



NEWS

LETTER

September 2024

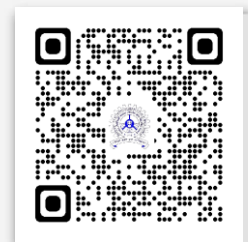
IIT(ISM) DHANBAD

Department of **Electronics**
Engineering

Contact Us



+91-326-223 5274

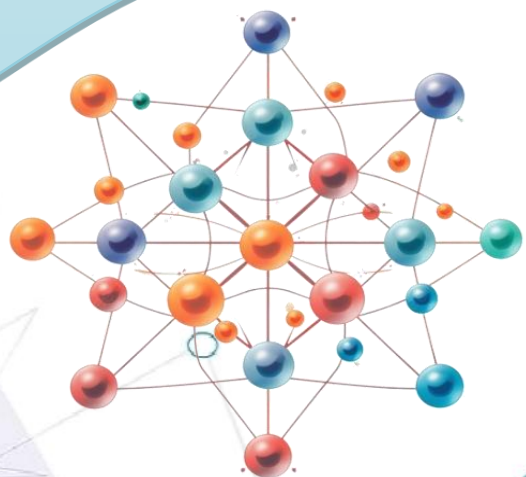


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From The HoD's Desk



Dear Readers,

It indeed gives me great satisfaction and pride to be at the helm of an affair of

the Department of Electronics Engineering with dynamic faculty colleagues, talented students, dedicated Research Scholars, and a very efficient supporting staff.

Last month (September'24) was another vibrant month for the department with full of activities and a couple of milestones. The month began with a teachers' day celebration followed by a series of expert talks. The department set new milestones in health and communication technology and extended the drone technology outreach program to other institutes.

Wish you all the best!

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



Refining Excellence in Communications

A Compact SD-QMSIW-Based Self-Diplexing MIMO Antenna Using Two Modified L-Shaped Slots for IoT Applications

