Abstracts

Quick quasi-TEM analysis of multiconductor transmission lines with rectangular cross section

J. Bernal, F. Medina and M. Horno. "Quick quasi-TEM analysis of multiconductor transmission lines with rectangular cross section." 1997 Transactions on Microwave Theory and Techniques 45.9 (Sep. 1997 [T-MTT]): 1619-1626.

This paper presents an efficient and accurate procedure for computing the quasi-static matrix parameters ([C], [L], [G], and [R]) of rectangular-shaped conductors embedded in a multilayered dielectric medium over an infinite ground plane. An additional top ground plane can also be considered., The problem is formulated in terms of the space-domain integral equation for the free-charge distribution on the slab conductor surfaces. The spatial Green's function is computed from its spectral counterpart using system identification techniques [Prony's method or matrix pencil method (MPM)]. The integral equation is solved by means of a Galerkin scheme employing entire domain basis functions. This results in a small matrix size. In addition, the quasi-analytical evaluation of the entries of the Galerkin matrix leads to a very efficient and accurate computer code. A detailed study on the convergence and accuracy of the method has been included.

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