

SCEE  
NEWSLETTER  
VOL-04, ISSUE-01, JUNE-2019

# Élëctron Wavë

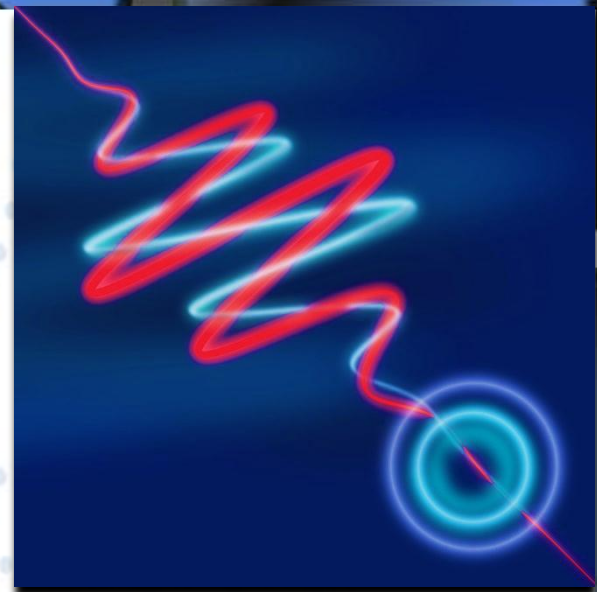
**Editor:** Dr. Shubhajit Roy Chowdhury  
School of Computing and Electrical Engineering  
Indian Institute of Technology, Mandi

**Team Members:**

Dr. Ankush Bag  
Dr. Siddhartha Sarma  
Dr. Arnav V. Bhavsar  
Dr. Padmanabhan Rajan

**Design and Development:**

Ms. Shivangi Shringi  
Ms. Nikita Deswal  
Ms. Meenakshi Shegane



## Message from the Editor:



It gives me a lot of pleasure to introduce before you Vol. 03 No. 03 of Electron Wave, the School of Computing and Electrical Engineering (SCEE) Newsletter. Years passed by and the School of Computing and Electrical Engineering has grown reasonably and diversified in its focus ranging from Signal processing and Communication to VLSI, Power Systems to Control Systems, Embedded Systems to Human Computer Interaction. A good number of faculty members from other institutions within and outside India have also visited IIT Mandi for long and short periods contributing to the intellectual growth of the institute.

In this issue, we are publishing a faculty interview; this time Electron Wave is face to face with Dr. Ravinder Arora.

## What's Inside:

1. Research Records ..... 3
2. Recent Projects .....3
3. Faculty Achievements ..... 4
4. Students Achievements ..... 4
5. Face to Face with Dr. Ravinder Arora ..... 5
6. Recent Distinguished Lectures..... 8
7. Recent Seminars and Workshops .....8
8. Upcoming Events ..... 9
9. SCEE students and faculty statistics..... 9

## Research Records (Since December 2018)

**Journal Paper Published: 11**

**Conference Paper Published: 18**

**Book Chapters Published: 02**

**Patent filed: 01**

### Recent Projects

- Title:** Indo-Japanese joint project on Establishment of Young Researcher Fellowship Programme (ERFP) 2018-19.  
**PI:** Dr. Siddhartha Sarma.  
**Funding Authority:** Indian National Science Academy (INSA) and Japan Society for the Promotion of Science (JSPS).  
**Amount:** INR 1,00,000/- from INSA for travel, visa and medical insurance JPY 3,62,000/-per month as maintenance allowance.
- Title:** Development of high accuracy Machine Learning diagnostics for pest and disease management for agricultural crops.  
**PI:** Dr. Srikant Srinivasan.  
**Funding Authority:** Arnetta Technologies Pvt Ltd.  
**Amount:** Rs. 3 lakh.
- Title:** Technology Development of Compound Semiconductor Devices for electronic and Optoelectronic.  
**PI:** Dr. Ankush Bag.  
**Funding Authority:** Scheme for promotion of Academic and Research Collaboration (SPARC), Ministry of Human Resource Development (MHRD), Government of India.  
**Amount Sanctioned:** Rs. 49.58 Lakh.
- Title:** Development of a non invasive low cost portable device for monitoring blood parameters.  
**PI:** Dr. Shubhajit Roy Chowdhury.  
**Funding Authority:** M/S Biofi Medical Healthcare Pvt. Ltd, Bengaluru.  
**Amount Sanctioned:** Rs. 20.07 Lakh.
- Title:** Point of care monitoring of Neuro-Vascular interactions (especially inverse Neuro-Vascular coupling) during spreading depolarizations in brain trauma using simultaneous recording of EEG and NIRS.  
**PI:** Dr. Shubhajit Roy Chowdhury.  
**Funding Authority:** Department of Science and Technology (BDTD), Government of India.  
**Amount Sanctioned:** Rs. 24.68 Lakh.
- Title:** Software tools for ARM Embedded processor laboratory.  
**PI:** Dr. Shubhajit Roy Chowdhury.  
**Funding Authority:** ARM University Programme (South Asia).  
**Amount Sanctioned:** Rs. 50 Lakh.