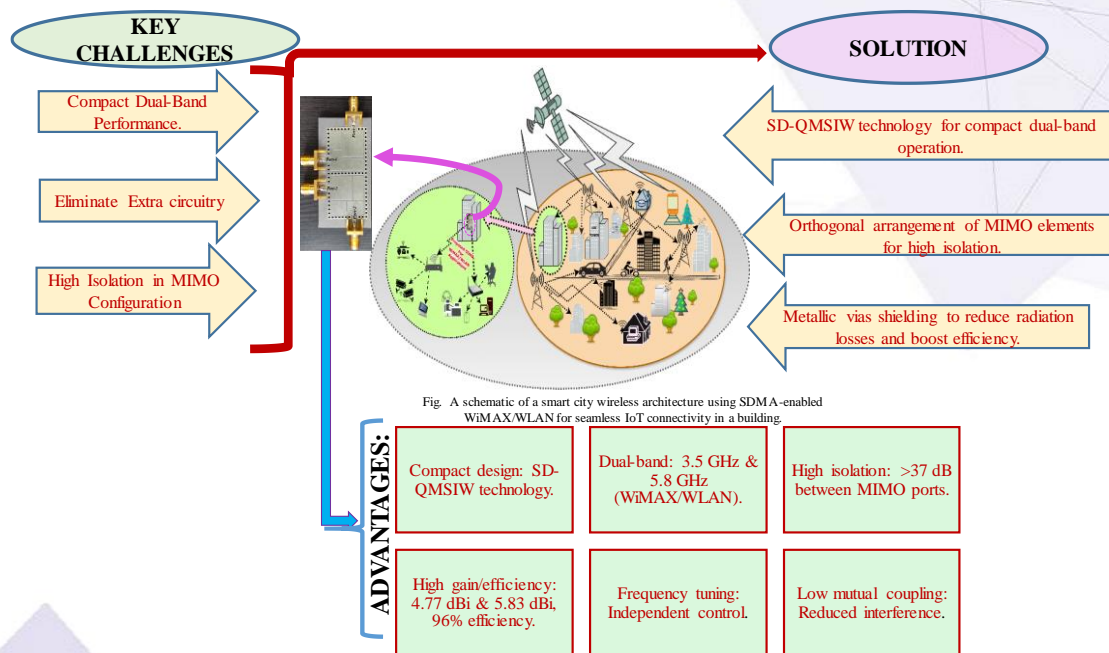
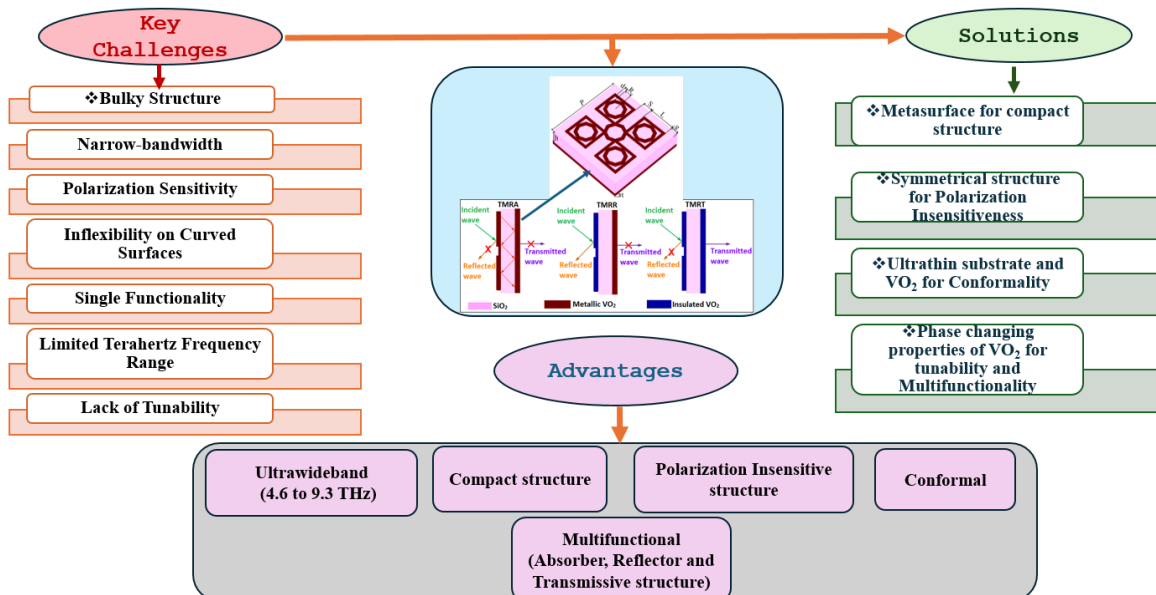


Fig. A schematic of a smart city wireless architecture using SDMA-enabled WiMAX/WLAN for seamless IoT connectivity in a building.

Amit Kr. Pandey, Ravi Kumar Gangwar and Raghvendra Kumar Chaudhary, "A Compact SD-QMSIW-Based Self-Diplexing MIMO Antenna Using Two Modified L-Shaped Slots as Radiators for IoT Applications," *IEEE Internet of Things Journal*, doi: 10.1109/IJOT.2024.3464590.

Pioneering Multi-functionality through VO₂-infused Polarization Insensitive Conformal Meta-Structures in Terahertz Regime



