Abstracts

Highly Efficient Calculation of Shielded Microstrip Structures in the Presence of Undercutting

Shielded microstrip transmission files of a trapezoidal cross section such as resulting from the undercutting effect are analyzed by a highly efficient numerical technique, essentially consisting in a new formulation of the integral-equation approach. First, the method of electric images is used to change the conventional Fourier-series expansion of the Green's function into a fast-converging expression allowing the time required for computation to be reduced by more than two orders of magnitude. Then, the discretization of the Fredholm integral equation for the charge density on the strip surface is carried out by the Jacobi-Gauss integration formula, ensuring optimum accuracy for a given order of the solving matrix. In this way a very powerful tool for microstrip analysis and design is obtained, combining generality of application and excellent numerical performance.

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