Abstracts

A New Procedure for Interfacing the Transmission Line Matrix (TLM) Method with Frequency-Domain Solutions (Short Papers)

Z. Chen, W.J.R. Hoefer and M.M. Ney. "A New Procedure for Interfacing the Transmission Line Matrix (TLM) Method with Frequency-Domain Solutions (Short Papers)." 1991 Transactions on Microwave Theory and Techniques 39.10 (Oct. 1991 [T-MTT]): 1788-1792.

This paper presents a new procedure that interfaces the transmission-line matrix method (TLM) with frequency-domain solutions of electromagnetic fields. Frequency-domain solutions are transformed into appropriate time-domain sequences using the discrete Fourier transform (DFT). Hence, the corresponding boundary Johns matrix can be determined with minimum computational effort. The subsequent treatment consists in convolving the streams of TLM impulses incident on the boundary with a Johns matrix generated with the new approach. The method is applied to obtain the time-domain reflection sequence of wide-band absorbing terminations in a rectangular waveguide in the dominant mode operation. In addition, the time-domain analysis of pulse penetration through a sheet with high, but finite, conductivity is presented. Good results demonstrate the efficiency of the proposed procedure.

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