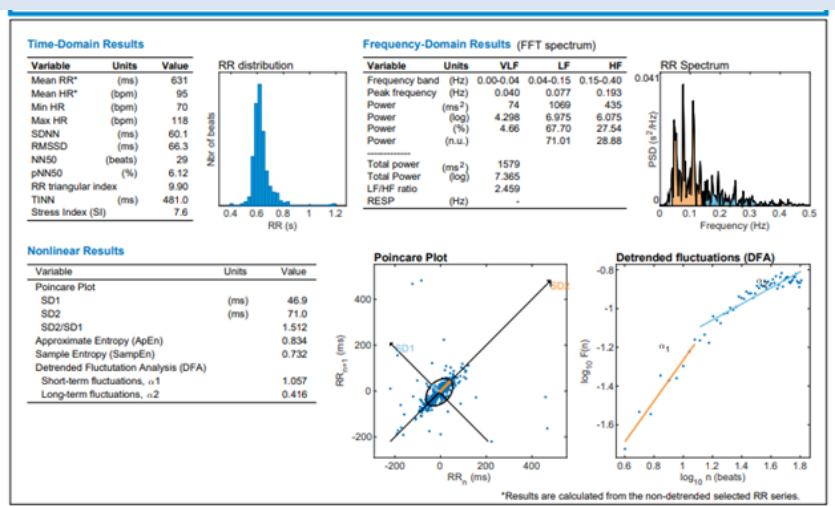
A. Raj, R. K. Gangwar and R. K. Chaudhary, "Pioneering Multi-functionality through VO₂-infused Polarization Insensitive Conformal Meta-Structures in Terahertz Regime," in *IEEE Transactions on Nanotechnology*, Vol. 19, Sep. 2024, doi: 10.1109/TNANO.2024.3462802.



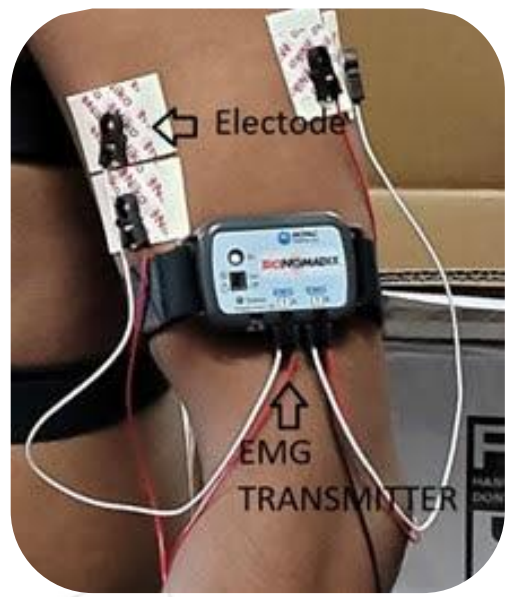
Empowering Health Solutions

Advanced Fiber Optic Sensors lab, lead by Prof. S. K. Raghuwanshi, extensively utilized the BIOPAC system for real-time health monitoring, focusing on ECG signals. Tests were conducted on students in various conditions, both at rest and during physical activity, using modules to capture continuous data. The data, analyzed through software, provided insights into heart rate variability (HRV) and the balance between sympathetic and parasympathetic responses. Additionally, we tested the developed ECG modules on students, monitoring their health in real time under varying conditions. EMG data was also collected to study muscle activity under load, refining our wearable health monitoring systems through machine learning techniques to reduce noise and improve signal

BIOPAC SYSTEM FOR REAL-TIME HEALTH MONITORING

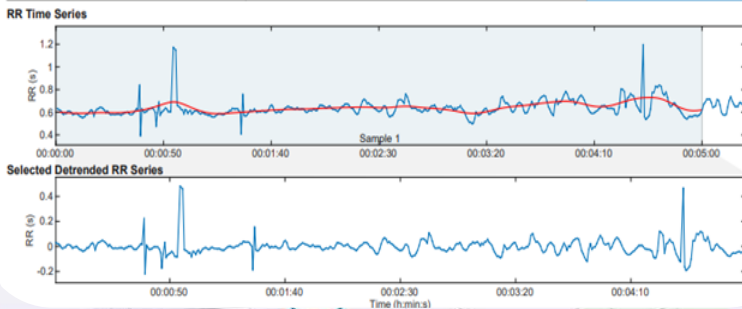


19-Jul-2023 16:24:00
Prasanth / EC, IIT ISM D
Kubios HRV Standard (ver. 3.5.0)
Kubios Ltd. - www.kubios.com



