Abstracts

Efficient Eigenmode Analysis for Planar Transmission Lines

A.K. Saad and K. Schunemann. "Efficient Eigenmode Analysis for Planar Transmission Lines." 1982 Transactions on Microwave Theory and Techniques 30.12 (Dec. 1982 [T-MTT] (1982 Symposium Issue)): 2125-2132.

A unified analysis for planar transmission fines is performed rising the mode-matching technique. Exploiting the fact that the thickness of the metal coating (fins or strips) is normally very small in comparison to all other dimensions, the characteristic equations are formulated in a way which preserves the physical meaning of their individual terms. Thus, simplifications of far-reaching consequences can be introduced for all eigenmodes showing a cutoff frequency. It is shown in particular that the higher order modes can be derived approximately from the fundamental mode. Moreover, the dispersion relation of fin-lines can be given by a simple expression because the equivalent dielectric constant linearly depends on frequency. Both steps reduce the computer time by about two orders of magnitude in comparison to the spectral-domain method.

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