2004, First Class
- B. Tech. in Radio Physics and Electronics, University of Calcutta, 2002, First Class
- B. Sc. (Honors) in Physics, University of Calcutta, 1999, First Class, National Scholarship
- 10+2 in Science, West Bengal Council of Higher Secondary Education, First Division
- 10+, West Bengal Board of Secondary Education, First Division

Employment Details

- **Asso. Professor,** Netaji Subhash Engineering College (affiliated under MAKAUT), Kolkata (July 2022 - present)
- **Visiting Scientist (Post-Doc):** University of Central Florida, Orlando, USA (1st May 2021-31st Oct 2021)
- **Asst. Professor,** Netaji Subhash Engineering College, Kolkata (Mar 2009 - June 2022)
- **Assistant Professor**, Academy of Technology, Bandel, WB (July 2005 - Mar 2009)
- **Senior Lecture** at Haldia Institute of Technology, Haldia (July 2004 - July 2005)
- **Lecturer** at JIS College of Engineering, Kalyani, India (Jan 2004 - July 2004)

Academic Leadership (Selected)

- Head of the Department, ECE, NSEC (May 2022-present)
- Faculty In-Charge, ECE, NSEC (July 2019-May 2022)
- NAAC, Core Committee Member and Criteria owner, 2024.
- NBA Coordinator, ECE, NSEC, 2019
- Member, NAAC working committee, NSEC, 2017
- Member, NBA core committee, ECE, NSEC, 2016
- Departmental in-charge, training & placement cell, ECE, NSEC, 2016
- Member, Internal Quality Assurance Cell (IQAC), NSEC, 2017-2019, 2021-present
- Member ED Cell, NSEC, 2019

Research Publications

Journals

1. **K. Dutta**, D. Guha, C. Kumar, and Y. M. M. Antar, "New approach in designing resonance cavity high gain antenna using nontransparent conducting sheet as the superstrate," ***IEEE Transactions on Antennas and Propagation.***, vol. 63, no. 6, pp. 2807 – 2813, June 2015.
2. **K. Dutta**, D. Guha, and C. Kumar, "Synthesizing Aperture Fields over Engineered Metal Film Superstrate in a Resonance Cavity Antenna for Modifying its Radiation Properties," ***IEEE Antennas and Wireless Propagation Letters***, Vol. 15, pp. 1677–1680, 2016.
3. **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 Transactions on Antennas and Propagation***, vol. 65, no. 3, pp. 1399–1403, March 2017.
4. **K. Dutta**, A. Chatterjee, S. Chakrabarti, and S. Bhunia, "Design of Wideband Resonant Cavity Antenna using Particle Swarm Optimization," ***Int. Jou. of Recent Tech. & Engg.*** (Elsevier Scopus), ISSN: 2277-3878, vol. 8, no. 5, pp. 2360-

2364, Jan 2020.

5. Poornima S., **K. Dutta**, H. Gajera, Chandrashekar K. S., and Chandramma S., "Flexible and Miniaturized Design of Microstrip Patch Antenna with Improved Cross-Polarized Radiation," ***AEÜ - International Journal of Electronics and Communications*** (***Elsevier***), vol. 116, Jan 2020.
6. Chandrashekar K. S., Chandramma S., H. Gajera, and **K. Dutta**, "Design of Microstrip Patch Antenna for Dual-band Operation Using Metal Ring Superstrate," ***Int. Jou. of Recent Tech. & Engg.*** (Elsevier Scopus)**,** ISSN: 2277-3878, vol. 8, no. 5, pp. 4539–4543, Jan 2020.
7. Chandrashekar K. S., **K. Dutta**, H. Gajera, Poornima S., and Chandramma S., "An Analytical Approach of Designing Compact Microstrip Patch Antenna using Metal-Ring Superstrate for Wideband and Broadside Radiations," ***AEÜ - International Journal of Electronics and Communications*** (***Elsevier***)**,** vol. 127, December 2020.
8. **K. Dutta**, "New Concept, Theory, and Advanced Design of Resonant Cavity Antenna," Forum for Electromagnetic Research Methods and Application Technologies (FERMAT), vol. 39, pp. 1-37, May-June 2020.
9. **K. Dutta**, P. K. Mishra, S. Manna, A. Pal, and D. Guha, "Geometrical Optics Based Advanced Design of an Open Cavity Resonant Antenna," ***IEEE Antennas and Wireless Propagation Letters***. vol. 20, no. 3, pp. 322-326, March 2021.
10. A. Chatterjee, **K. Dutta**, S. Chakrabarti and R. Mittra, "Advanced Design of High-Gain Fabry–Perot Cavity Antenna Offering Wide Common Impedance and Gain Bandwidth," ***IEEE Antennas and Wireless Propagation Letters***, vol. 22, no. 5, pp. 1214-1218, May 2023. doi: 10.1109/LAWP.2023.3236771.
11. S. Mukherjee, A. Roy, S. Maity, T. Tewary, **K. Dutta**, S. Bhunia, "EBG Coupled Tri-Notched Miniaturized Ultra Wideband Antenna Loaded with Slot and Parasitic Strip", ***International Journal of Communication Systems***, June 2023.
12. M. Mishra, **K. Dutta,** R. S. Kshetrimayum, Md. S. Sharawi, A. A. Kishk, S. Chaudhuri, and S. Bhunia, "Mutual Coupling Reduction Between Two Tightly Packed Half-Split Cylindrical Dielectric Resonator Antennas", ***IEEE Transactions on Antennas and Propagation***, vol. 71, no. 12, pp. 9974-9979, Dec. 2023, doi: 10.1109/TAP.2023.3325205.
13. **K. Dutta,** M. O. Akinsolu, M. Mishra, B. Liu, and D. Guha, "Application of Machine Learning-Assisted Global Optimization for Improvement in Design and Performance of Open Resonant Cavity Antenna", ***IEEE Open Journal of Antennas and Propagation***, vol. 5, no. 3, pp. 693-704, June 2024, doi: 10.1109/OJAP.2024.3385675.
14. A. Chatterjee, **K. Dutta,** M. Mishra, and S. Bhunia, "A Novel Wideband Design of Dielectric Resonator Antenna using Defected Ground Structure", ***IEEE Transactions on Antennas and Propagation*** (under process) 2025.
15. Dileep M. K., H. Gajera, **K. Dutta**, Lakshmikantha A. C., "Advanced Design and Analysis of Cylindrical Dielectric Resonator Antenna with High Gain and Wide Bandwidth for Ku-Band Applications", ***IEEE Transactions on Antennas and Propagation*** (under process) 2025.
16. A. Datta Sinha and **K. Dutta**, M. Mishra, and S. Bhunia, "Novel Antenna Based Modulation Technique Demonstrated as Polarization Shift Keying", ***IEEE Antennas and Wireless Propagation Letters*** (under process) 2025.
17. A. Datta Sinha and **K. Dutta**, M. Mishra, and S. Bhunia, "Antenna Based Advanced Polarization Modulation with High Spectral Efficiency", ***AEÜ - International Journal of Electronics and Communications*** (***Elsevier***) (will be communicated) 2024.
18. **K. Dutta,** P. Mishra, M. Mishra, and S. Bhunia, "Glue Less Design of Dielectric Resonator Antenna for Satellite Applications with Improved Cross-Polar Radiation and Electrostatic Charge Density", ***IEEE Transactions on Antennas and Propagation*** (under process) 2024.