HRV Analysis Results

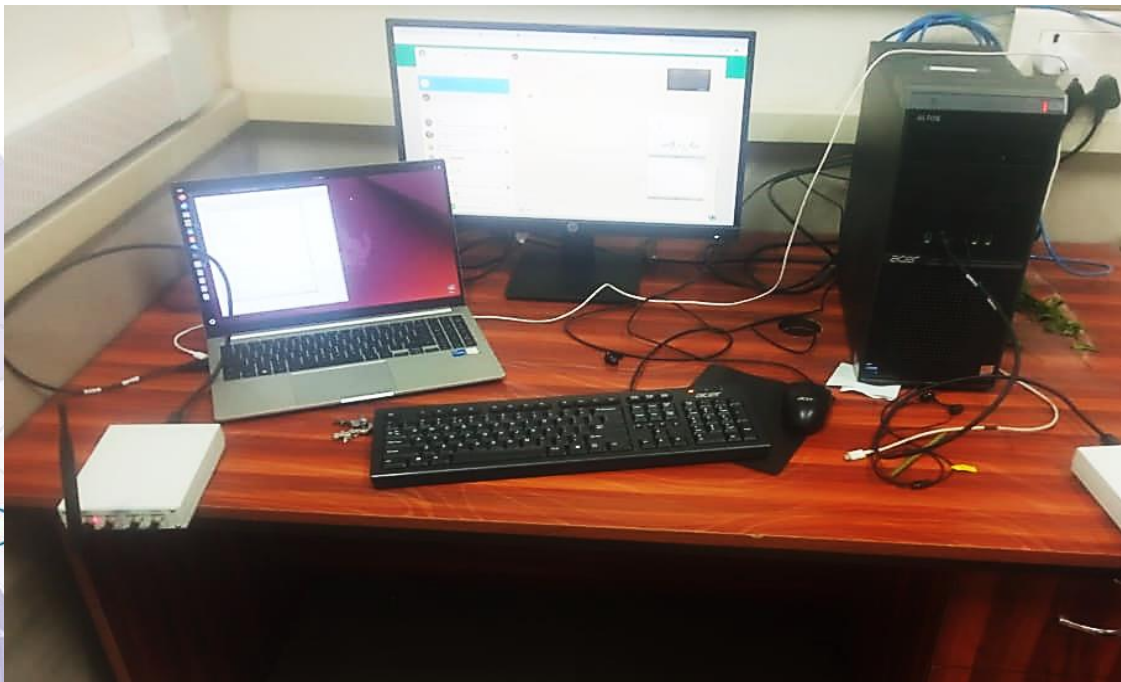
Person: Prasanth		Measurement Info		Results for Sample	
Gender: Male	Height: 165 cm	Date: xx/xx/xx	Trend removal: none	Sample start: 00:00:01	
Age: 26 years	Weight: 63 kg	Start time: 00:00:00	Smooth priors: none	Sample length: 00:05:00	
Max HR: 194 bpm	BMI: 23.1 kg/m ²	Duration: 00:05:20	Analysis samples: 1	Beats corrected: Uncorrected	





Improving the Technology in the Next Generation Wireless Systems Lab, Lead by Prof. Samrat Mukhopadhyay

1. OTFS modulation/demodulation integrated with SDRs
2. Successful transmission and reception of OTFS frames over lab environment.
3. Implemented the TCHTP channel estimation algorithm for OTFS.





Welcoming Prof. Samaresh Das

Prof. Samaresh Das, Professor & Head, Centre for Applied Research in Electronics IIT Delhi, visited at the Electronics Engineering department of IIT(ISM) Dhanbad. The faculties of our department had fruitful conversation with Prof. Das and gain insights from his vast range of a expertise. Moreover, Prof. Das delivered a talk on “THz Electronic Devices based on Low Dimensional Materials” which enlightened future THz technology research path for our young faculties as well as research scholars.



