Abstracts

Equivalent Representations of Nonuniform Transmission Lines Based on the Extended Kuroda's Identity

K. Kobayashi, Y. Nemoto and R. Sato. "Equivalent Representations of Nonuniform Transmission Lines Based on the Extended Kuroda's Identity." 1982 Transactions on Microwave Theory and Techniques 30.2 (Feb. 1982 [T-MTT]): 140-146.

Kuroda's identity may be extended to circuits consisting of lumped reactance elements and nonuniform transmission lines. It is shown that these circuits are equivalent to circuits consisting of cascade connections of nonuniform transmission lines whose characteristic impedance distributions are different from original ones, lumped reactance elements, and ideal transformers. If a characteristic impedance distribution W(x) of an original nonuniform transmission line is given, a characteristic impedance distribution Z(x) of a transformed nonuniform transmission line may be uniquely obtained using W(x). Moreover, by using these equivalent transformations, network functions of these transformed nonuniform transmission lines can he derived exactly.

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