Abstracts

A Convergence Acceleration Procedure for Computing Slowly Converging Series (Short Papers)

S. Singh and R. Singh. "A Convergence Acceleration Procedure for Computing Slowly Converging Series (Short Papers)." 1992 Transactions on Microwave Theory and Techniques 40.1 (Jan. 1992 [T-MTT]): 168-171.

The application of sloped theta-algorithm to the partial sums of a slowly converging series is shown to accelerate its convergence. The algorithm is applied to accelerate the convergence of series representing the free-space periodic Green's functions involving the zeroth-order Hankel function of the second kind, and its associated Fourier transform. Numerical results indicate that the algorithm converges faster than the Shanks' transform. It is also able to sum the series to machine precision in about 20 terms. A relative error measure is shown as a function of the number of terms of various combinations of source and observation points. The relative saving in computation time is also provided to show the benefit of using the algorithm.

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