## Faculty Achievements

- ❑ Dr. Shubhajit Roy Chowdhury elected as a member of Award Committee for Gandhian Young Technological Innovation (GYTI) Award by the Society for Research and Initiatives for Sustainable Technologies and Institutions (SRISTI) in the area of Health Care devices in the year 2018.
- ❑ Dr. Shubhajit Roy Chowdhury received the Outstanding Reviewer Award by the Journal of Neuroscience Methods (Elsevier) in 2018.
- ❑ Dr. Rahul Shrestha's work on cognitive radio in news *IIT Mandi Professor Fine-Tunes 'Cognitive Radio' For Wireless Communication*.
- ❑ Dr. Gopi Srikant Reddy received URSIS Young scientist Award 2019.

## Student Achievements

- ❑ Ms. Yashika Arora & Mr. Gaurav Sharma got IBRO fellowship for attending International Summer school in Brain Research at Sree Chitra Tirunal Institute of Medical Sciences and Technology, Trivandrum.
- ❑ Ms. Yashika Arora selected for SERB Overseas Doctoral fellowship( OVDF) for carrying out research work in area of neurosciences at the University of Buffalo, State University of New York (SUNY, USA) for a period of 6 months along with faculty visits of either sides.
- ❑ Best Poster award to Mr. Manoj K. Yadav in IEEE International Conference on Emerging Electronics (ICEE) 2018, IISc, Bangalore under the guidance of Dr. Ankush bag.
- ❑ Mr. Adil Usman awarded as Outstanding Student Branch Chapter Chair in the IEEE IAS Annual Meeting 2019 ( Baltimore, USA ).

## Face to Face with Dr. Ravinder Arora



### **Q1. Who are you and what you do?**

**Ans.** I am a retired Professor from IIT Kanpur. I worked for IIT Kanpur for 34 years as a member of faculty in the Department of Electrical Engineering and retired at the age of 62 in 2005; however, left IIT Kanpur in 2008. At present, I am taking a full 3 credit course for PG students at IIT Mandi. Last year too I took the same course, “High Voltage Engineering”. I have delivered at IIT Mandi a few seminars on lightning, in the past. Besides, I have been busy here with Dr. Bharat Singh Rajpurohit in writing a book. We have just completed a UG level text book, “Fundamentals of High-Voltage Engineering”, for which we have been working together for the last 4 years.

### **Q2. You have been associated with IITK since its youth age. How have you seen the institute evolving across the years?**

**Ans.** Yeah. See, the strength of IIT Kanpur is the ‘culture’, established by its founder director Dr. P K Kelkar. He gave utmost importance and full independence to the members of faculty so that they could develop a number of leaders who occupy key positions all over the country. After leaving IIT Kanpur or taking long leave they have been heading various organizations in India. Even, our Alumni occupy key positions in India and in different countries either as heads of so many organizations or have established their own companies. They have been able to do that because they could excel themselves with the system. When I joined IIT Kanpur in 1974, there was absolutely no activity in my field of “High Voltage Engineering”. I established a unique high voltage laboratory within ten years of my joining in spite of severe resource crunch at that time unlike today. I have written 2 books when I was in IIT Kanpur, and the 3<sup>rd</sup> book has just come out, written after leaving IIT Kanpur. My second book was published by IEEE/ Wiley in US in 2011.

