Abstracts

Determination of the Eigenfrequencies of a Ferrite-Filled Cylindrical Cavity Resonator Using the Finite Element Method (Short Papers)

G.C. Chinn, L.W. Epp and G.M. Wilkins. "Determination of the Eigenfrequencies of a Ferrite-Filled Cylindrical Cavity Resonator Using the Finite Element Method (Short Papers)." 1995 Transactions on Microwave Theory and Techniques 43.5 (May 1995 [T-MTT]): 1207-1209.

A formulation of the Finite Element Method (FEM) particular to axisymmetric problems containing anisotropic media is compared to an analytic solution. In particular, the resonant frequencies of a longitudinally biased ferrite-filled cylindrical cavity are examined. For comparison, a solution of the characteristic equation for the lossless, ferrite-filled cylindrical waveguide was modified to give the resonant frequencies of the cylindrical cavity. This analytical solution was then used to examine the error in the FEM formulation for the anisotropic case. It is noted that the FEM formulation for anisotropic material presented, based on both node and edge-based elements, is found to be free of spurious solutions.

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