Abstracts

Analytically determined quasi-static parameters of shielded or open multiconductor microstrip lines

D. Homentcovschi and R. Oprea. "Analytically determined quasi-static parameters of shielded or open multiconductor microstrip lines." 1998 Transactions on Microwave Theory and Techniques 46.1 (Jan. 1998 [T-MTT]): 18-24.

An exact analytical expression for the capacitance matrix of a shielded or open multiconductor microstrip structure is derived by solving the system's dual integral equations by constructing a Volterra boundary-value problem (BVP). The solution is expressed in terms of infinite matrices with very good convergence properties. This new approach uses a series of Bessel functions rather than trigonometric series to approximate the solution which results in an efficient algorithm. Simplified formulas are given for the even and odd capacitance of symmetric coupled microstrip lines and compared to the results given by the finite analytical solution available in this particular case. Numerical examples demonstrate that the method yields accurate results and is computationally effective for structures having a large number of conductors.

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