Abstracts

A Moment Method with Mixed Basis Functions for Scatterings by Waveguide Junctions

A moment method with mixed basis functions is introduced. In this formulation, modal basis functions are used for the expansion of the currents corresponding to the scattered propagating modes, while pulse basis functions are used for the expansion of the current corresponding to the scattered envancescent waves. This, together with the Dirac delta weighting functions, reduces the number of total basis functions needed while retaining the simplicity and versatility of the method to cover junctions of an arbitrary shape. This method is applied to study examples of homogeneous and inhomogeneous waveguide junctions of parallel-plate waveguide propagating TE waves. It is found that for junctions that are not electrically large the convergence of the solutions is good. An appendix is included to transform and quicken the numerical integration of the modal basis functions.

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