Abstracts

Efficient Computation of the Periodic Green's Function in Layered Dielectric Media

R.M. Shubair and Y.L. Chow. "Efficient Computation of the Periodic Green's Function in Layered Dielectric Media." 1993 Transactions on Microwave Theory and Techniques 41.3 (Mar. 1993 [T-MTT]): 498-502.

This paper presents a novel technique for the efficient computation of the periodic Green's function in layered dielectric media. The technique is based upon expanding the spectral Green's function into a finite number of inverse-transformable complex exponential functions. This enables the use of Poisson's summation formula to express the periodic Green's function as a combined sum of spectral terms and spatial terms each set of which is rapidly convergent. Numerical results are obtained for the "on-plane" case, in which the direct summation of the series converges extremely slowly. Using the accelerated summation formula of this paper, a computation time reduction of 160 fold is obtained. The proposed technique is useful as it can be applied to a wide class of problems where periodic structures are to be modeled.

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