Abstracts

Generalized Spectral Analysis of Planar Lines on Layered Media Including Uniaxial and Biaxial Dielectric Substrates

F. Medina, M. Horno and H. Baudrand. "Generalized Spectral Analysis of Planar Lines on Layered Media Including Uniaxial and Biaxial Dielectric Substrates." 1989 Transactions on Microwave Theory and Techniques 37.3 (Mar. 1989 [T-MTT]): 504-511.

In this paper the spectral-domain analysis (SDA) is generalized in order to compute the dispersive properties of a wide variety of planar and quasi-planar transmission lines (microstrips and finlines) printed on a stratified dielectric medium. Uniaxial and biaxial dielectric anisotropy can be easily manipulated due to the definition of a "transverse propagation matrix" characterizing each dielectric layer. The whole boundary value problem is reduced to two simpler problems involving only one or two dielectrics. Then, the spectral dyadic Green's function is derived via a recurrence algorithm. The dispersion equation is derived by using the Ritz-Galerkin method. The numerical convergence is substantially improved taking into account the asymptotic behavior of the series. A number of illustrative examples have been included to emphasize the power of the method.

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