Abstracts

Integral Representation of Spatial Green's Function and Spectral Domain Analysis of Leaky Covered Strip-Like Lines

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This paper studies the possible integral representations of the Spatial Dyadic Green's Function of a laterally open but covered multilayered planar waveguide with translation symmetry. Among all of integral representations, we especially focus on that unique representation which comprises only out-going waves (energy transferred from the source to infinity in case lateral radiation was present). We propose this specific integral representation as the most appropriate in the Spectral Domain Analysis of strip-like structures when these are assumed to be guiding/teaky systems with translation symmetry. This integral representation directly provides the integration contour to be used in the definition of the inverse Fourier transform. Some aspects concerning the use of the nonconventional Fourier transform are discussed in connection with the application of the Method of Moments. It is also highlighted that the dispersion relation of the strip-like configuration is expressed in terms of the zeros of a multivalued complex function. This fact becomes relevant when searching for zeros out of the spectral sheet (i.e., zeros associated with leaky modes). Finally, some numerical results are presented. These computed values show good agreement when compared with some previously published data. The influence of different definitions of the inverse integration contour on the propagation characteristics of a pair of coplanar coupled strips is also investigated. Computed data will show the leakage characteristics of a pair of noncoplanar strips.

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