Abstracts

Graph Transformations of Nonuniform Coupled Transmission Line Networks and Their Application (Short Papers)

Y. Nemoto, K. Kobayashi and R. Sato. "Graph Transformations of Nonuniform Coupled Transmission Line Networks and Their Application (Short Papers)." 1985 Transactions on Microwave Theory and Techniques 33.11 (Nov. 1985 [T-MTT]): 1257-1263.

The graph transformation method of [5] has been extended to apply for a class of coupled nonuniform transmission lines whose self and mutual line constants have the same functional dependence along the direction of propagation, and it is assumed that the mode of propagation is TEM. First, the graph representation of such nonuniform coupled two-wire transmission lines is derived by decomposition of the 4 X 4 admittance matrix. This leads to three-port equivalent circuits of nonuniform coupled two-wire line networks. Then, the multiport graph transformations of networks consisting of nonuniform transmission lines and nonuniform stubs are shown. By using the graph transformation of n-wire nonuniform coupled lines, the equivalent circuits for the nonuniform interdigital line and the nonuniform meander line are given. Finally, a meander-line low-pass filter consisting of parabolic tapered coupled transmission lines designed on this equivalent circuit is shown.

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