Abstracts

Cut-off and Phase Constants of Partially Filled Axially Magnetized, Gyromagnetic Waveguides Using Finite Elements

B.M. Dillon, A.A.P. Gibson and J.P. Webb. "Cut-off and Phase Constants of Partially Filled Axially Magnetized, Gyromagnetic Waveguides Using Finite Elements." 1993 Transactions on Microwave Theory and Techniques 41.5 (May 1993 [T-MTT]): 803-808.

A three component vector finite element formulation to model the propagation characteristics of partially filled, axially magnetized, gyromagnetic waveguides is described. Covariant-projection elements have been used to avoid spurious modes and periodic boundary conditions have been implemented to improve numerical efficiency. The classic quadratic functional derived from the vector, curlcurl, magnetic field equation is suited to evaluating the cut-off planes of gyrotropic waveguides. A known field transformation is used to reformulate the functional into a form convenient for calculating phase constants. Cut-off and phase constant solutions are presented for both fully and partially filled, longitudinally magnetized, ferrite loaded waveguides.

❑ Return to main document.