Abstracts

Finite-Element Formulation in Terms of the Electric-Field Vector for Electromagnetic Waveguide Problems

M. Koshiba, K. Hayata and M. Suzuki. "Finite-Element Formulation in Terms of the Electric-Field Vector for Electromagnetic Waveguide Problems." 1985 Transactions on Microwave Theory and Techniques 33.10 (Oct. 1985 [T-MTT] (Special Issue on Numerical Methods)): 900-905.

A vector finite-element method for the analysis of anisotropic waveguides with off-diagonal elements in the permeability tensor is formulated in terms of all three components of the electric field. In this approach, spurious, nonphysical solutions do not appear anywhere above the "air-line." The application of this finite-element method to waveguides with an abrupt discontinuity in the permittivity is discussed. In particular, we discuss how to use the boundary conditions of the electic field at the interface between two media with different permittivities. To show the validity and usefulness of this formulation, examples are computed for dielectric-loaded waveguides and ferrite-loaded waveguides.

❑ Return to main document.