Abstracts

Lumped- and distributed-element equivalent circuits for some symmetrical multiport signal-separation structures

A.D. Jimenez. "Lumped- and distributed-element equivalent circuits for some symmetrical multiport signal-separation structures." 1997 Transactions on Microwave Theory and Techniques 45.9 (Sep. 1997 [T-MTT]): 1537-1544.

This paper presents an extension to the synthesis of the symmetrical analysis methods for modeling passive n-port junctions. Two approaches are discussed: the electrical one, based on consideration of even- and odd-propagation modes, and the geometrical one, based on space symmetry operators. The convenience of using more complete models for both analysis and synthesis is manifest in the choice of the simplest topological circuits of some well-known signal-separation structures. An example of the synthesis of a lumped quadrature coupler is carried out via the geometrical approach and the results compared to those of a previously reported design performed via the electrical approach. Likewise, a distributed circuit for a ring-style five-port four-way equal-power divider simpler than others exhibiting the same power-division characteristics is presented.

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