### **Q3. You were known for striking a good balance between your teaching and research activities. How did you bring out the balance?**

**Ans.** It’s all because of the system I was in at IIT Kanpur that I could make contributions in my field/area of work. I also brought balance in the form of my publications regarding involvement of students in the R&D activities incorporated in my books. Books are evolved with class room teaching and research work in the laboratory in the form of thesis. In my books, especially the 2<sup>nd</sup> one, published by IEEE/Wiley, I have incorporated a lot of work which has been done under my guidance in our HV laboratory and also the ideas emerged from question-answer sessions and discussions in the classroom.

**Q4. You have advised so many places for protection against lightning. What is your advice to IIT Mandi community in this regard? How safe are we at IIT Mandi north and south campuses?**

**Ans.** One thing, of course, IIT Mandi area is also prone to lightning. Fortunately, situated in a valley the number of lightning strikes on campus may not be high because all around I see the transmission lines, located very high on the mountains. They would attract lightning first and in the process protect the lower objects, the campus, in the valley. Quite a long back, may be two years ago, I came across a tall pine tree in the IIT Mandi Botanical Garden, which had fallen and whose core had charred and turned into black wood-coke, but surprisingly its outer shell was intact. A very peculiar and curious development. It made me to conclude that it could have happened only by lightning strike. I have given explanation about it as to how and why could it happen. There is no second example of such an event anywhere in the literature.

Lightning may strike on the campus very rarely but every building must be protected from lightning. Fortunately, all the buildings out here are finished with metallic tin roofs. All metals and especially the sharp edges are prone to lightning strikes. If these tin roofs are simply connected to the ground with metallic conductors, the buildings and the belongings inside will be safe. I think most of the buildings are provided with such a simple lightning conductor on the campus. Another simple advice for the protection of life is, whenever there is thunder activity just above, do not take shelter under a tree, instead better go indoor.

**Q5. Where did you get your inspiration to work with lightening form?**

**Ans.** Yeah, in fact, lightning always attracted me. When I started working in the field of high voltage engineering, I realized that lightning is a High Voltage phenomenon. Although many physicists do not agree to it, but I strongly believe that this is a High Voltage phenomenon. It is nothing but an electrical breakdown of air as a dielectric in a very long gap distance. The question is, *how much you understand and how do you interpret and analyze the phenomenon?* I was working in other areas of high voltage but not specifically on lightning. Some incidents of lightning took place in Kanpur city in a posh residential area where a number of blasts took place over a short span of time. Police, forensic experts and even the victimized people were at a loss, how and why these blasts could have taken place? Fortunately, no body, except a dog, was hurt. But, a lot of damage to property took place. The people of Kanpur were in a total dismay for a couple of days, till I revealed that the culprit was nothing but lightning strike. It used to take place mostly in the remote, early morning hours when nobody saw the lightning actually striking. When I was referred the problem, I informed myself first and investigated the cases at sight. It turned out to be lightning from the traces left behind, and later it was also confirmed when somebody actually saw lightning strike creating a blast in IIT Kanpur campus. It was repeated in Lucknow after some time. Later, many people told me that similar happening took place in other cities also.

**Q6. Is it ever possible to harvest energy generated due to lightning?**

**Ans.** A very frequent question, I have been asked. In fact, duration of lightning is so small, in micro and mili seconds, that the total energy involved is very small. I don't think there is any way to harness...if you look at the world map 100s or 1000s of lightning activity take place at a single time spread over the world but the energy cannot be harnessed.

**Q7. What is your opinion about the academics and research at IIT Mandi?**

**Ans.** Yeah, I am very glad that IIT Mandi has dedicated people involved in systematic research & development activities and they are busy in establishing new laboratories. For any institution like this, the most important thing is to have good laboratories. The laboratories are developed with institutional support by the dedicated people working the area. Good labs always bring good academic output. I am glad many good laboratories have come up and many more are to come. I wish all the best for the endeavor. I would say, one should not go for the number but for the quality.

**Q8. Please give me a word of advice to the professors and students of IIT Mandi?**

**Ans.** They all are working well... hahaha. Yeah, remote location of IIT Mandi reminds me that, what I have come across here is that, the people, who have a desire and liking to live and work under this kind of an atmosphere, join here. I am glad IIT Mandi has come up well with a peaceful atmosphere giving plenty of opportunity to individuals to work and develop in their field of specialization. It has also given a lot of freedom to every member of faculty to develop himself/herself. I would only say, you can excel with hard work and dedication. Every member of the faculty and every student should avail this opportunity, and try to excel in this excellent peaceful atmosphere of learning.

