

Abstracts

Accurate Computation of Wide-Band Response of Electromagnetic Systems Utilizing Narrow-Band Information

K. Kottapalli, T.K. Sarkar, Y. Hua, E.K. Miller and G.J. Burke. "Accurate Computation of Wide-Band Response of Electromagnetic Systems Utilizing Narrow-Band Information." 1991 Transactions on Microwave Theory and Techniques 39.4 (Apr. 1991 [T-MTT]): 682-687.

We investigate Cauchy's technique for interpolating a rational function from samples of frequency responses and/or their derivatives. This technique can be used to speed up the numerical computations of parameters including input impedance and RCS of any linear time-invariant electromagnetic system. Here we have applied the technique to find the electromagnetic response of a conducting cylinder over a spectrum of frequency. The numerical results presented are in good agreement with exact computational data. This technique is a true interpolation/extrapolation technique as it provides the same defective result as the original electric field integral equation at a frequency which corresponds to the internal resonance of the closed structure.

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