Abstracts

Efficient Computation of the Free-Space Periodic Green's Function

S. Singh and R. Singh. "Efficient Computation of the Free-Space Periodic Green's Function." 1991 Transactions on Microwave Theory and Techniques 39.7 (Jul. 1991 [T-MTT]): 1226-1229.

The application of Shanks's transform is shown to improve the convergence of the series representing the doubly infinite free-space periodic Green's function. Higher order Shanks transforms are computed via Wynn's epsilon algorithm. Numerical results confirm that a dramatic improvement in the convergence rate is obtained for the "on-plane" case, in which the series converges extremely slowly. In certain instances, the computation time can be reduced by as much as a factor of a few thousands. A relative error measure versus the number of terms taken in the series is plotted for various values of a convergence factor as the observation point is varied within a unit cell. Computation times are also provided.

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