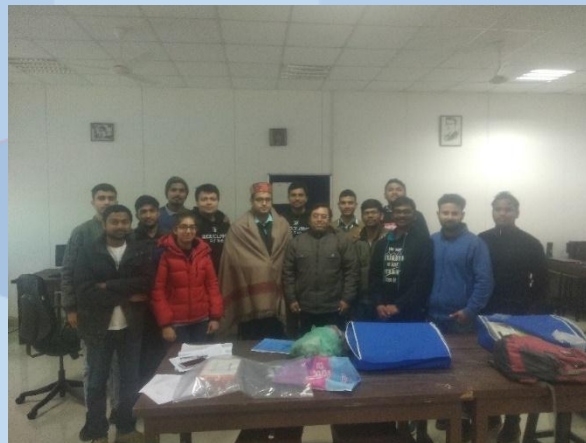
I have found among students, especially among under graduates, a kind of an apathy towards attending classes. This is a matter of serious concern. I don't know *why?* But, the problem is there. Perhaps Google is playing a bad role in this process. The new trend in conducting the lectures like a *slide show* by Power Point may also be playing a negative role and disinterests the students to attend the lectures. It is a challenge for the young members of the faculty today to inculcate interest among the students to attend lectures.

## Recent Distinguished Lectures

- ❑ Dr. Shubhajit Roy Chowdhury delivered an expert lecture on "Point of care non invasive medical diagnosis: Can we have a hospital at home?" at Sankalp Semiconductors, Kolkata on January 07, 2019
- ❑ Dr. Shubhajit Roy Chowdhury delivered an expert lecture on "Particle Swarm Optimization and its application on Maximum Powerpoint Tracking of Solar Photovoltaic Arrays" at Centre of Excellence for Green Energy and Sensing Systems, Indian Institute of Engineering, Science and Technology, Shibpur on January 11, 2019.
- ❑ Dr. Srikant Srinivasan delivered an expert lecture on "AI in Agriculture" at IIT Delhi PAN-IIT Conclave on January 21, 2019.
- ❑ Prof. N.S. Dinesh from the Dept. of Electronic system and Engineering, IISc Bangalore delivered Innovation Lecture on "Challenges in Engineering product Development" on 24 May, 2019.
- ❑ Dr. Aditya Nigam delivered a lecture on "Deep Learning" at Workshop on Deep Learning, held at Aligarh Muslim University, Delhi on January 30 to February 03, 2019.
- ❑ Dr. Aditya Nigam delivered an expert lecture on "Deep Learning and its applications" at National Institute of Technical Teachers Training and Research Kolkata on February 06, 2019.

## Recent Seminars and Workshops

- ❑ Seminar on **Precise and Efficient Analysis of Java Programs** on May 30<sup>th</sup>, 2019.



- ❑ 1 day Workshop on **FPGA Based System Synthesis**, conducted by Xilinx on January 17<sup>th</sup>, 2019.
- ❑ A 3 days Workshop on **Water Filtration Techniques Based on Solar Energy** from February 11-13<sup>th</sup>, 2019.
- ❑ A 3 days Workshop on **Analog and Digital Design Flow using Cadence EDA Tools** from April 20-22<sup>nd</sup>, 2019.
- ❑ A 2 days Workshop on **Embedded Systems for Automotive Applications** with the support of M/S Visteon Technologies from April 26-27<sup>th</sup>, 2019.



## Upcoming Events

- ❑ A **Summer School on Advanced lithography and device Fabrication: From basics to contemporary methods** to be organized from June 25<sup>th</sup>-July 2<sup>nd</sup>, 2019.
- ❑ The MANAS group is going to conduct an **International Workshop on Applied Deep Learning** from July 1-5<sup>th</sup>, 2019.
- ❑ Mandicon is organizing a five days **Workshop on Learning and Control (WLC19)** from July 22-26<sup>th</sup>, 2019.

### Statistics of Students

No. of current M.S. students: 25

No. of current Ph.D. students: 74

### Statistics of SCEE faculty members

Total no. of regular Faculty members: 33

*Indian Institute of Technology, Mandi*

*Kamand Campus*

*VPO: Kamand*

*Dist. Mandi*

*Himachal Pradesh*

*India, 175005*

*Tel: +91-01905-267133*

*Email: sceoffice@iitmandi.ac.in*