Abstracts

Vectorial Finite-Element Method Without Any Spurious Solutions for Dielectric Waveguiding Problems Using Transverse Magnetic-Field Component

An improved finite-element method for the analysis of dielectric waveguiding problems is formulated rising the transverse magnetic-field component. In this approach, the divergence relation /spl nabla/ · H = 0 is satisfied and the spurious, nonphysical solutions which have been necessarily included in the solutions of earlier vectorial finite-element methods are completely eliminated in the whole region of a propagation diagram. To verify the accuracy of the present method, numerical results for a rectangular metallic waveguide half filled with dielectric are presented and compared with exact and earlier finite-element solutions. Dielectric rectangular waveguides are also analyzed for both isotropic and anisotropic cases.

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