

Sanu Roy

Roll No.: 23EC63R27

M.Tech in RF and Microwave Engineering

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🐙 GitHub Profile

🌐 LinkedIn Profile

EDUCATION

- | | |
|---|----------------------------------|
| • Master of Technology in RF and Microwave Engineering
<i>Indian Institute of Technology Kharagpur</i> | 2023-25
CGPA: 7.39 |
| • Bachelor of Technology in Electronics and Electrical Engineering
<i>Kalinga Institute of Industrial Technology, Bhubaneswar</i> | 2017-21
CGPA: 7.37 |
| • Higher Secondary(+2) in PCMB
<i>West Bengal Council of Higher Secondary Education</i> | 2017
Percentage 65.6% |
| • Secondary(10th)
<i>West Bengal Board of Secondary Education</i> | 2015
Percentage: 84.4% |

COURSEWORK INFORMATION

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|---|---|
| • ADVANCED ELECTROMAGNETIC ENGINEERING | • MICROWAVE AND MILLIMETER WAVE INTEGRATED CIRCUITS |
| • ANALYTICAL AND COMPUTATIONAL TECHNIQUES IN ELECTROMAGNETICS | • RADAR SIGNATURE ANALYSIS AND RADAR IMAGING |
| • ACTIVE AND PASSIVE RF COMPONENTS | • EMI AND EMC TECHNIQUES |
| • VLSI INTERCONNECTS | • MIXED SIGNAL AND RF DESIGN |
| • OPTICAL FIBRES, COMPONENTS AND DEVICES | • RADIO FREQUENCY INTEGRATED CIRCUITS(RFIC) |
| • ANTENNA THEORY AND PRACTICE | |

TECHNICAL SKILLS AND EXPERTISE

Languages: C/C++, Python

Circuit Simulator : Keysight ADS, LTspice

Tools: Ansys HFSS, Matlab, LaTeX, MS Visual Studio Code, Github

PROJECTS

M.Tech Project

- | | |
|---|----------------------|
| • Project title: Photonic Reconfiguration of Microwave Devices.
<i>Project guide: Prof. Sarang Pendharker</i> | April '24 - Till Now |
| – Description: In this project, novel approaches for the photonic reconfiguration of microwave devices, including antennas, phase shifters, microwave switches, and tunable components, were researched. In the realm of photonic reconfigurable antennas, the gain and directivity can be manipulated through the modulation of incident light. Similarly, for phase shifters, the phase across the device can be altered through light modulation. This methodology shows promise for the design and implementation of advanced microwave filters. | |
| – Tools Used: Ansys HFSS, LaTeX, Github, Python, etc. | |

Summer Internship Project

- | | |
|---|--------------------|
| • Project Title: Leaser Diode Driver Using Various Techniques
<i>Project guide: Prof. Sarang Pendharker</i> | May '24 - July '24 |
| – This project aims to design a Laser Diode Driver using a Linear Voltage Regulator, Low-Dropout Voltage Regulator and DC-DC Buck Converter techniques. | |
| – Tools Used: LTspice, PCB Design | |

Research Internship

• Research Intern – RF System Design

Jan '25 - Till Now

Analog and RF Systems Laboratory, Dept. of ECE, IISc Bangalore

- Working on various aspects of RF system design, involving hands-on experience with electronic components in a laboratory environment. Engaging in design, testing, and optimization of RF circuits.
- **Tools Used:** MatLab, Python, RF Test Equipment, PCB Design, Microwave Circuit Simulation.

Coursework Mini-Project

• Design Lab Project(Substrate RT5870, Thickness(t)= 15 mil)

Jan '24 - May '24

Project guide: Prof. Miranl Kanti Mandal

- Designed and simulated a Bias Tee ($S_{21} \approx -40$ dB) and Band Stop Filter (BSF) ($S_{21} \approx -40$ dB) with $Z_0 = 50 \Omega$ for 14 GHz on HFSS.
- Designed a Branch Line Coupler (BLC) and Wilkinson Power Divider (WPD) for 14 GHz on HFSS.
- Designed impedance matching using single shunt stub matching, open stub matching, and Quarter Wave Transformer ($S_{21} \approx -35$ dB) for 14 GHz on HFSS.
- Designed a two-element microstrip patch array antenna for 14 GHz on HFSS with a bandwidth of approximately 600 MHz.
- Designed a microwave amplifier and a microwave detector for 14 GHz on ADS and implemented their layouts in ADS.
- Designed a sub-harmonic mixer with IF 20 MHz, LO 6.90 GHz, RF 14 GHz, and a conversion gain of -11.414 dB on ADS.

POSITION OF RESPONSIBILITY

Assistant Secretary(Jan '24 - Dec '24) & **Webmaster**(Jan '25 - Dec '25) at IEEE AP-MTTS SBC IIT Kharagpur|| **Student Ambassador** at IEEE Microwave Theory and Technology Society(2024) || TA For RF and Microwave Circuit Lab (EC69019) and Electromagnetic Engineering Course (EC21206)

VOCATIONAL TRAINING AND EXTRACURRICULAR COURSE

- **SEMICONDUCTOR FABRICATION 101** (*June 2024*) Purdue University, University of Texas at Austin, Intel Corporation(Online Mode)
- **IISC CeNSE Summer School on Semiconductor Technology and Microfabrication** (*June 2024*) IISC Centre for Nano Science and Engineering (CeNSE) (Online Mode)
- **Satellite-based Navigation: A Journey from GPS to Mobile Phone Platform** (*March 2021*) (ISRO IIRS Online Course)

ACHIEVEMENTS & AWARDS

- **GATE 2023 (EC):** Score: 389, Percentile: 88.5%
- **GATE 2023 (EE):**Percentile: 90%
- **First Prize in North Bengal Science Festival** 2015
- **Participated in 42nd JNNSMEE National Level Science Fair** Hosted by NCERT 16-22 December 2015
- **Participated in School Drama Festival**Balurghat Natyakarmee 2016

EXTRA CURRICULAR ACTIVITIES

- **Hobbies:** Swimming, Drawing, Traveling, Trekking, Photography, Cinematography