

**Course
on**

**Advancing Antenna
Technologies Using
Metasurfaces**

**Feb. 24 – Feb. 28, 2025
(Virtual Mode)**



Organized by

**Department of Electronics &
Communication Engineering
National Institute of Technology
Hamirpur
Hamirpur - 177005,
Himachal Pradesh, India
Phone: +91-1972-254011
Web: www.nith.ac.in**

Overview

The course will describe novel antenna technologies based on metasurfaces, which have immense potential in telecommunications and sensing. First, Fabry-Perot type cavity resonator antennas are described. The electromagnetics community has recently paid substantial attention to Fabry-Perot resonator antennas (FPRAs), also known as EBG resonator antennas, resonant-cavity antennas, and 2-D leaky-wave antennas, for their highly directed emission patterns and straightforward feed mechanisms. This form of antenna has a wide range of uses in contemporary communication systems, including base stations, back-haul networks, and satellite communications. In situations where the cost of production and the amount of area taken up by the antenna are constraints, antennas of this sort may be able to replace array antennas and large parabolic antennas. The foundation of conventional FPRAs is a cavity formed between a ground plane and a partly reflecting surface (PRS). Boresight radiation patterns are the consequence of constructive wave interference above the cavity, which is brought on by a lot of reflections inside the cavity.

Who can attend

- An electronics engineer or research scientist interested in designing antenna technologies based on metasurfaces.
- A student/faculty from academic/research institutions, employees from the industries interested in learning how to do research on Fabry-Perot resonator antennas, EBG resonator antennas, resonant-cavity antennas, Beam-steering antenna, miniaturized antennas, and 2-D leaky-wave antennas.



NIT Hamirpur

National Institute of Technology Hamirpur is one of the thirty-one NITs of the country, established in 1986 as Regional Engineering College, as a joint and cooperative enterprise of the Govt. of India and Govt. of Himachal Pradesh. The goals of the institute as embodied in the logo are truly remarkable in their scope of vision. The Institute provides Undergraduate, Postgraduate and Doctorate Education in Engineering, Sciences & Humanities; fostering the spirit of National Integration among the students, a close interaction with industry and a strong emphasis on research, both basic and applied.

About the Department

Established in the year 1988, the Electronics & Communication Engineering (E&CE) Department NIT Hamirpur, HP, has built an International reputation for excellence in teaching, research and service. Electronics engineers are changing the world to a comfortable global home. The information and technology revolution has been built on the advances of Electronics. The E&CE Department takes pride in its high National rankings and the International recognition its faculty has received from their peers.

The Faculty



Prof. Karu P. Esselle

Karu Esselle is the Distinguished Professor in Electromagnetic and Antenna Engineering at the University of Technology Sydney. Karu is Australia's 2022 Professional Engineer of the Year, a Fellow of the Royal Society of New South Wales, IEEE and Engineers Australia, and a Director of Innovations for Humanity Pty Ltd. His "MetaSteerers" team won the prestigious Australian national Eureka Prize (Australia's "Oscar") for Outstanding Science in Safeguarding Australia in 2023 and he received the Premier's Prize for Leadership in Innovation in News South Wales in 2024. Karu has published over 750 papers, has been cited over 16,000 times and his h-index is 63. Karu has served as a Senior Editor of IEEE Access; Associate Editor of IEEE Transactions on Antennas Propagation, IEEE Antennas and Propagation Magazine and IEEE Access; and Lead Guest Editor of several journals including IEEE Antennas & Wireless Propagation Letters. He is a Track Chair of IEEE AP-S/URSI for several years and has chaired or served in many conference Technical Program Committees. His research activities are posted in the web at

<https://www.uts.edu.au/staff/karu.esselle>.



Dr. Saurabh Kumar

Dr. Kumar is working as an Assistant Professor in the Department of ECE, NIT Hamirpur, HP, India. Prior to joining NIT Hamirpur, he worked as an assistant prof. in NIT Andhra Pradesh. He has more than 8 years of teaching and research experience. His research interest includes planar and microstrip patch antennas, artificial materials like meta-materials, electromagnetic theory, RF and microwave engineering, Nano-photonics and Plasmonics etc.

Course Fee:

- Foreign participants: USD 100
- Participants from industry: INR 1000/-
- Faculties from academic institutions/ Govt. research organizations: INR 500/-
- Students: INR 250/-

Course Registration

Step-1: Fee Payment

- I. Go to State Bank Collect (onlinesbi.sbi)
- II. Select 'Educational Institutions'
- III. Select 'Filter by State': Himachal Pradesh
- IV. Select 'Educational Institution': NIT Hamirpur
- V. Select 'Payment category': "Workshop STC FDP Conference" and fill the details to proceed further link for payment.

Step-2 E-Registration

After the payment, fill the form for e-registration through Google form:

<https://forms.gle/inVReGVLzjVoLNQF9>



Dr. C. S. Prasad

Dr. Prasad is currently working as an Assistant Professor in ECE Department NIT Hamirpur. Before joining here, he was an Assistant Professor at NIT Delhi in ECE department. His current research interests include dielectric waveguide, dielectric im-age line-based antennas and circuits, leaky wave, and wide-band high-gain antennas etc.

Course Co-ordinators

Dr. Saurabh Kumar

Assistant Professor
Department of Electronics & Communication Engineering
National Institute of Technology Hamirpur
Himachal Pradesh - 177005
Phone: +91-9407286763
E-mail: saurabh@nith.ac.in

Dr. Chandra Shekhar Prasad

Assistant Professor
Department of Electronics & Communication Engineering
National Institute of Technology Hamirpur
Himachal Pradesh - 177005
Phone: +91-7275629085
E-mail: csprasad@nith.ac.in

Scan to Register



Last Date for Registration : 20-02-2025