Abstracts

A Generalized Spectral-Domain Green's Function for Multilayer Dielectric Substrates with Application to Multilayer Transmission Lines

N.K. Das and D.M. Pozar. "A Generalized Spectral-Domain Green's Function for Multilayer Dielectric Substrates with Application to Multilayer Transmission Lines." 1987 Transactions on Microwave Theory and Techniques 35.3 (Mar. 1987 [T-MTT]): 326-335.

A generalized full-wave Green's function completely defining the field inside a multilayer dielectric structure due to a current element arbitrarily placed between any two layers is derived in two-dimensional spectral-domain form. It is derived by solving a "standard" form containing the current element with two substrates on either side of it, and using an iterative algorithm to take care of additional layers. Another iterative algorithm is then used to find the field in any layer in terms of the field expressions in the two layers of the "standard" form. The locations of the poles of the Green's function are predicted, and an asymptotic form is derived along with the asymptotic limit, by use of which the multilayer Green's function can be used in numerical methods as efficiently as the single-layer grounded-dielectric-substrate Green's function. This Green's function is then applied to a few multilayer transmission lines for which data are not found in the literature to date.

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