Conference/Symposia

1. J Roychoudhary, **K Dutta**, A Chatterjee, S Chakrabarti, and Raj Mittra, "An Edge-Tapered Antipodal Beam Switching Antenna with 360° Azimuthal Beam Steering", *2024 IEEE International Symposium on Antennas and Propagation and ITNC-USNC-URSI Radio Science Meeting*, Florence, Italy 14-19 July 2024.
2. Lakshmi Kantha A C, **K Dutta**, H Gajera, Dileep M K, and Raj Mittra, "Wideband Design of a Compact Square Dielectric Resonator Antenna for Improved Radiation Features", *2024 IEEE International Symposium on Antennas and Propagation and ITNC-USNC-URSI Radio Science Meeting*, Florence, Italy 14-19 July 2024.
3. A. Chatterjee, **K. Dutta**, S. Chakrabarti, and R. Mittra, "A Printed Design of Fabry-Perot Cavity Antenna with High Gain-Bandwidth Product", *IEEE Wireless, Antenna & Microwave Symposium (WAMS 2023)*, Gandhinagar, India, June 07-10, 2023.

4. A. Chatterjee, **K. Dutta**, U. Purkayastha, S. Chakrabarti, and R. Mittra, "A Wideband Design of Circularly Polarized Antenna with High Gain", *IEEE Wireless, Antenna & Microwave Symposium (WAMS 2023)*, Gandhinagar, India, June 07-10, 2023.
5. A. Indu, **K. Dutta** and R. Mittra, "Compact and Wideband Design of a Switched-Beam Lens Antenna for Millimeter-Wave 5G Applications," 2022 IEEE Microwaves, Antennas, and Propagation Conference (MAPCON), Bangalore, India, Dec 12-15, 2022, pp. 617-620.
6. A. Indu, **K. Dutta**, R. Mittra and D. Oueslati, "A Novel Design of SIW-based Phase Shifter for Electronic Beam Switching in Millimeter Wave 5G," 2022 IEEE Microwaves, Antennas, and Propagation Conference (MAPCON), Bangalore, India, Dec 12-15, 2022, pp. 1636-1639.
7. M. Mishra, S. Chaudhuri, R. Singh Kshetrimayum, **K. Dutta**, "New Design Approach for Mutual Coupling Reduction in Two-Port Compact Antenna Array for W-LAN MIMO Applications", *3rd URSI AT-AP-RASC*, Gran Canaria, Spain, 29 May–3 June 2022.
8. **K. Dutta**, A Chatterjee, and R. Mittra, "Wideband Design of a Circularly Polarized Fabry-Perot Cavity Antenna", *2021 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting (AP-S/URSI 2021)*, Singapore, 4-10 December 2021.
9. **K. Dutta** and R. Mittra, "Compact and Wideband Design of Substrate Integrated Waveguide Fed Dielectric Resonator Antenna Array", *2021 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting (AP-S/URSI 2021)*, Singapore, 4-10 December 2021.
10. Poornima S, H. Gajera, Chandrashekar K. S, and **K. Dutta**, "Design of Rectangular Microstrip Antenna with Defected Patch Surface for Improved Cross-Polarized Radiations", *2020 IEEE International Conference for Convergence in Engineering (ICCE 2020)*, Kolkata, India, 5-6 October 2020.
11. H. Gajera, **K. Dutta,** Chandrashekar K. S, Poornima S, and Chandramma S, "Dual-Band Design of Microstrip Patch Antenna with Copper Ring Superstrate for X-Band Applications", *2020 IEEE International Conference for Convergence in Engineering (ICCE 2020)*, Kolkata, India, 5-6 October 2020.
12. A. Datta Sinha and **K. Dutta**, "Advanced Design of Transmitting Antenna System for Polarization Modulation", *2020 IEEE International Conference for Convergence in Engineering (ICCE 2020)*, Kolkata, India, 5-6 October 2020.
13. **K. Dutta**, P. Mishra, and D. Guha, "Quasi-Optical Design Approach for Resonant Cavity Antenna with Improved Characteristics", *2020 IEEE International Conference for Convergence in Engineering (ICCE 2020)*, Kolkata, India, 5-6 October 2020.
14. **K. Dutta**, A. Chatterjee, and S. Chakrabarti, "An Efficient Design Methodology for Fabry-Perot Cavity Antenna", *IEEE Indian Conference on Antennas and Propagation - InCAP 2019*, Ahmedabed, India, 19-22 Dec 2019.
15. Chandrashekar K. S, H. Gajera, **K. Dutta**, Poornima S, and Chandramma S, "A Wideband Design of Microstrip Patch Antenna Loaded with Metal Ring Superstrate", *IEEE Indian Conference on Antennas and Propagation - InCAP 2019*, Ahmedabed, India, 19-22 Dec 2019.
16. Poornima S, H. Gajera, **K. Dutta**, Chandrashekar K. S, and Chandramma S, "An Improved Design of Microstrip Patch for the Suppression of Cross-Polarized Radiations", *IEEE Indian Conference on Antennas and Propagation - InCAP 2019*, Ahmedabed, India, 19-22 Dec 2019.
17. **K. Dutta** and D. Guha, "Fabry-Perot Resonant Cavity Antenna: New Theory and Design Opportunity", *AP-RASC 2019*, Delhi, 9-15 March 2019 (Invited Paper; The Radio Science Bulletin; ISSN 1024-4530).
18. **K. Dutta**, A. Chatterjee, and D. Guha, "Wideband Design of Dielectric Resonator Antenna using Defected Ground Structure", *IEEE International conference on Applied Electromagnetics, Signal Processing & Communication, AESPC 2018*, Bhubaneswar, India, 22-24 Oct 2018.
19. **K. Dutta**, P. Mishra, S. Manna, A. Pal, and D. Guha, "Wideband Design of a Fabry-Perot Cavity Antenna with Improved Features", *IEEE Indian Conference on Antennas and Propagation-InCAP 2018*, Hyderabad, India, 16-19 Dec 2018.
20. **K. Dutta**, A. Chatterjee, S. Chakrabarti, and D. Guha, "A New Fabry-Perot Cavity Antenna with Wideband Characteristics", *IEEE Indian Conference on Antennas and Propagation-InCAP 2018*, Hyderabad, India, 16-19 Dec 2018.
21. **K. Dutta**, A. Datta Sinha, D. Guha, and C. Kumar, "New Idea of Antenna Based Modulation Technique Demonstrated as Polarization Shift Keying", *IEEE Applied Electromagnetics Conference-AEMC 2017*, Aurangabad, India, 19-22 Dec 2017.
22. D. Guha, **K. Dutta**, and C. Kumar, "New Theory for Fabry-Perot Cavity Antenna", *URSI AP-RASC 2016*, Seoul, Korea, pp. 386-389, Aug. 21-25, 2016. (Invited Paper in Special Session on Novel Mathematical Methods in Electromagnetics)
23. **K. Dutta**, D. Guha, and C. Kumar, "Simple and New Design of Resonance Gain Antenna for Circular Polarization with Improved Characteristics," *IEEE AEMC 2015*, IIT Guwahati, India, 18-21 Dec 2015.

