Abstracts

Novel coupling schemes for microwave resonator filters (Dec. 2002 [T-MTT])

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This paper introduces novel coupling schemes for microwave resonator filters. It is shown that higher order filter characteristics can be obtained from lower order sections, which are connected in parallel between the source and load, by proper superposition of the individual lower order responses. This property can be used in modular filter design by focusing on separate sections of the filter one at a time. In addition, some of these coupling schemes exhibit zero-shifting properties, whereby transmission zeros can be shifted from one side of the passband to the other by simply changing the resonant frequencies of the resonators while keeping all the coupling coefficients unchanged. Several novel filter designs of different kinds (microstrip, planar waveguide cavity, and dual-mode types) are introduced to prove the new method and to give an idea of the extended design possibilities. Good agreement between measured, computed, and synthesized results is demonstrated.

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