Abstracts

On the fast approximation of Green's functions in MPIE formulations for planar layered media

N.V. Shuley, R.R. Boix, F. Medina and M. Horno. "On the fast approximation of Green's functions in MPIE formulations for planar layered media." 2002 Transactions on Microwave Theory and Techniques 50.9 (Sep. 2002 [T-MTT]): 2185-2192.

The numerical implementation of the complex image approach for the Green's function of a mixed-potential integral-equation formulation is examined and is found to be limited to low values of /spl kappa//sub o//spl rho/ (in this context /spl kappa//sub 0//spl rho/ = 2/spl pi//spl rho///spl lambda//sub 0/, where /spl rho/ is the distance between the source and the field points of the Green's function and /spl lambda//sub 0/ is the free space wavelength). This is a clear limitation for problems of large dimension or high frequency where this limit is easily exceeded. This paper examines the various strategies and proposes a hybrid method whereby most of the above problems can be avoided. An efficient integral method that is valid for large /spl kappa//sub 0//spl rho/ is combined with the complex image method in order to take advantage of the relative merits of both schemes. It is found that a wide overlapping region exists between the two techniques allowing a very efficient and consistent approach for accurately calculating the Green's functions. In this paper, the method developed for the computation of the Green's function is used for planar structures containing both lossless and lossy media.

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