24. **K. Dutta**, D. Guha, and C. Kumar, "New Superstrate for Resonance Gain Antenna with Reduced Side Lobe Level ", in IEEE APSYM-2014, pp. 259-262, Cochin, Kerala, 17-19 Dec 2014.
25. **K. Dutta** and D. Guha, "Resonance Gain Antenna Using Nonengineered Surface: Compact Design with Broadband High Gain Characteristics ", in IEEE CALCON-2014, Kolkata, 7-8 Nov 2014. (ISBN 978-93-833-0383-0)
26. **K. Dutta**, P. Sadhukhan, S. Paul, D. Guha, and C. Kumar, "New Design of Resonance Gain Antenna using Half-Split Cylindrical DRA", in IEEE Indian Antenna Week (IAW 2014), Chandigarh, 26-30 May 2014.
27. **K. Dutta**, D. Guha, C. Kumar, and Y. M. M. Antar, "Resonance Gain Antenna Using Fully Reflecting Surface (FRS): New Boundary Condition to Realize Wideband High Gain Operation", in IEEE conference APS-URSI, pp. 1978-1979, Memphis, USA, 6-11 July 2014.
28. **K. Dutta**, D. Guha, and T. Kundu, "New Circularly Polarized Resonance Cavity Antenna," IEEE Applied Electromagnetics Conference - AEMC 2013, Bhubanaswar, India, pp. 1-2, 18-20 Dec 2013.
29. **K. Dutta** and D. Guha, "A Resonance Cavity Dielectric Resonator Antenna," in Recent Trends in Microwave Techniques and Applications (Microwave – 2012), vol. MW1283, pp. 43, Jaipur, India, 30th July-1st Aug 2012.
30. **K. Dutta** and R. Chatterjee, "Some Studies on Precipitable Water Vapour Measurement using Radiosonde and GPS Technique", National Conference on Pervasive computing and communication, NCPCC 2012, vol. 48, pp. 179-183, BBIT, West Bengal, India, 2-3 Mar 2012.
31. D. Guha, **K. Dutta**, J. Y. Siddiqui, and Y. M. M. Antar, "New Two-Layer Split Ring Resonator for Metamaterial Design", International conference of North Americal Radio Science Meeting URSI-CNC/USNC (URSI-2007), Ottawa, Canada, 22-26 July 2007.

PhD Thesis

Title: ***New Concept Theory and Advanced Design of Resonance Cavity Antenna***
(Shodhganga Link: https://shodhganga.inflibnet.ac.in/handle/10603/185732)

Academic Accomplishments

- Received best paper award on all tracks in WAMS 2023 (with cash award).
- Best poster paper award (Rank III): for the paper titled "An Improved Design of Microstrip Patch for the Suppression of Cross-Polarized Radiations" in *IEEE InCAP 2019*, Ahmedabed, India, 19-22 Dec 2019
- Best UG project award (1st Place) 'Student Project Competition Award' received by UG project students (Spandan Manna and Alolika Pal; BTech pass out 2018) from IEEE "Indian Conference on Antennas and Propagation (InCAP 2018)", Hyderabad, 16-19 December 2018.
- IEEE Outstanding Volunteer Award 2017
- National Scholarship from MHRD, India for the result of B. Sc(H), 1999

Society Membership

- **Fellow**, Institute of Engineers (India): (Membership No: **F-1309052**)
- **Senior Member** of Institute of Electrical and Electronics Engineers (IEEE): Member ID **92160913**
- **Life Member** of Indian Radio Science Society (InRaSS): Member ID **LM0392022**

Sponsored Projects and Funding Received

- Received **SERB (ANRF) Core Research Grant from DST (CRG/2023/002898)**; approved amount **Rs 47.93 Laks**+ (Approval date: 9th Nov 2023; Start Date: 17 Oct 2024) for 3 years.
- Secured AICTE funding of amount **Rs 110 Lakhs** (approx.) as a coordinator to build **AICTE IDEA Lab** at **Netaji Subhash Engineering College**, Kolkata (received provisional approval for this collaborative project with AICTE on 18th Jan 2025).
- AICTE Project MODROBS (Modernization & Removal of Obsolescence) under AQIS, 2017 (9.6 Lac; for 2 years)

Invited Talks and Tutorials (selected last 5 years)

1. Invited Talk in 3-days invited Lecture Series on "Advancements in Antenna Development: Current Trends and Challenges", Title: "*Antennas for next-generation wireless communications*", Department of Electronic Science, University of Delhi South Campus, New Delhi, India, 5-7 Jan 2024.

