



Student Project Proposal

Project title: Dual-Band Circularly Polarized Antenna for mm-Wave Applications

Project type: **Bachelor Semester Project** (8 credits)

Faculty and Laboratory: STI, Microwaves and Antennas Group

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Project Description

Dual-band dual-sense circularly polarization (CP) antennas are capable of concurrently transmitting and receiving signals at distinct frequencies. These antennas are extensively utilized in satellite communications, wireless communication systems, and radar systems, as they enable frequency reuse and enhance system capacity and coverage. Moreover, polarization diversity can be attained by configuring the two frequency bands with contrasting polarization. Consequently, the construction of dual-band dual-sense circularly polarized antennas has garnered considerable interest in recent years.

Project Goal

In this project student will learn about basic of the antenna simulation and design, as first step student will design a simplified circularly polarized antenna and understand drawback of such system. If time permits the students will move toward the final goal of the project and try to achieve a dual band antenna with different polarization in each frequency.

Student Task

- Study of circularly polarized feeding system.
- Study of basic design guidelines.
- Study of available solutions.
- Design and simulate the appropriate solution.
- Fabrication and measurement (if time permits).

Outcomes

- Students will learn circularly polarized antenna basics.
- EM Simulation and measurement techniques will be learned.

Type of Work

- Theory 35%
- Simulation 40%
- Measurement 5%
- Documentation & Reporting 20%