Abstracts

Parameter Extraction and Correction for Transmission Lines and Discontinuities Using the Finite-Difference Time-Domain Method

M.A. Schamberger, S. Kosanovich and R. Mittra. "Parameter Extraction and Correction for Transmission Lines and Discontinuities Using the Finite-Difference Time-Domain Method." 1996 Transactions on Microwave Theory and Techniques 44.6 (Jun. 1996 [T-MTT]): 919-925.

The finite-difference time-domain (FDTD) method is useful for performing broadband characterization of uniform transmissiom lines and discontinuities. Modeling a geometry often requires the implementation of an absorbing boundary condition (ABC). When this is the case, numerical reflections from the ABC's willl add significant error to the calculated transmission line or scattering (S) parameters. This paper introduces a simple post-processing algorithm for extracting these parameters and correcting for numerical reflection error. Furthermore, the method is shown to have a unique relationship to Prony's method. Practical application and limitations of this technique are also discussed. Finally, the impedance and propagation constant of a miscrostrip tine are calculated using this method.

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