

# DEBIDAS KUNDU

Department of Electronics and Communication Engineering  
Indian Institute of Technology Roorkee  
Roorkee, Uttarakhand,  
India-247667

Email: debidas.kundu@ece.iitr.ac.in  
debi.aec@gmail.com  
Contact No.: (+1) 343-558-3285  
(+91) 9434839661

## Professional Experience

---

APRIL 2023	↑	<b>Visiting Researcher (Post-Doc)</b> Department of Electronics Engineering
APRIL 2022		Carleton University, Ottawa, Canada, ON K1S 5B6
		<i>Current</i>
	↑	<b>DST-INSPIRE Faculty</b> Department of Electronics and Communication Engineering
JAN 2019		Indian Institute of Technology Roorkee, Roorkee, Uttarakhand, India- 247667
DEC 2018	↑	<b>Visiting Faculty</b> Department of Electrical and Electronics Engineering
JAN 2018		BITS Pilani, K K Birla Goa Campus, Goa, India- 403726

## Academic Background

---

JUN 2018	↑	<b>Doctor of Philosophy</b> , Indian Institute of Technology Kharagpur, Kharagpur, India <b>Department:</b> Electronics and Electrical Communication Engineering
JUL 2013		<b>Thesis:</b> Design and Analysis of Efficient Electromagnetic Absorbers with Polarization Insensitivity and Angle Stability <b>Advisors:</b> Prof. Ajay Chakrabarty & Prof. Akhilesh Mohan
JUN 2013	↑	<b>Master of Engineering</b> , Bengal Engineering and Science University (now IEST), India <b>Department:</b> Electronics and Telecommunication Engineering
JUL 2011		<b>Thesis:</b> Study and Realization of Metamaterial Based Transmission Lines, Resonators, Zeroth Order Resonator Antennas <b>Marks:</b> 86.61% (Stood 2nd in Department)
JUN 2011	↑	<b>Bachelor of Technology</b> , West Bengal University of Technology, Kolkata, India <b>Department:</b> Electronics and Communication Engineering
JUL 2007		<b>Degree GPA:</b> 8.72

## Awards and Recognitions

---

- Selected for Young Scientist Award from URSI-General Assembly and Scientific Symposium (GASS), 2023
- Article on my Research Activities as INSPIRE Faculty Published on Department of Science and Technology (DST), Govt of India Platforms, 2022 (Links: <https://dst.gov.in/inspire-faculty-fellows-work-surface-electromagnetics-can-augment-existing-capabilities-rf-microwave> <https://pib.gov.in/PressReleasePage.aspxPRID1809168>).
- Received Young Scientist Award from URSI-Regional Conference on Radio Science (RCRS), 2020
- Received DST-INSPIRE Faculty Award in July 2018
- Finalist for Best Student Paper Award in IEEE Asia Pacific Microwave Conference (APMC), 2016
- Received Design Challenge Award from Computer Simulation Technology (CST) in 2015

- Received MHRD Fellowship for Ph. D. from 2013 to 2017
- Received MHRD Fellowship for M. Tech from 2011 to 2013
- GATE Qualified in 2011 (98.5 Percentile)
- Certificate of Merit for High Rank in Secondary Examination in 2005
- Received National Merit Scholarship at Secondary Stage in 2003

## Research Interests

---

- Efficient Antenna Design, Reflectarray, Reconfigurable Intelligent Surface
- Metamaterial, Metasurface, Impedance Surface
- Metagratings and spatio-temporal metasurface
- Method of Moment and Analytical Techniques
- Thin Electromagnetic Absorber

## Patents

---

1. **D. Kundu**, A. Parameswaran, H. S. Sonalika, D. Bhattacharya, and S. Gupta, "A Low Radar Cross Section Circularly Polarized Reflectarray," *IN Patent*, App. 202211057030.

