

DEPARTMENT OF ELECTRONICS ENGINEERING MONTHLY e-NEWSLETTER

- 03 INVITED TALK
- 04 FACULTY VISIT
- 05 PUBLICATION
- 07 OUTREACH
- 08 UPCOMING EVENT

INSIDE THIS ISSUE





FROM THE HOD'S DESK

Dear Readers,

We are here to update you about the overall progress and a few milestones achieved by the Department of Electronics Engineering in May 2025.

During the month, Prof. Lalan Kumar from IIT Delhi delivered a lecture on "Array Signal Processing for Brain Source Localization" in our department. Additionally, Prof. Samarendra Dandapat from IIT Guwahati and Prof. Samareesh Das from IIT Delhi had an interactive session with faculty members and students of our department. Prof. Ravi Kumar Gangwar published a paper in IEEE Letters on Electromagnetic Compatibility Practice and Applications. Prof. Manodipan Sahoo published a few papers in Scientific Reports, Springer Nature & Micro and Nanostructures focusing on modeling and simulation of on-chip interconnects and signal integrity.

Furthermore, our Department conducted a Drone Bootcamp at Mahatma Jyotiba Phule Rohilkhand University in Bareilly, Uttar Pradesh, under the MeitY-funded project.

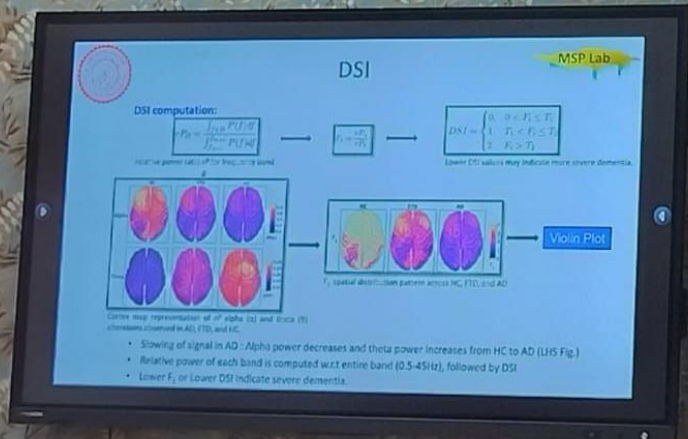
I would like to highlight that an exciting Global Initiative of Academic Networks (GIAN) Programme and a drone bootcamp focusing on electronics for unmanned aerial systems, sensors, and communication are scheduled to take place in June. These events aim to enhance knowledge and skills in advanced technologies, fostering innovation and collaboration.

Wish you all the best!



*Prof. Ravi Kumar Gangwar
HoD, Department of Electronics Engineering,
IIT (ISM) Dhanbad*





Prof. Lalan Kumar, Associate Professor, Department of Electrical Engineering, IIT Delhi, visited the Department of Electronics Engineering, IIT(ISM) Dhanbad. He delivered a talk on "Array Signal Processing for Brain Source Localization". The faculties of our department had fruitful conversation with Prof. Lalan kumar and gained insights from his vast range of a expertise. Thank you, Prof. Kumar, for visiting and giving your valuable time.



FACULTY VISIT

Dr. Samarendra Dandapat, Professor from the Electronics and Electrical Engineering Department at IIT Guwahati, had an interaction with faculty members and students at our department.

It was a great opportunity for cross-departmental collaboration, exchanging ideas and professional development for our department.



Dr. Samaresh Das, Associate Professor at the Centre for Applied Research in Electronics(CARE), IIT Delhi, visited our department at IIT(ISM) Dhanbad. An inspiring interaction between Professor Das and the faculty members and students of our department.