2. Talk on "*Empowering Futures: A Showcase of Netaji Subhash Engineering College Initiatives and Impact*", VLSID 2024, Kolkata, India, 6-10 Jan 2024.
3. Invited Talk: "*High-Frequency Engineering and Antennas for Wireless Communication*", IEEE 3rd International Conference on Applied Electromagnetics, Signal Processing & Communication (AESPC 2023), KIIT University, Bhubaneswar, 24-26 Nov 2023.
4. Invited Talk: "*High-Frequency Engineering from the perspective of Wireless Communication*", virtual technical session, IEEE MTTs Students Ambassador Program 2023, India, 7 Oct 2023.
5. Invited Talk: "*Antenna Theory & Practices with HFSS*", One day IEEE hands-on workshop 2023, IEEE MTTs SBC, Asansol Engineering College, Asansol, West Bengal, 31st Jan 2023.
6. Invited Talk: "*Engineering aspects of Antennas*", One day IEEE hands-on workshop 2022, IEEE AP-MTTs Kolkata Chapter, NSEC, Kolkata, 21st Nov 2022.
7. Inauguration of IEEE PES SBC of Narula Institute of Technology, 1st April 2022 Friday.
8. Invited Talk: "*Physical Insight of Antenna Measurement Techniques*", Advanced School of Antennas 2022 (ASA-2022), IEEE APS Technical Committee on Antenna Measurements, KIIT University, Bhubaneswar, 3-4 June 2022.
9. Invited Talk: "*Recent Trends and Developments in Nanotechnology*", Research Conclave, Dept. of Electrical Engineering, Indian Institute of Technology, Patna, Bihar, 5-7 May 2022.
10. Invited Talk: "*Antennas for Next-Generation Wireless Communication Systems: New Design Concepts*", Young Scientist Conclave, IEEE AP/MTT, Kolkata Section, 21st December 2021.
11. Invited Talk: "*Fabry-Perot Cavity Antennas: Fundamentals and New Concepts*", University of Central Florida, Orlando, USA, 16th September 2021.
12. "*Fundamentals of Antennas and its Applications*", DoS in Electronics, Mysore University, Hassan, Karnataka, 9 Mar 2020.
13. "*Electromagnetic Theory – Antennas and Applications*", SBRR Mahajana First Grade College (Autonomous), Maisuru, Karnataka, 6 Mar 2020.
14. "*Sustainable Solutions & Engineering Principles for IEEE SIGHT Projects*", IEEE InCAP 2019, Ahmedabed, India, 19-22 Dec 2019.
15. "*Introduction to Dielectric Resonator Antenna*", Adamas University, Kolkata, 27 November 2019.
16. "*Fabry-Perot Technique for Antennas: New Theory and Design*", NIT Agartala, Tripura, 14 August 2019.
17. "*Fabry-Perot Resonant Cavity Antenna: New Theory and Design Opportunity*", URSI AP-RASC 2019, Delhi, 9-15 Mar 2019.
18. "*Fabry-Perot High Gain Techniques*", Advanced School of Antennas 2018 (ASA-2018), Bhubaneswar, 22-26 June 2018.
19. "*Antennas: Fundamental and Inside Story of Radiation*", IEEE AEMC 2017, Aurangabad, India, 19-22 Dec 2017.
20. "*New Theory of Fabry-Perot Cavity Resonator*", Microwave Antennas in Present Days Communication 2017, KIIT University, Bhubaneswar, 28 Oct 2017.
21. "*Resonance Gain Antenna: A New Theory*", Workshop on 'Setting A Horizon of Antennas' SAHA, CRNN, University of Calcutta, 26 Oct 2017.
22. "*New Concept and Theory of Resonant Cavity Antenna*", IEEE Indian Antenna Week, IAW-2017, DIAT, Pune, 5-9 June 2017.
23. "New Concept, Theory, and Advanced Design of Resonance Cavity Antenna", Invited talk in two days' workshop MAT-2017, Siliguri Institute of Technology, 1st April. 2017.
24. "Engineering with Dielectric Resonator Antenna Modes", Invited talk in two days' workshop MAT-2017, Siliguri Institute of Technology, 31st March. 2017.
25. "*Microwave and its Applications*", invited lecture series in Assam University, Silchar, Assam, 22-23 Mar 2017.
26. "Fundamentals of Electromagnetic wave and transmission line: A different angle of understanding", Invited talk in Technique Polytechnic Institute, Hooghly, West Bengal, 14th Sept. 2016.
27. "*Application of Mode Engineering in Dielectric Resonator Antennas*", Malnad College of Engineering, Hassan, Karnataka, 18 Feb 2016.
28. "*Fabry-Perot Antennas: New Concept and Design Techniques*", one day workshop in 'Recent Advances in Microwave and Antenna Technology', Dept. of Electronics, University of Mysore, Hassan, Karnataka, 19 Feb 2016.
29. "*Art of cylindrical dielectric resonator antenna modes*", workshop on Innovation in Dielectric Resonator Antenna, KIIT, Bhubaneswar, 4 July 2015.
30. "*Art of Resonance Gain Antenna*", Indian Antenna Week, IEEE IAW-2015, Ajmer, 3 June 2015.
31. "Know the Modes of Cylindrical Dielectric Resonator Antenna and Their Excitation Methods", Recent Advances in Microwave and Antenna Technology, RAMAT-2015, Netaji Subhash Engineering College, 9-11 April, 2015.

32. "Exciting Dielectric Resonator Antenna modes", Workshop on Microwave Engineering & Applications, Dr. B.C. Roy Engineering College, Durgapur, 14th March 2015.
33. "Resonance Cavity Antenna: New Boundary Condition to Realize Wideband High Gain Operation", Young Scientist Colloquium, YSC-2014, IIEST, Shibpur, 9th Aug. 2014.
34. "Modes of Dielectric Resonator Antennas", Lecture Meeting organized by IEEE AP/MTT Kolkata Chapter, Kolkata Section, Institute of Radio Physics and Electronics, 26th Sept. 2013.
35. "Electromagnetic Problem Solving using Ansoft's HFSS", in National Workshop on "Microwave and Millimeter Wave Techniques in Engineering Applications", Netaji Subhash Engineering College, Garia, 8-19 Feb, 2010.