## Publications

---

- *Journals (Published)*

1. A. Parameswaran, D. K. Sahoo, H. S. Sonalika, **D. Kundu**, and A. Patnaik, "PSO-assisted design of a dual-polarized broadband switchable rasorber/absorber," **accepted** in *IEEE Trans. Electromag. Compt.*, 2023.
2. P. Bajaj, **D. Kundu**, and D. Singh, "Frequency selective surface-based electromagnetic absorbing structures: trends and perspectives," **accepted** in *Wireless Personal Communications*, 2023.
3. **D. Kundu**, A. Parameswaran, H. S. Sonalika, D. Bhattacharya, and S. Gupta, "Design of a low-RCS circularly polarized reflectarray antenna with a linearly polarized feed" **accepted** in *IEEE Trans. Antennas and Propag.*, 2023.
4. A. Parameswaran, A. Ovhal, **D. Kundu**, H. S. Sonalika, J. Singh, and D. Singh, "A low-profile ultra-wideband absorber using lumped resistor-loaded cross dipoles with resonant nodes," *IEEE Trans. Electromag. Compt.*, vol. 64, no. 5, pp. 1758-1766, 2022.
5. **D. Kundu**, D. Bhattacharya, and R. Ruchi, "A single-layer broadband reflectarray in K-Band using cross-loop slotted patch elements," *IEEE Access*, vol. 10, pp. 13490-13495, 2022.
6. A. Parameswaran, **D. Kundu**, and H. S. Sonalika, "A dual polarized wideband frequency selective rasorber with low in-band insertion loss and high oblique incidence stability," *IEEE Trans. Electromag. Compt.*, vol. 63, no. 6, pp. 1820-1828, 2021.
7. A. Parameswaran, H. S. Sonalika, and **D. Kundu**, "Temperature-dependent electromagnetic design of inhomogeneous planar layer variable thickness radome for power transmission enhancement," *IEEE Antennas Wireless Propag. Lett.*, vol. 20, no. 8, pp. 1572-1576, 2021.
8. **D. Kundu**, J. Singh, D. Singh and A. Chakrabarty, "Design and analysis of broadband ultrathin reflective linear-to-circular polarization converter using polygon-based anisotropic-impedance surface," *IEEE Trans. Antennas and Propag.*, vol. 69, no. 8, pp. 5154-5159, 2021.
9. **D. Kundu**, S. Baghel, A. Mohan and A. Chakrabarty, "Design and analysis of printed lossy capacitive surface based ultra-wideband low-profile absorber," *IEEE Trans. Antennas and Propag.*, vol. 67, no. 5, pp. 3533-3538, 2019.

10. **D. Kundu**, R. K. Gayen, A. Mohan and A. Chakrabarty, "Moment method analysis of periodic array of thin conducting strips using waveguide simulator," *J. Electromagn. Waves Appl.*, vol. 32, no. 3, pp. 363-370, 2018.
11. **D. Kundu**, A. Mohan and A. Chakrabarty, "Design of ultrathin dual resonant reflective polarization converter with customized bandwidths," *Appl. Physics A*, vol. 123, no. 10, p. 621, 2017.
12. **D. Kundu**, A. Mohan and A. Chakrabarty, "A compact ultrathin broadband absorber by reducing cross-polarized reflection from metal-backed anisotropic array," *Microwave and Opt. Technol. Lett.*, vol. 59, no. 4, pp. 970-976, 2017.
13. **D. Kundu**, A. Mohan and A. Chakrabarty, "Comment on 'Wide-angle broadband microwave meta-material absorber with octave bandwidth'," *IET Microwaves Antennas Propag.*, vol. 11, no.3, pp. 442-443, 2017.
14. **D. Kundu**, A. Mohan and A. Chakrabarty, "Reduction of cross-polarized reflection to enhance dual-band absorption," *J. Appl. Physics*, vol. 120, no.20, p. 205103, 2016.
15. L. B. Pratap, **D. Kundu**, and A. Mohan "Planar microstrip-fed broadband circularly polarized antenna for UWB applications," *Microwave and Opt. Technol. Lett.*, vol 58, no. 5, pp. 1088-1093, 2016.
16. **D. Kundu**, A. Mohan, A. Chakrabarty, "Single layer wideband microwave absorber using array of crossed dipoles," *IEEE Antennas Wireless Propag. Lett.*, vol. 15, no.99, pp.1589-1592, 2016.
17. **D. Kundu**, A. Mohan and A. Chakraborty, "Ultrathin polarization independent absorber with enhanced bandwidth by incorporating Giuseppe Peano fractal in square ring," *Microwave and Opt. Technol. Lett.*, vol 57, no. 5, pp. 1072-1078, 2015.

