National Institute of Technology Rourkela

Registration Seminar

Seminar Title	: Design and Development of FSS for Multi-Band Applications
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Venue	: EC Seminar Room (Room No: EC 303)
Date and Time	: 15 Oct 2024 (11:00 am)

Abstract : Sub-wavelength periodic structures known as frequency-selective surfaces transfer incident signals in specific frequency bands while reflecting them in a different frequency domain. The transmission and reflection properties of the incident wave are determined by its angle of incidence and polarization. Frequency-selective surfaces (FSS) have become indispensable components in modern electromagnetic applications, particularly for multiband systems that require efficient signal processing across a broad frequency range. The invention, improvement, and use of FSS for multiband applications are examined in this work, focusing on their selectivity in transmitting, reflecting, or filtering electromagnetic waves at different frequencies. The FSS Unit Cell Structures such as Jerusalem Cross-shaped, a Sequential Notched Concentric Ring type, a Slotted Concentric FSS, and a Novel E-shaped FSS had been designed for various applications such as Wireless Applications, 5G communications, ISM Band, etc., These structures are built on rigid substrates (FR4), so flexible substrates are used to construct different designs. FSS-based polarization converters modify the polarization of electromagnetic waves by utilizing the frequency-selective characteristics of engineered surfaces. Effective polarization conversion is largely dependent on the layout, design, and resonant frequencies of the FSS elements. FSS structures reflect or block certain electromagnetic wave frequencies while allowing others to flow through. They are frequently utilized in radomes, filters, and antenna applications. This research opens up new possibilities for creating flexible and adaptable electromagnetic devices in the future, while also advancing our basic understanding of FSS in multiband situations.