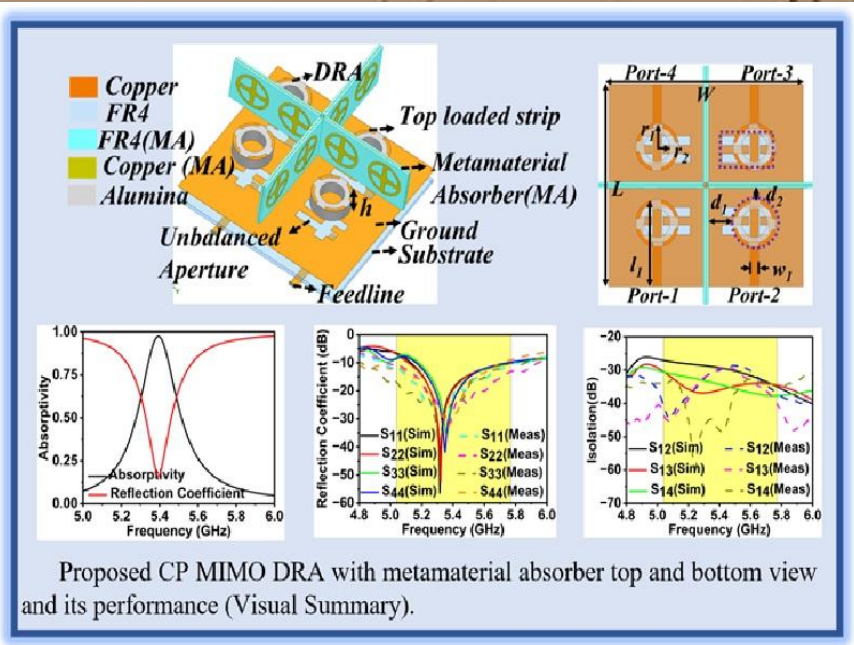
Research

PUBLICATION



Prof. Ravi kumar Gangwar has recently published a paper titled “Metamaterial Absorber-Integrated CP MIMO DRA for EMI Reduction and High Isolation”, Published in IEEE Letters on Electromagnetic Compatibility Practice and Applications . [DOI](#)

A quad-port circularly polarized MIMO dielectric resonator antenna (DRA) is proposed with an integrated metamaterial absorber (MA) to combat electromagnetic interference (EMI) and enhance inter-element isolation. The ring DRA is excited using an unbalanced aperture and conformal arc strips, generating left-hand CP radiation at 5.3 GHz. A vertical 1×2 MA array featuring a hexagonal cross-ring structure, achieves $>93\%$ absorption and improves isolation from -12 dB to -28 dB within 5.1 – 5.7 GHz. Equivalent circuit modeling and material characterization validate absorption behavior. The fabricated antenna shows wide impedance and AR bandwidth, high gain (~ 5 dB), excellent diversity performance ($ECC < 0.01$), and $\sim 90\%$ radiation efficiency, making it ideal for EMI-sensitive WLAN and Wi-Fi environments.



Research

PUBLICATION



1. Bhawana Kumari, Dr. Manodipan Sahoo & Rohit Sharma has recently published a paper titled “ABCD parameter based analytical AC modeling of novel Cu-carbon hybrid interconnects for noise constrained nanoscale systems”, Scientific Reports, Springer Nature, 2025, [DOI](#)

2. Arti Kumari , Dr. Manodipan Sahoo , R. Thangavel , Somenath Roy , has recently published a paper titled “First-Principles Investigation of Noble Metal-decorated Reduced Graphene Oxide for Ultrasensitive Detection of Methane”, Micro and Nanostructures, vol. 205, No. 208184, 2025, [DOI](#)



OUTREACH



The Electronics Engineering Department of IIT(ISM) Dhanbad recently conducted a Drone Bootcamp at Mahatma Jyotiba Phule Rohilkhand University Bareilly UP, under the MeitY-funded project on “Capacity Building for Human Resource Development in Unmanned Aircraft Systems (Drone and Related Technologies)”. Held from May 7 to May 11, 2025, the bootcamp aimed to provide participants with a robust understanding of drone technology through both theoretical and practical sessions.