- **Conferences**

1. **D. Kundu** and S. Gupta, "A 1-Bit coding reconfigurable metasurface reflector for circularly polarized wave beam steering from linearly polarized incidence," **accepted** in *URSI GASS 2023*, 2023
2. **D. Kundu**, M. K. Emara, L. Rufail, and S. Gupta, "Waveguide-Floquet mapping based on surface susceptibilities for metasurface unit cell characterization," **accepted** in *URSI GASS 2023*, 2023
3. M. K. Emara, **D. Kundu**, L. Rufail, and S. Gupta, "Coupled resonator configuration for enhanced reflectarray magnitude and phase control," **accepted** in *IEEE European Conference on Antennas and Propagation (EuCAP)*, 2023
4. C. Chakraborty, D. K. Sahoo, **D. Kundu**, A. Patnaik, and A. Chakrabarty, "Capacity optimization in coding metasurface-based reconfigurable intelligent surface-aided MIMO," **presented** in *IEEE Microwave Antennas and Propagation Conference (MAPCON)*, 2022
5. P. Bajaj, **D. Kundu**, and D. Singh, "A dual-polarized L-S-band frequency-selective rasorber with highly selective transmission response," **presented** in *IEEE Microwave Antennas and Propagation Conference (MAPCON)*, 2022
6. D. K. Sahoo, **D. Kundu**, and A. Patnaik, "Harmonic beam steering along both the cardinal planes using a dual-polarized space-time-coding digital metasurface," *IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting*, 2022, pp. 918-919.
7. A. Parameswaran, H. S. Sonaliker, and **D. Kundu**, "Design of a dual-polarized notch band absorber with high band edge selectivity and broad absorption bandwidth," *IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting*, 2022, pp. 1252-1253.
8. Ruchi, N. V. Kumar, N. N. Naik, **D. Kundu**, and M.V. Kartikeyan, "A rectenna for RF energy harvesting for application in powering IoT devices," *IEEE Wireless Antennas and Microwave Symposium (WAMS)*, 2022, pp. 1-4.
9. A. Ovhal, A. Parameswaran, **D. Kundu**, and H. S. Sonaliker, "Design of a wide-band circuit analog absorber using modified square loop loaded with lumped resistors," *IEEE Wireless Antennas and Microwave Symposium (WAMS)*, 2022, pp. 1-4.

10. P. Bajaj, **D. Kundu**, and D. Singh, "Design of a narrowband and a wideband switchable absorber/reflector using an active frequency selective surface with embedded biasing network," *IEEE Wireless Antennas and Microwave Symposium (WAMS)*, 2022, pp. 1-4.
11. D. K. Sahoo, **D. Kundu**, D. Bhattacharya, and A. Patnaik, "A 1-bit coding reflective metasurface for beam steering along both the cardinal planes using dual-polarized incident waves," *IEEE Indian Conference on Antennas and Propagation (InCAP)*, 2021, pp. 571-574.
12. **D. Kundu**, D. Bhattacharya, and D. Pathak, "Simultaneous transmission and reflection mode linear-to-circular polarization conversion using a single metasurface," *IEEE Indian Conference on Antennas and Propagation (InCAP)*, 2021, pp. 591-594.
13. D. Bhattacharya, **D. Kundu**, "An analytical approach for the generation of second-order Floquet-Bloch mode for anomalous reflection using metagratings," *IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting*, 2021, pp. 1529-1530.
14. **D. Kundu**, A. Mohan, and A. Chakrabarty, "Design of a high performance reflective linear to circular polarization converter with wide axial ratio bandwidth," *URSI Regional Conference on Radio Science (URSI-RCRS)*, Varanasi, India, Feb. 2020, pp. 1-3.
15. **D. Kundu**, A. Mohan, A. Chakrabarty, J. Singh and D. Singh, "An ultrathin linear-to-circular polarization converter with wide axial ratio bandwidth," *IEEE Asia-Pacific Microwave Conference (APMC)*, Singapore, Singapore, Dec. 2019, pp. 929-931.
16. **D. Kundu**, A. Mohan and A. Chakrabarty, "Design of a conductive FSS based ultrathin absorber using impedance analysis method of equivalent circuit model," *IEEE Indian Conference on Antennas and Propagation*, Hyderabad, India, pp. 1-4, Dec. 2018.
17. **D. Kundu**, A. Mohan and A. Chakrabarty, "Ultrathin high-efficiency X-band reflective polarization converter using sunken double arrowhead metasurface," *IEEE Asia Pacific Microwave Conference*, New Delhi, India, pp. 1-4, Dec. 2016.
18. **D. Kundu**, A. Mohan and A. Chakrabarty, "Thickness reduction of single layer circuit analog absorber," *IEEE Applied Electromagnetics Conference*, Guwahati, India, pp. 1-2, Dec. 2015.

