Abstracts

Development of a General Symmetrical Condensed Node for the TLM Method

V. Trenkic, C. Christopoulos and T.M. Benson. "Development of a General Symmetrical Condensed Node for the TLM Method." 1996 Transactions on Microwave Theory and Techniques 44.12 (Dec. 1996, Part I [T-MTT]): 2129-2135.

A general symmetrical condensed node (GSCN) for the transmission line modeling (TLM) method, with six different link line characteristic impedances, six stubs, and six lossy elements is described for the first time. It unifies all the currently available condensed nodes into a single formulation and provides the basis for the derivation of an infinite set of new nodes, including nodes with improved numerical characteristics. The GSCN is derived in two ways: 1) from an equivalent network model and 2) directly from Maxwell's equations using central differencing and averaging. The direct correspondence established between the GSCN TLM and a finite difference scheme for Maxwell's equations provides a rigorous theoretical foundation for all available TLM methods with condensed nodes.

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