Welcoming Prof. Tapan K. Gandhi

Prof. Tapan K. Gandhi, Cadence Chair Professor of AI and Automation, IIT Delhi, visited the Electronics Engineering department of IIT(ISM) Dhanbad. Our faculty members had a very insightful discussion with Prof. Gandhi. Additionally, Prof. Gandhi delivered a talk on “Unlocking Artificial Intelligence and Serving Mankind” which highlighted present states-of-the-art of the intersection between neuroscience and AI along with the role of humanitarian research on the advancement of fundamental science and their social impacts.





Welcoming Prof. Raghavendra Kumar Chaudhary

We delighted hosting Prof. Raghavendra Kumar Chaudhary, Associate Professor of Department of Electrical Engineering at IIT Kanpur, for a talk on "Latest Trends in Modern Antennas for mm Waves and Sub-6 GHz Frequency Bands". The speaker shared valuable insights into the advancements in modern antenna technology, particularly focusing on applications for millimeter-wave (mm-Wave) frequencies and sub-6GHz frequency bands, which are critical for 5G networks and beyond.



Welcoming Prof. Yogesh Singh Chauhan

It was a great pleasure for us to host Prof. Yogesh Singh Chauhan, Professor & HoD, Electrical Engineering, IIT Kanpur at the Department of Electronics Engineering, IIT(ISM) Dhanbad. The faculties of our department had fruitful conversation with Prof. Chauhan and gain insights from his vast range of academic, research and administrative expertise. Moreover, Prof. Chauhan delivered a talk on "Excelling in Academic Career – Advice for Young Faculty" which enlightened career path of our young faculties as well as research scholars.



3. rch scholars.

Thank you, Prof. Chauhan, for visiting and giving your valuable time.

Welcoming Dr. A. K. Singh

Dr. A K Singh, Scientist G., Defense Electronics Research Laboratory (DLRL), Hyderabad, visited our department and had fruitful discussion with faculty members. He highlighted some of the technological challenges of DRDO projects and suggested possible collaborative work to break some of the existing roadblocks.



Congratulations!

Our HoD, Prof. Ravi K. Gangwar, received IEI young engineer award of the year from IEI JH section at Ranchi IEI headquarters in the presence of Prof. Indranil Manna Vice-chancellor of the Birla Institute of Technology, Mesra.





DRONE BOOTCAMP

Excited to share that the Department of Electronics Engineering, IIT (ISM) Dhanbad successfully organized a Drone Bootcamp at Government Engineering College (GEC) Jamui, Bihar from 10th-14th September 2024, under the aegis of the Ministry of Electronics and Information Technology (MeitY) funded project on "Capacity Building for Human Resource Development in Unmanned Aircraft System (Drone and related technologies)." With more than 90 students from various streams participating, the bootcamp was an incredible hands-on experience. Participants not only assembled and programmed but also flew a total of 16 drones (08 quadcopters and 08 hexacopters). The enthusiasm and curiosity of the students were truly inspiring, and it was a great step forward in building skills in UAV technology.





EVENTS AT A GLANCE

TEACHERS DAY CELEBRATION





Welcome!



Dr. Swati Rajput

Dr. Swati Rajput has recently joined the Department of Electronics at IIT (ISM) Dhanbad as an Assistant Professor. Prior to this role, she served as a DST Inspire Faculty member in the Department of Electrical Engineering at IIT Jodhpur from May 2023 to September 2024.

Dr. Swati holds a B.E. in Electronics and Telecommunication from B.I.T. Durg (2014) and an M.Tech in Optoelectronics from S.G.S.I.T.S. Indore (2016). She completed her Ph.D. in Electrical Engineering at IIT Indore in December 2021. Following her doctoral studies, she was a Postdoctoral Fellow at the University of Toronto, Canada, until May 2023.

Her research interests encompass Nanophotonics, Silicon Photonics, Optical Communication, and Device Fabrication Technology, leading to 30 journal publications, 17 conference papers, and 2 patents. Dr. Swati's contributions have earned her notable accolades, including the Best Technology Award 2023 from IIT Indore and the Young Scientist Award from the Madhya Pradesh Council of Science and Technology.



Find out more

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