Abstracts

Cutoff Spaces of Elliptical Gyromagnetic Planar Circuits and Waveguides Using Finite Elements

J. Helszajn and A.A.P. Gibson. "Cutoff Spaces of Elliptical Gyromagnetic Planar Circuits and Waveguides Using Finite Elements." 1989 Transactions on Microwave Theory and Techniques 37.1 (Jan. 1989 [T-MTT]): 71-80.

The finite element method is admirably suited for the analysis of irregular planar circuits on gyromagnetic substrates. It is used in this paper to evaluate the cutoff spaces of elliptical magnetized planar circuits with electric and magnetic walls in all combinations. A knowledge of the four possible solutions and a knowledge of the rules governing the intersections of cutoff branches in the cutoff spaces are sufficient for a complete description of the related elliptical gyromagnetic waveguide with either an electric or a magnetic wall. It is also demonstrated that the demagnetized and split cutoff numbers of the resonator with magnetic sidewall and top and bottom electric walls are sufficient for the approximate description of the split phase constants of the dominant mode in the related weakly magnetized gyromagnetic waveguide problem with either a magnetic or an electric wall.

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