Member of Editorial board in Journals

1. Associate Editor: **IETE Journal of Research**, since 2nd Aug 2023.
2. Associate Editor: **International Journal of Electrical and Computer Engineering (IJECE)**, since 1st Nov 2023.

Journal Reviewer

IEEE Transactions on Antennas & Propagation, IEEE Antennas & Wireless Propagation Letters, IEEE Access, IET Microwaves, Antennas & Propagation, International Journal of Electronics & Communications (Elsevier), IETE Technical Review, etc.

Technical Session Chair in Conference/Symposia

1. IEEE INDICON, Dec 2024
2. IEEE SPACE, 23 July 2024
3. IEEE CODEC 2023, Kolkata, 2023
4. IEEE MAPCON 2022, Bangalore, 2022
5. IEEE-MESIICON-2022, Dr. B. C. Roy Engineering College, Durgapur, 11-12 Nov 2022.
6. APS URSI 2021, Singapore, 2021
7. IEEE Indian Conference on Antennas and Propagation - InCAP 2018, Hyderabad, India, 16-19 Dec 2018.
8. IEEE Applied Electromagnetics Conference-AEMC 2017, Aurangabad, India, 19-22 Dec 2017.
9. IEEE Indian Antenna Week, IAW-2017, DIAT, Pune, 5-9 June 2017.

Professional Leadership (Selected)

- Track Chair, IEEE INDICON 2024, 19-21 Dec 2024, IIT Kharagpur, Kharagpur.
- Track Chair, IEEE CALCON 2024, 14-15 Dec 2024, Kolkata.
- Conference Chair, AESPC 2023, KIIT University, Bhubaneswar, India.
- Chair, IEEE AP/MTTs Kolkata Chapter, 2022-2023
- Publication Chair, IEEE MAPCON 2022, IEEE APS and MTT, Bangalore, India.
- Publicity Chair, WAMS 2023, June 7-10,2023, Gandhinagar, India.
- Conference Chair, AESPC 2021, KIIT University, Bhubaneswar, India.
- Chair, Invited Talks & Tutorials, WAMS 2022, National Institute of Technology Rourkela, India.
- Organizing Chair, IEEE International Conference ICCE 2020, 5-6 Sept 2020.
- Course Coordinator, IEEE Advance School of Antennas (ASA) 2018, Bhubaneswar, 22-26 June 2018.
- Convener, IEEE Sponsored one-week summer school WPRS-2019, NSEC, Kolkata, India, 14-20 July 2019.
- Coordinator, IEEE 'TENSYMP Student Meet' at "TENSYMP 2019", Kolkata, India, 9 June, 2019.
- Organizing Chair, 3 days National Workshop RAMAT-2015, Netaji Subhash Engg. College, Kolkata, 9-11 April 2015.
- Chair, Invited Talk, IEEE WAMS 2022, NIT Rourkela
- Publicity Chair, IEEE-iSSSC 2020, GIET University, Gunupur, Odisha, 16-17 December 2020.
- Finance Chair, IEEE InCAP 2020, 17-20 Dec 2020, Kolkata.
- Vice-chair, IEEE AP/MTTs Kolkata Chapter, 2020-2021
- Executive Committee Member of IEEE Kolkata Section, 2018-2023.
- IEEE Student Activity Chair, IEEE Kolkata Section, 2018-2022.

- Secretary, IEEE AP/MTT Joint Chapter of Kolkata, 2014, 2017, 2018
- Treasurer, IEEE AP/MTT Joint Chapter of Kolkata, 2015, 2016.
- Executive Committee Member, IEEE AP/MTT Joint Chapter, Kolkata Section, 2012-present.
- Branch Counselor, IEEE Student Branch of Netaji Subhash Engineering College, 2016-present.
- Student Branch Chapter Advisor, IEEE AP Society Student Branch, NSEC, 2016-present

Conducted/Organized Events (Conferences/Seminars/Workshops)

1. Technical Program Committee and Advisor, International Conference on Communication and Smart Devices (ICCSD-2025) March 10th and 11th, 2025, Birla Institute of Technology Mesra, Ranchi.
2. Track Chair, IEEE CALCON 2024, IEEE Kolkata Section, 14-15 Dec 2024.
3. Advisory committee, IEEE International Conference on Communication, Computing & Signal Processing (IICCCS – 2024)", Asansol Engineering College, Department of ECE, 19th –20th September, 2024.
4. Conference Chair, AESPC 2023, November 2023, KIIT University, Bhubaneswar.
5. Coordinator, ASA 2023, 22-24 June 2023, KIIT University, Bhubaneswar.
6. IEEE WAMS 2022, Department of Electrical Engineering NIT Rourkela, 5-8 June 2022.
7. Lecture on 'Nano Technology', 23 Dec 2022.
8. IEEE Lecture on '5G - A Reality Now', Netaji Subhash Engineering College, 19 Dec 2022.
9. IEEE Lecture on 'Ultra-wideband Antenna Sub-Systems', Netaji Subhash Engineering College, 29 Nov 2022.
10. IEEE Hands-on workshop, Netaji Subhash Engineering College, Kolkata, 21 Nov 2022.
11. IEEE AP-S COPE Special project for Underprivileged School (APS SIGHT), 13 Sept 2022.
12. IEEE Advanced School of Antennas 2022, KIIT-DU, Bhubaneswar, 3-4 June 2022.
13. IEEE AP/MTT Technical Lectures on Satellite and Microwave Communication systems, University of Calcutta, 26 April 2022.
14. Workshop on Antenna Measurement Techniques, IRPE, CU, 22 April 2022.
15. One day seminar on 'Spacecraft Antennas', Jadavpur University, Kolkata, 29 March 2022.
16. IEEE Talk on Basic concepts of RF and Microwave Measurement (virtual), 15 March 2022.
17. Technical Talk on Python Scripting in Ansys HFSS (virtual), 18 Feb 2022.
18. Conference Chair, AESPC 2021, 26-28 November 2021, KIIT University, Bhubaneswar.
19. Organizing Chair, IEEE International Conference ICCE 2020, Netaji Subhash Engineering College, 5-6 Sept 2020.
20. Course Coordinator, IEEE Advance School of Antennas (ASA) 2018, Bhubaneswar, 22-26 June 2018.
21. Convener in IEEE Sponsored one-week summer school, "Wave Propagation and Remote Sensing (WPRS-2019)", NSEC, Kolkata, India, 14-20 July 2019.
22. IEEE International Conference, "TENSYMP 2019", Kolkata, India, 7-9 June, 2019.
23. IEEE 'TENSYMP Student Meet' at "TENSYMP 2019", Kolkata, India, 9 June, 2019.
24. IEEE International Conference, "Indian Conference on Antennas and Propagation (InCAP 2018)", Hyderabad, 16-19 December 2018.
25. IEEE One-day Seminar on "VLSI circuits and applications in industries", IEEE EDS SBC, Netaji Subhash Engineering College, 10th October 2018
26. IEEE One-day Seminar on "Video and Image Processing", IEEE GRSS SBC, Netaji Subhash Engineering College, 9th October 2018
27. One-day Seminar on "Security in SDN/NFV and 5G networks – Opportunities and challenges", IEEE SB, Netaji Subhash Engineering College, 4th August 2018
28. One-week summer school, "Advanced School of Antennas (ASA)", IEEE AP/MTT Kolkata Chapter, Bhubaneswar, 22-26 June 2018.
29. One-day Seminar on "Conventional MOSFETs and emerging Hybrid CMOS devices", IEEE EDS SB Chapter, Netaji Subhash Engineering College, 3rd May 2018
30. IEEE One-day Seminar on "Electron Device Application 2018", IEEE EDS SB Chapter, Netaji Subhash Engineering College, 20th March 2018
31. IEEE Applied Electromagnetics Conference - AEMC 2017, Aurangabad, India, 19-22 Dec 2017.
32. IEEE CALCON 2017, IEEE Kolkata Section, 2-3 Dec 2017.