Nearly 120 students from various engineering disciplines participated in this five-day program, gaining hands-on experience in assembling, configuring, and successfully flight-testing 18 drones, including 08 hexacopters and 10 quadcopters. The bootcamp’s curriculum encompassed key aspects of UAV systems such as UAV introduction, aerodynamics, sensors, GPS, antenna design, UAV communication, image processing, Artificial Intelligence (AI) and Machine Learning (ML), control systems, and embedded systems.

This initiative not only equipped students with essential skills but also fostered a deeper interest in cutting-edge UAV technologies.



The Ministry of Education-sponsored GIAN Program on "Memristor and its Applications in Neuromorphic Computations

"(Course ID: 2700047), which is scheduled to take place during June 23-27, 2025, at IIT(ISM), Dhanbad.

The registration is open till June 16, 2025. Detailed schedules and other relevant information are provided in the attached brochure. The GIAN course will span one week and will be co-taught by Prof. Sung-Mo Steve Kang(Distinguished Professor Emeritus Department: Electrical and Computer Engineering

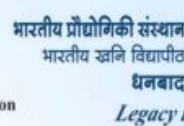
University/Institute: Baskin School of Engineering, Santa Cruz, California) and Prof. Rajeev Kumar Ranjan from IIT(ISM) Dhanbad with academician and Industry expert. It will include a total of twelve (12) lectures and eleven (03) tutorials.

This information is being shared for your kind reference, attached [brochure](#) In case of any query, contact at rajeev@iitism.ac.in



Global Initiative of Academic Networks (GIAN) Programme

(Under the aegis of the Ministry of Education, Govt. of India)



Legacy that Inspires the Future

Course ID: 2700047

Ref. No.: GIAN/S-24-25/242_rev_1 Dated: 16-01-2025

One Week GIAN Course On (in-virtual mode)

Memristor and its Applications in Neuromorphic Computations

Last Date for Registration June 16, 2025



IIT(ISM) Dhanbad (Virtual Mode)



June 23–27, 2025

Foreign Faculty: Prof. Sung-Mo Steve Kang



Name: Prof. Sung-Mo Steve Kang
Designation: Distinguished Professor Emeritus
Department: Electrical and Computer Engineering
University/Institute: Baskin School of Engineering, Santa Cruz, California
Email: skang@ucsc.edu
Mobile: (831) 706-5456

Sung-Mo Steve Kang is a Distinguished Chair Professor Emeritus of Engineering and Research Professor at the University of California, Santa Cruz. Briefly summarizing his background, he obtained his PhD from the University of California, Berkeley in 1975. He has worked over two decades at Rutgers University, AT&T Bell Laboratories at Murray Hill in NJ, and the University of Illinois at Urbana Champaign, before joining the University of California, Santa Cruz in 2001 as Dean of the School of Engineering. He has taken leaves of absence from UC Santa Cruz to become the President of the Korea Institute for Advanced Science and Technology (KAIST) from 2013 to 2017, and the Chancellor of the Nanomanufacturing Systems Center (NASCENT) University of California, Merced from 2007 to 2011. Throughout the career, his research interests centered on high-performance low power very large-scale integration (VLSI) circuits, computer-aided design (CAD) of such circuits, memristors, memristive devices, and their applications to neuromorphic computing. His work on these subjects has been published in over 600 peer-reviewed publications and major conference proceedings. Together, these works have been cited nearly 21,000 times by others in the computer science and electrical engineering. More recently, He has put much effort into memristor-technology-based neuromorphic circuits and systems to achieve higher energy efficiency while delivering higher throughput. This effort can be categorized as AI acceleration. In recognition of this work, he has received the best paper awards for the paper published in IEEE Trans. on Circuits and Systems I and also for the IEEE AICAS conference..

