Abstracts

Analysis of Lossy Transmission Lines with Arbitrary Nonlinear Terminal Networks

A.R. Djordjevic, T.K. Sarkar and R.F. Harrington. "Analysis of Lossy Transmission Lines with Arbitrary Nonlinear Terminal Networks." 1986 Transactions on Microwave Theory and Techniques 34.6 (Jun. 1986 [T-MTT]): 660-666.

A novel method for transient analysis of lossy transmission lines with arbitrary nonlinear terminal networks is presented. The uniqueness of this approach is that we develop time-domain Green's functions for the multiport transmission-line systems by terminating the ports in quasi-matched loads. This ensures Green's functions of a short duration. Hence, the amount of frequency-domain data necessary to obtain time-domain Green's functions is modest. These Green's functions are then convolved with the line port voltages. With this technique one can analyze responses of multiconductor transmission lines with arbitrary nonlinear loads (even with memory) as we have at any instant of time Thévenin's equivalent of the linear portion of the system. An example is presented to illustrate the application of this technique to multiconductor nonlinearly loaded transmission lines.

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