Abstracts

Exact Solutions for Shielded Printed Microstrip Lines by the Carleman-Vekua Method

J.G. Fikioris, J.L. Tsalamengas and G.J. Fikioris. "Exact Solutions for Shielded Printed Microstrip Lines by the Carleman-Vekua Method." 1989 Transactions on Microwave Theory and Techniques 37.1 (Jan. 1989 [T-MTT]): 21-33.

Exact analytical solutions for the field of the quasi-TEM mode in various cross-sectional configurations of rectangularly shielded printed microstrip lines are obtained on the basis of Carleman-type singular integral equations (SIE's). There are no limitations on the dimensions or the proximity of the strip conductors to the shield. For the kernel of the SIE, strongly and uniformly convergent series expansions have recently been developed that are suitable for the exact solution of the equation by the Carleman-Vekua regularization method, which proceeds by first solving the so-called dominant equation. The procedure leads to rapidly convergent series solutions for the field of the quasi-TEM mode even when the conductors are large or very near the shield, i.e., in situations for which numerical techniques become inadequate. Characteristic values of the shielded microstrip lines are evaluated by summing a few terms, while field plots, requiring more terms, are shown for various configurations including the case of close proximity.

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