National Faculty & Course Coordinator: Prof. Rajeev Kumar Ranjan



Name: Prof. Rajeev Kumar Ranjan
Designation: Associate Professor
Department: Department of Electronics Engineering
University/Institute: Indian Institute of Technology (Indian School of Mines) Dhanbad
Email: rajeev@iitism.ac.in
Phone: (+91) 9471191517

Rajeev Kumar Ranjan completed his Ph.D. at the Indian Institute of Technology (Indian School of Mines Dhanbad). He worked as a Project Scientist at CSIR-CEERI, Pilani, Rajasthan from July 2004 – Aug 2005. He has also served as an assistant professor in the Department of Electronics and Communication Engineering, Sant Longowal Institute of Engineering and Technology, Longowal, Punjab, India (MHRD Funded Deemed University) from Aug 2007 - Nov 2010 before joining the Indian Institute of Technology (Indian School of Mines), Dhanbad, Jharkhand as a faculty in 2010. He is an associate professor with the Department of Electronics Engineering, IIT (ISM) Dhanbad. **Prof. Rajeev Kumar Ranjan has figured in the world's top 2% of scientists 2023 list compiled by Stanford University, US.** He is a passionate teacher as well as a researcher and holds more than 60 publications in reputed journals including IEEE Transactions on Circuits and Systems I, IEEE Transactions on Circuit and Systems II, IEEE Transactions on Nanotechnology, and IEEE Transactions on Very Large Scale Integration System. His research lab is primarily funded by the Ministry of Electronics and Information Technology, Govt. of India under the Chip to Startup Programme. Dr. Rajeev's current research work combines memristors for neuromorphic computing to understand the crosspoint arrays in object recognition and other learning applications.



UPCOMING EVENT



इलेक्ट्रॉनिक्स एवं
सूचना प्रौद्योगिकी मंत्रालय
MINISTRY OF
ELECTRONICS AND
INFORMATION TECHNOLOGY

Bootcamp on Electronics for Unmanned Aerial Systems, Sensors, and Communication



About Bootcamp

Department of Electronics Engineering, IIT(ISM) Dhanbad is organizing a bootcamp at IIT ISM Dhanbad. This training program is aimed at capacity building for human resource development in Unmanned Aircraft Systems (guidance, navigation, and control) in India under a project funded by MeitY. This bootcamp training program will provide theory and hands-on experiments with Drone Electronics.

Bootcamp Outline

- Introduction to Drones
- Basics of Aircraft Systems
- Classification
- UAV communication
- Sensors
- Data Acquisition Systems of UAV
- Demonstration of drone assembly
- AI & ML in Drones
- Hands-on aspects/ challenges of drone electronics
- Applications of Drone Systems

Eligibility Criteria

- B.Tech / Master (Pursuing/Completed)

Registration Fees

- Rs 600 (If food and lodging are not required)
- Rs 3500 (If food and lodging (twin sharing) are required)

ASSEMBLE AND FLY DRONE AT IIT ISM DHANBAD



Register Now

- Scan QR code for registration or [click here](#)
- Last date to apply: 14th June 2025
- Limited seats, registration will be on first come-first serve basis



Venue

636, Academic Complex, IIT ISM Dhanbad
Jharkhand India

Date: 18/06/2025 to 22/06/2025

Time: 9:00 AM to 6:00 PM

Coordinators IIT(ISM), Dhanbad

Prof. Ravi Kumar Gangwar
Prof. Jaishigh T
Prof. Samrat Mukhopadhyay

Contact Person

Dr. Varun Chaudhary
Email: 23pr0011@iitism.ac.in

Kundan Kumar Suman
Email: 23pr0105@iitism.ac.in

Aks Raj
Email: aksitdhanbad@gmail.com

Meet the Team

Dr. Jeevesh Kumar (Assistant Professor)

Mr. Bappa Ghosh (Junior Technician)

Mr. Vaibhav (Junior Technician)

Contact Us

DEPARTMENT OF ELECTRONICS ENGINEERING

INDIAN INSTITUTE OF TECHNOLOGY
(INDIAN SCHOOL OF MINES) DHANBAD
JHARKHAND, INDIA (826004)
PHONE: +91-326-223 5274



[See earlier iterations of the newsletter](#)