33. One-day Workshop on 'Microwave Application - Trends and Challenges', IEEE AP/MTT Kolkata Chapter, Venue: SAMEER Kolkata Centre, Salt Lake Electronics Complex, Kolkata, 4th November 2017.
34. Microwave Antennas in Present Days Communication 2017, KIIT University, Bhubaneswar, 28-29 October 2017.
35. One-day Workshop on 'Setting A Horizon of Antennas' SAHA, CRNN, University of Calcutta, IEEE AP/MTT Kolkata, 26th October 2017.
36. Organizing Chair of three days' national workshop RAMAT-2015, 9-11 April, 2015, ECE, NSEC, Kolkata
37. One-day workshop of IEEE AP/MTT Kolkata, GARG-2015, 7-8 May 2015, Saltlake, Kolkata
38. Organizer of Young Scientist Colloquium – 2014, 9th Aug. 2014, IIEST, Shibpur.
39. Organizer of IEEE Indian Antenna Week IAW-2015, 30 May–3 June 2015, Ajmer
40. Organizer of IEEE Indian Antenna Week, IAW-2014, 26-30 May 2014, Chandigarh
41. Organizing committee member of the IEEE National Conference CALCON 2014, 7-8 Nov 2014, Kolkata
42. Organizer of two days' IEEE workshop, Microwave Engineering and Applications MEA-2015, 14-15 March 2015, Durgapur
43. Organizer of the one-day seminar "DRA Research: An Experience over the Last Decade" – 2015, 15 May 2015, Kolkata
44. Organizing committee member of two days' workshop "Innovations in Dielectric Resonator Antennas", 4-5 July, 2015, KIIT, Bhubaneswar.
45. IEEE AP/MTT lecture program, 15th July 2015, Netaji Subhash Engineering College, Garia.
46. All IEEE AP/MTT Kolkata Chapter events during 2014-2017
47. All events of IEEE student branch of Netaji Subhash Engineering College since 2016.

<u>Attended</u> (Training Courses/Conference/Seminar/Workshop/FDP)

1. IEEE INDICON Dec 2024, IIT Kharagpur.
2. IEEE APS URSI, 14-19 July 2024, Florence, Italy
3. IEEE SPACE 2024, 22-23 July 2024, Bangalore, India
4. International Conference VLSID 2024, Kolkata, India, 6-10 Jan 2024.
5. One-week National-level Short-term Training Programme (STTP) on Crafting and Conducting Cutting-edge Research and Innovation, Department of Engineering Science and Management & IIC and IQAC, RCC Institute of Information Technology, Kolkata, 3-8 January 2024.
6. FDP on "AI and Machine Learning for Computer Vision Applications", Electronics and ICT academy, IIT Roorkee, 18-22 Dec 2023.
7. IEEE AISYWLC'22, Pune, October 7th-9th, 2022.
8. Advanced School of Antennas 2022 (ASA-2022), IEEE APS Technical Committee on Antenna Measurements, KIIT University, Bhubaneswar, 3-4 June 2022 (FDP).
9. IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting (AP-S/URSI 2021), Singapore, 4-10 December 2021.
10. 2020 IEEE International Conference for Convergence in Engineering (ICCE 2020), Kolkata, India, 5-6 October 2020.
11. IEEE International Conference, "Indian Conference on Antennas and Propagation (InCAP 2019)", Amedabad, 18-22 December 2019.
12. Seminar-cum-workshop on "IPR: Awareness, Practice and Challenges in Academia", IIEST Shibpur, 6-7 Nov 2019 (FDP).
13. "All India Student Young Professional Women in Engineering Congress 2019" AISWIC'2019, IEEE India Council, Hyderabad, 28-30 September 2019.
14. IEEE "EUREKA 2019: Technology Dissemination Contest for Students" IEEE Pune Section, Pune, July-Aug 2019.
15. One FDP on "Behavioral Remodeling and use of ICT Tools for Classroom Delivery of Teaching", E&ICT Academy IIT Guwahati, NSEC, 9-15 Jan 2019 (FDP).
16. 2019 URSI Asia Pacific Radio Science Conference (AP-RASC 2019), Delhi, 9-15 March 2019.
17. Radar Training Workshop, URSI Asia Pacific Radio Science Conference (AP-RASC 2019), Delhi, 10 March 2019.
18. IEEE International Conference, "Indian Conference on Antennas and Propagation (InCAP 2018)", Hyderabad, 16-19 December 2018.
19. One-day Seminar on "Security in SDN/NFV and 5G networks – Opportunities and challenges", IEEE SB, Netaji Subhash Engineering College, 4th August 2018.