## Research Grants

---

<i>Ongoing</i> ↑ MAR 2022	<b>Title:</b> Design of a Streamlined Ablatable Radome for Airborne Applications <b>Sponsoring Agency:</b> DRDO, India <b>Amount of Grant:</b> INR 17 Lakhs <b>Role:</b> Co-PI
---------------------------------	---

<i>Ongoing</i> ↑ JAN 2019	<b>Title:</b> Efficient Design of Low Profile Frequency Selective Radome with Wide Absorption Band and Low In-Band Insertion Loss <b>Sponsoring Agency:</b> Department of Science and Technology (DST), India <b>Amount of Grant:</b> INR 35 Lakhs <b>Role:</b> PI
---------------------------------	---

## Supervision

---

<i>Ongoing</i> ↑ AUG 2019	Supervising (jointly) <b>three Ph.D.</b> student Supervised final year M.Tech projects (MTP) of <b>two PG</b> student Supervised final year B.Tech projects (BTP) of <b>four UG</b> students Dept. of Electronics and Communication Engineering, IIT Roorkee, India
---------------------------------	--

## Professional Activities

---

- **Reviewer Experience:**

- AIP Journal of Applied Physics
- AIP Applied Physics Letters
- IEEE Transactions on Antennas Propagation
- IEEE Transactions on Electromagnetic Compatibility
- IEEE Transactions on Components Packaging and Manufacturing Technology
- IEEE Antennas and Wireless Propagation Letters
- IET Microwaves, Antennas and Propagation
- OSA Optics Express
- Scientific Reports

- **Membership:**

- Member, IEEE
- Member, IEEE Antennas and Propagation Society

## Invited Technical Talks

---

DEC 2022	Online Invited Talk Electronic and Photonic Integrated Circuits Conference, SRM Amara-vati University, India
OCT 2022	Online Invited Talk IEEE Student Branch Chapter, Indian Institute of Technology Indore, India
MAY 2022	One Week Online Workshop on RF and Microwave Components, VIT-AP University, India
DEC 2021	Online Short-Term Course on Recent Trends and Applications of RF and Microwave Engineering, Indian Institute of Information Technology Bhagalpur, India
NOV 2019	International Conference on Artificial Intelligence and Applications 2019, College of Engineering Roorkee, India
OCT 2019	IEEE Outreach Leadership Meet 2019, Indian Institute of Technology Kharagpur, India

## Teaching Experience

---

- **Theory**

AUT 2019	Introduction to Electronics and Communication Engineering (ECN 101) Indian Institute of Technology Roorkee, India	UG Yr I
SPR 2019	Fundamentals of Electronics (ECN 102) Indian Institute of Technology Roorkee, India	UG Yr I
AUT 2018	Digital Design (ECE F215) BITS Pilani, KK Birla Goa Campus, India	UG Yr II
SPR 2018	Electrical Sciences (EEE F111) BITS Pilani, KK Birla Goa Campus, India	UG Yr I

- **Laboratory**

AUT 2021	Microwave Lab (ECN 530) Indian Institute of Technology Roorkee, India	PG Yr I
SPR 2021	Linear IC Applications (ECN 351) Indian Institute of Technology Roorkee, India	UG Yr III
AUT 2018	Digital Design Lab (ECE F215) BITS Pilani, KK Birla Goa Campus, India	UG Yr II
SPR 2018	Analog Electronics (EEE F341) BITS Pilani, KK Birla Goa Campus, India	UG Yr III

