Abstracts

Spectral Representation of Self-Adjoint Problems for Layered Anisotropic Waveguides

C.R. Paiva and A.M. Barbosa. "Spectral Representation of Self-Adjoint Problems for Layered Anisotropic Waveguides." 1991 Transactions on Microwave Theory and Techniques 39.2 (Feb. 1991 [T-MTT]): 330-338.

Layered waveguides with lossless anisotropic layers in the polar configuration are analyzed through the unifying concept of a real self-adjoint operator. For a suitable definition of two-vector transverse eigenfunctions, general properties such as orthogonality and completeness relations are derived. The linear operator formalism is applied to closed waveguides inhomogeneously filled with anisotropic materials, including crystals and gyrotropic media. As an extension of the former theory to open waveguides, a grounded uniaxial dielectric slab with a coplanar optic axis is also analyzed as for open isotropic waveguides, a complete spectral representation including the surface (improper eigenfunctions) as well as the pseudosurface modes (proper eigenfunctions) is presented.

❑ Return to main document.