

Departmental Seminar

Seminar Title : Approximate Analysis of Sectoral Cylindrical Dielectric Waveguide.
Speaker : Prof Sudipta Maity
Supervisor : Prof Sudipta Maity.
Venue : EC303, Seminar Room.
Date and Time : 23 Dec 2024 (05.45PM)
Abstract : An approximate theoretical investigation on sectoral Cylindrical Dielectric Waveguide (CDWG) is presented here. The contributions of transverse electric and transverse magnetic modes are utilized to find the solution of different modes. The use of an imperfect wall along the azimuth direction will lead to a Bessel function with imaginary order which may not lead to any closed-form analytical solution. Due to that reason, a mixed magnetic wall model is applied here to find the dispersion characteristics of the sectoral CDWG for different modes. Internal field patterns, cut-off frequency, and the variation of propagation constant with frequency are computed at different frequencies for different modes and the same is also compared with data obtained using a commercially available FEM-based 3D EM simulator HFSS. It is found that our theory is in excellent agreement with simulated data.