Abstracts

Analytical Expansion of the Dispersion Relation for TLM Condensed Nodes

V. Trenkic, C. Christopoulos and T.M. Benson. "Analytical Expansion of the Dispersion Relation for TLM Condensed Nodes." 1996 Transactions on Microwave Theory and Techniques 44.12 (Dec. 1996, Part I [T-MTT]): 2223-2230.

A method for obtaining analytical solutions of the general transmission line modeling (TLM) dispersion relation for condensed node schemes is described. Exact analytical forms of the dispersion relation for currently available nodes are derived, enabling the efficient study of dispersion solutions without resorting to a numerical solver. Using these analytical relations, the range and behavior of propagation errors is fully explored and visualized, not only for propagation along the axes and diagonals or in a coordinate plane, but for arbitrary angles of propagation in three-dimensional space. Comparisons are presented of the numerical performance of different TLM condensed node schemes.

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