Abstracts

Fast full-wave analysis of planar microstrip circuit elements in stratified media

Rong-Chan Hsieh and Jen-Tsai Kuo. "Fast full-wave analysis of planar microstrip circuit elements in stratified media." 1998 Transactions on Microwave Theory and Techniques 46.9 (Sep. 1998 [T-MTT]): 1291-1297.

The fast Hankel transform (FHT) algorithm is implemented in the mixed-potential integral-equation (MPIE) analysis of planar microstrip circuits in stratified media. The spatial-domain Green's functions are accurately and quickly obtained by applying the FHT algorithm to the exact spectral-domain counterparts. Therefore, the entire analysis procedure has high accuracy and efficiency. A nonuniform partition scheme is used to effectively model the rapid change of current distributions around discontinuities. A generalized supplementary equation accounting for arbitrary termination conditions at both feeding and load ends is also derived. The proposed method is used to design a single-stub band-stop filter and a compensated dc block circuit. Experimental measurements are performed to validate the computation.

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