National Institute of Technology Rourkela

Departmental Seminar

Seminar Title	: A Broadband Artificial Magnetic Conductor for S-band Applications .
Speaker	: Kamlesh Muchhawat.
Supervisor	: Prof Siturani Patre.
Venue	: Room No. EC-411 (Microwave and Antenna Design Laboratory), ECE Dept. (Electrical Science Building)
Date and Time	: 04 Apr 2025 (05.30PM)
Abstract	: The Artificial Magnetic Conductor (AMC) concept presented in this study is intended to achieve in-phase reflection over broad bandwidth. The AMC unit cell incorporates a star-shaped patch with an octagonal slot on FR4 substrate and an air gap that separates the ground plane from the substrate. The proposed AMC unit-cell is optimized to achieve the in-phase reflection at frequency 2.4 GHz, with a bandwidth of 51.5% ranging from 1.83 to 3.10 GHz. The evolution steps and parameter variations in patch geometry and air gap are explored. The parametric study demonstrates that the changes in parameters influences the in-phase reflection point and frequency tuning. Additionally, the AMC's performance under oblique incidence angles from 0° to 45° is examined, revealing a minor shift in resonant frequency and a narrowing of bandwidth as the angle of incidence increased. The reflecting screen designed using proposed AMC unit-cell shows promising applications for gain and bandwidth enhancement of low-profile antenna operating in S-band.