Abstracts

Implicit 3-D dyadic Green's function using self-adjoint operators for inhomogeneous planar ferrite circulator with vertically layered external material employing mode-matching

C.M. Krowne. "Implicit 3-D dyadic Green's function using self-adjoint operators for inhomogeneous planar ferrite circulator with vertically layered external material employing mode-matching." 1998 Transactions on Microwave Theory and Techniques 46.4 (Apr. 1998 [T-MTT]): 359-377.

Self-adjoint operators are found for the differential equations describing the z-dependent field variation in the medium external to the ferrite microstrip circulator puck. The external medium is, in general, inhomogeneously layered, consisting of media with permittivity properties, magnetic properties, or both. Eigenvalue equations characterizing the radially sectioned medium outside the puck are found, as are the eigenvectors. When the z-dependent parts are multiplied with the radial and azimuthal dependences, the complete three-dimensional (3-D) field expressions are determined. Source-constraint equations (representing microstrip lines) driving the circulator are then combined with the mode-matching technique to obtain in direct space, implicit dyadic Green's function elements. Mode orthogonality is employed to encourage sparsity in matrix system development where appropriate or convenient. The implicit Green's function is particularly useful because field information and s-parameters may be found in real space, completely avoiding typical inverse transformations.

❑ Return to main document.