▷ *Teaching Assistantship*

DEC 2017 JUL 2014	Indian Institute of Technology Kharagpur, Kharagpur, India	UG & PG
----------------------	--	---------

• **Theory:**

- Electromagnetic Engineering (EC 60041) Autumn 2014, 2015, 2016, 2017
- EMI/EMC Techniques (EC 60090) Spring 2015, 2016, 2017

• **Laboratory:**

- Microwave Engineering (EC 39005) Autumn 2014, 2015
- Antenna and EMI/EMC (EC 69021) Autumn 2016, 2017
- Basic Electronics (EC 29001) Spring 2016, 2017

## Workshop and Training

---

- Attended **Global Initiative for Academic Networks (GIAN) course on “Millimeter-wave Antennas, Circuits and Systems”** organized by IIT Kharagpur, (Foreign Expert: Dr. Gautam Chattopadhyay, NASA JPL, USA; Host Faculty: Dr. Mrinal Kanti Mandal, IIT Kharagpur, India) sponsored by MHRD, Govt. of India from 28th November to 02nd December, 2017.
- Attended **workshop on “Design of Microwave Antennas for Wireless Communication Applications”** organized by IIT Kharagpur, sponsored by CEP IIT kharagpur from 23rd August to 28th August, 2017.
- Undergone two weeks of **Vocational Training on “Tele- and Wireless Communication Systems”** in Netaji Subhas Chandra Bose Telecom Training Center, Kalyani, West Bengal, India from 4th January 2010 to 16th January 2010.

## Technical Expertise

---

- **Electromagnetic Simulation Tools:** CST, Ansys HFSS, Keysight ADS
- **Engineering Software and Languages:** MATLAB, Mathematica, PSPICE
- **Instruments:** RF Signal Generator, Vector Network Analyzer, Spectrum Analyzer, Digital Storage Oscilloscope, Anechoic Chamber
- **Fabrication:** Microstrip Antenna, Active Frequency Selective Surface, Electromagnetic Absorber, Metamaterial and Active Metasurface
- **Packages:** Latex, MS Office
- **Computer Programming Languages:** C
- **Operating System:** Microsoft Windows, LINUX

## Coursework in Ph. D.

---

• Subject	Letter Grade (Grade Point)
◦ Electromagnetic Engineering (EC 60041)	A (9/10)
◦ Analytical and Computational Techniques in Elctromagnetics (EC 60045)	A (9/10)
◦ Advanced Mathematical Techniques (TS 70004)	B (8/10)
◦ English for Technical Writing (HS 63002)	EX (10/10)

## Personal Information

---

**Date of Birth:** 14.01.1990  
**Nationality:** Indian  
**Languages Known:** Bengali, English, Hindi  
**Interests:** Reading books, writing, playing cricket and football, listening to music

## Referees

---

1. **Prof. Ajay Chakrabarty** (Professor (Retd.)), Dept. of Electronics and Electrical Communication Engineering, Indian Institute of Technology Kharagpur, Kharagpur, India - 721302.  
Ph. No. +91-9434005863  
email: ajaychak10@gmail.com
2. **Prof. Shulabh Gupta**, (Associate Professor), Dept. of Electronics Engineering, Carleton University, Ottawa, ON K1S 5B6, Canada  
Ph. No. +1-514-578-2082  
email: shulabh.gupta@carleton.ca
3. **Prof. Amalendu Patnaik**, (Professor), Dept. of Electronics and Communication Engineering, Indian Institute of Technology Roorkee, Roorkee, India - 247667.  
Ph. No. +91-1332-285850  
email: amalendu.patnaik@ece.iitr.ac.in
4. **Prof. M. V. Kartikeyan** (Professor), Director, Indian Institute of Information Technology Design and Manufacturing, Kancheepuram, Tamil Nadu, India - 600127.  
Ph. No. +91-8772-503033  
email: kartik@ieee.org

**Declaration:** I hereby declare that the information given above is correct to the best of my knowledge.

Date : 21st June, 2023  
Place : Roorkee, India

(DEBIDAS KUNDU)