Abstracts

An Equivalence Principle for Nonuniform Transmission-Line Directional Couplers

C.B. Sharpe. "An Equivalence Principle for Nonuniform Transmission-Line Directional Couplers." 1967 Transactions on Microwave Theory and Techniques 15.7 (Jul. 1967 [T-MTT]): 398-405.

The analysis of transmission-line directional couplers is formulated in terms of a pair of first-order matrix differential equations. It is shown that for every nonuniform directional coupler that is electrically symmetric, there exists an equivalent pair of dual nonuniform transmission lines. It is also shown that a matched, transmission-line directional coupler having an absolutely continuous characteristic impedance matrix must be symmetric. Restrictions on the terminating impedances and the implications of these restrictions on the realizability of transmission-line couplers are investigated. Finally, the tapered-line magic T is treated as an example.

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