Abstracts

Simple and Efficient Finite-Element Analysis of Microwave and Optical Waveguides

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A simple and efficient finite-element method for the analysis of microwave and optical waveguiding problems is formulated using three components of the electric or magnetic field. In order to eliminate spurious solutions, edge elements are introduced. In the edge element approach the nodal parameters are not limited to the magnetic field as in the conventional three-component formulation for the dielectric waveguiding problem. An eigenvalue equation derived here involves only the edge variables in the transversal plane and can provide a direct solution for the propagation constant. To show the vailidity and usefulness of this approach, computed results are illustrated for microstrip transmission lines and dielectric waveguides.

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