Abstracts

Analysis of general lossy inhomogeneous and anisotropic waveguides by the finite-element method (FEM) using edge elements

L. Nuno, J.V. Balbastre and H. Castane. "Analysis of general lossy inhomogeneous and anisotropic waveguides by the finite-element method (FEM) using edge elements." 1997 Transactions on Microwave Theory and Techniques 45.3 (Mar. 1997 [T-MTT]): 446-449.

Several finite element formulations based on edge elements have been developed in recent years, avoiding the appearance of spurious modes in waveguides. However, no formulation of this kind dealing with general lossy inhomogeneous and anisotropic waveguides has been found in the literature. In this paper, a new finite element scheme for the most general linear waveguides has been derived from vector wave equations via a Galerkin procedure. In this formulation, triangular and quadrilateral edge elements have been used in order to avoid the spurious solutions. Furthermore, the final eigensystem involves only very sparse matrices, thus allowing important savings in time and memory.

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