Abstracts

A Chebyshev Approximation Method for Microstrip Problems

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The quasi-static TEM mode of a microstrip line may be obtained approximately from the solution of Laplace's equation subject to certain boundary conditions. The Green's function approach leads to the solution of a Fredholm integral equation with a logarithmic singularity in the kernel. It is shown that if the charge distribution on the strip is expanded in terms of Chebyshev polynomials then the integrals arising from the logarithmic term may be evaluated in closed from, and the integral equation may be approximated closely by a set of algebraic equations. The method is applied to numerous open and shielded configurations of strips and couple-strips in the presence of dielectrics. Numerical results are compared with exact results whenever possible and with results from previous authors. Design curves are presented for particular shielded couple-strip configurations.

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