Abstracts

Self-Adjoint Vector Variational Formulation for Lossy Anisotropic Dielectric Waveguide

This paper presents the derivation of a new self-adjoint variational formula for complex propagation constant in a lossy anisotropic dielectric waveguide, in terms of the magnetic field and real frequency. The ability to include loss and anisotropy (into the permittivity tensor) while preserving the self-adjointness of the system is achieved by using the less common real-type inner product. When used as a basis of Rayleigh-Ritz or finite-element methods, the formula leads to the canonical eigenvalue eqnation of the form $Ax = \gamma^2 Bx$.

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