20. One-week summer school, "Advanced School of Antennas (ASA)", IEEE AP/MTT Kolkata Chapter, Bhubaneswar, 22-26 June 2018 (FDP).
21. One-day Seminar on "Conventional MOSFETs and emerging Hybrid CMOS devices", IEEE EDS SB Chapter, Netaji Subhash Engineering College, 3rd May 2018
22. IEEE Seminar on "Electron Device Application 2018", IEEE EDS SBC, Netaji Subhash Engg College, 20th March 2018
23. IEEE Applied Electromagnetics Conference - AEMC 2017, Aurangabad, India, 19-22 Dec 2017
24. IEEE CALCON 2017, IEEE Kolkata Section, 2-3 Dec 2017.
25. One-day IEEE AP/MTT Workshop on 'Microwave Application - Trends and Challenges' Venue: SAMEER Kolkata Centre, Salt Lake Electronics Complex, Kolkata, 4th November 2017.
26. Two-days' workshop organized by IEEE AP/MTT Kolkata Chapter 'Microwave Antennas in Present Days Communication', KIIT University, Bhubaneswar, 28-29 October 2017.
27. One-day Workshop on 'Setting A Horizon of Antennas' SAHA, CRNN, University of Calcutta, IEEE AP/MTT Kolkata, 26th October 2017.
28. Two Days' workshop, "Microwave and Antenna Technology (MAT 2017)", 31st Mar – 1st April 2017, SIT, Siliguri (FDP).
29. IEEE Lecturer Meeting, Institute of Radio Physics and Electronics, Kolkata, 6th March 2017.
30. Two weeks ISTE STTP workshop on "COMS, Mixed Signal and Radio Frequency VLSI Design", IIT Kharagpur, 26th Dec 2016 - 4th Feb 2017 (FDP).
31. One Day Seminar, "Antenna Research: Challenges and Success", 10th Feb 2017, CRNN, Kolkata
32. IEEE GRSS one-day workshop on "Remote Sensing Application and Sciences", RSAS-2016, Kolkata, 17th Dec 2016.
33. International conference AEMC 2015, 18-21 Dec 2015, IIT Guwahati, Aasam.
34. IEEE AP-S Distinguished Lecturer Program, IIT Kharagpur, 24th Sept 2015.
35. IEEE AP-S Distinguished Lecturer Program, Institute of Radio Physics and Electronics, Kolkata,7 April 2015.
36. IEEE AP-S Distinguished Lecturer Program, IIEST, Shibpur, 16th Dec 2016.
37. IEEE Lecturer Meeting, Institute of Radio Physics and Electronics, Kolkata, 15th July 2016.
38. IEEE Lecturer Meeting, Institute of Radio Physics and Electronics, Kolkata, 27th May 2016.
39. IEEE Lecturer Meeting, Institute of Radio Physics and Electronics, Kolkata, 23rd May 2016.
40. IEEE Lecturer Meeting, Heritage Institute of Technology, Kolkata, 4th April 2016.
41. IEEE sponsored workshop on "Innovation in Dielectric Resonator Antenna", KIIT, Bhubaneswar, 4-5 July, 2015 (FDP).
42. International workshop cum conference, IEEE Indian Antenna Week, IAW-2015, 30 May–3 June 2015, Ajmer.
43. One-day seminar "DRA Research: An Experience over the Last Decade", Kolkata, 15 May 2015.
44. Two-days' workshop of IEEE AP/MTT Kolkata, "GARG-2015" at Saltlake, Kolkata, 7-8 May 2015.
45. IEEE sponsored National workshop RAMAT-2015, Netaji Subhash Engineering College, Kolkata, 9-11 April, 2015 (FDP).
46. Workshop on Microwave Engineering &Applications (MEA 2015), Dr. B.C. Roy Eng. College, Durgapur, 14th Mar 2015.
47. IEEE AP-S Distinguished Lecturer Program, KIIT University, Bhuvaneswar, 29th Dec 2014.
48. IEEE AP-S Distinguished Lecturer Program, IIEST, Shibpur, 23rd Dec 2014.
49. IEEE International Symposium on Antennas and Propagation (APSYM-2015), 17-19 Dec 2014, Kochin, Kerala.
50. Two weeks ISTE Workshop in Control Systems-2014, IIT Kharagpur, 2-12 Dec, 2014 (FDP).
51. IEEE Lecturer Meeting, Institute of Radio Physics and Electronics, Kolkata, 8th Dec 2014.
52. National Conference of IEEE Kolkata Section, CALCON-2014, 7-8 Nov, 2014.
53. IEEE Lecturer Meeting, IEM, Saltlake, 20th Aug 2014.
54. Young Scientist Colloquium, YSC-2014, IIEST, Shibpur, 9th Aug. 2014.
55. One day workshop, "How to Publish a Technical Paper with IEEE", Jadavpur University, 8th Aug 2014.
56. International workshop cum conference, IEEE Indian Antenna Week, IAW-2014, 26-30 May 2014, Chandigarh (FDP).
57. Two weeks ISTE Workshop on "Signals and Systems", IIT Bombay, 2-12 Jan 2014.
58. International conference AEMC 2013, KIIT University, Bhubaneswar, 18-20 Dec 2013.
59. Two weeks ISTE Workshop in Analog Electronics, IIT Kharagpur, 4-14 June 2013 (FDP).
60. IEEE AP-S Distinguished Lecturer Program, IIEST, Shibpur, 21th Feb 2013.
61. One-day workshop, "ATMS India 2013", Kolkata, 11th Feb 2013.
62. Two days ISTE workshop on "Aakash for Education", IIT Bombay, 10-11 Nov 2012 (FDP).
63. International Conference "AEMC 2011" and workshop "IAW 2011", Kolkata, 18-22 Dec 2011.

64. National Conference on "Recent trends in microwave applications and techniques (Microwave-2012)", 30 July–1 Aug 2012, Jaipur, India.
65. National workshop on "Microwave and millimeter wave techniques in Engineering" NSEC, Kolkata, 8-9 Feb 2010 (FDP).
66. One-week short term course on "Recent Trends in the design and measurement of RF and microwave circuits", IIT Kanpur, Kanpur, 12-16 July 2010 (FDP).
67. A workshop on "VLSI Laboratory Course", Asansol Engineering College, Asansol, 25-26 July 2006 (FDP).
68. One-week workshop on "Microwave Engineering and Antennas", CEM, Kolaghat, 17-21 July 2006 (FDP),
69. Seminar on "Advances in Communication and Networking", BESU, Shibpur, 9-10 Dec 2005.

Courses Taught

UG Level

- Microwave Engineering
- Antenna Engineering
- Electromagnetic Theory, Transmission Lines, & Radio Wave Propagation
- Communication Engineering
- Circuit Theory
- Radar Engineering
- Signal and Systems
- Analog Electronics
- Basic Electronics

PG Level

- EMI & EMC
- Satellite Communication
- Optical Communication
- Microwave and Millimeter Wave Techniques
- Microwave Measurements

Guiding Ph. D Students

1. Anirban Chatterjee (Registered under MAKAUT, SRF with National Scholarship from MHRD, Dec 2019-Present)
2. Aparajita Datta Sinha (Registered under MAKAUT, Assistant Professor, NSEC, Kolkata)
3. Joyanta Roy Choudhary (Registered under MAKAUT, Assistant Professor, MSIT, Kolkata)
4. Ankita Indu (Registered, MAKAUT, Assistant Professor, BPPIMT, Kolkata)
5. Indranil Ghosh (Registered, Jadavpur University)

Supervised M. Tech Thesis: Total 9 Students

1. "Study of Resonance and Radiation Behavior of a Cylindrical Dielectric Resonator Antenna", by Ankur Lahiri, ECE, NSEC, 2010-11.
2. "Comparative Study of Various Feeding Mechanism Used for Cylindrical Dielectric Resonator Antenna", by Sreepurna Chakraborty, ECE, NSEC, 2010-11.
3. "Study of Dielectric Resonator Antenna Using Various Superstrate Structures for Enhancement of Antenna Characteristics", by Anirban Chatterjee, ECE, NSEC, 2011-12.
4. "Metallic Grid Superstrate Loaded Resonance Gain Circular Polarized DRA", by Tanmoy Kundu, ECE, NSEC, 2012-13. (Published his work in IEEE International Conference)
5. "Resonance Gain Antenna Design using Half-Split CDRA for High Gain Radiation", by Prateek Sadhukhan, ECE, NSEC, 2013-14. (Published his work in IEEE International Conference)
6. "A Helical Antenna Design for Circular Polarized Radiation with Better Impedance Matching Characteristics", by Subhajit Paul, ECE, NSEC, 2013-14. (Published his work in IEEE International Conference)
7. "Annular-Ring Dielectric Resonator Antenna for Wide-Band Applications", by Somenath Ghosh, ECE, NSEC, 2013-14.
8. "Design of Rectangular Microstrip Patch Antenna applying Defected Ground Structure (DGS)", by Prabuddha Sen, ECE, NSEC, 2013-14.

9. "New Superstrate Loaded Resonance Cavity Antenna for High Gain and Low Side Lobe Level", by Dwivedi Shubhangi S.K, ECE, NSEC, 2014-15.

Supervised B. Tech Projects: Total 44 Undergraduate Projects

Teaching Plan (next 5 years)

- Plan to develop a new interactive mode of teaching with the help of animations, virtual lab, simulating software, and real-time hands-on practice etc.
- Primary focus is to develop e-content (only video course) on Electromagnetics, Antenna, and Microwave Engineering.
- More emphasis only laboratory teaching considering present requirement from the industrial.
- Involve more students into industry projects.

Present Research Focus

I am doing research in the field of Antenna Engineering for the last 17 years. A new concept to develop a class of high gain resonant cavity antenna has been successfully implemented and published in IEEE AP Transactions and other IEEE journals. Apart from this, I had worked on designing microstrip patch antenna and dielectric resonator antenna for improved bandwidth and radiation features. We have developed some compact antennas for high gain and bandwidth together. Additionally, I am working on millimeter wave 5G/6G applications of antenna in collaboration with some industries and universities. My present focus is to develop some scan beam antennas for 5G/6G applications.

Research Collaborations

- University of Central Florida, Orlando, USA.
- University of Glasgow, UK
- Indian Space Research Organization (ISRO), Bangalore, India
- Institute of Radio Physics and Electronics, Calcutta University, Kolkata
- University of Mysore, Karnataka, India.
- CIT, Kokrajhor, Assam
- IIT Guahati, Assam
- SAMEER, Kolkata

Research Plan (Next 5 Years)

I have planned to change my research direction towards the present antenna requirement for defense, mobile, and satellite communication. For the next 5 years I am focusing on the antenna development for 5G applications. I have already started exploring them and planning to do some work with my research scholars and UP/PG students.

I have already extended my research collaboration with various research groups, academic institutions, and industries to fulfil the research fund requirement. My research collaboration is going on with the University of Central Florida (USA), University of Glasgow (UK), University of Calcutta, University of Mysore, CIT Kokrajhor, ISRO, SAMEER etc. Recently I have been invited by the University of Central Florida under '***exchange visitor program***' to work on a wireless project.

I have planned to submit some patents based on my recent innovations.

Taking research projects from industry will be one of my major goals to fulfill my plan. Already I have received **SERB (now ANRF) Core Research Grant from DST (CRG/2023/002898;** approved amount **Rs 47.93 Laks** (approval date: 9th Nov 2023; Start Date: 17 Oct 2024) for 3 years. In the next five years, I have planned to take at least three more sponsored projects from the Government Agencies.

Topics for my future research plan:

- 3D printed compact, high-gain, and wideband lens antennas
- MIMO antennas for 5G mobile applications

- AI and Machine Learning for Optimized Antenna Design
- High-gain feed for space applications
- Metasurface antennas for high-gain, RCS reduction, and antenna array applications.
- Meta-lens antennas for 5G beam scanning applications
- Dielectric resonator antenna for mm-wave (Ka band) applications
- New antenna-based Polarization Modulation technique for very high-speed communication
- Wideband High-Gain design of Circularly Polarized Resonant Cavity antenna

Referees

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