Abstracts

Modal-S-Matrix Design of Microwave Filters Composed of Rectangular and Circular Waveguide Elements

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The rigorous CAD of a class of cavity filters is introduced which are composed of rectangular circular waveguide structures. Based on the rectangular-to-circular and circular-to-circular waveguide junction key-building block modal S-matrices, the design takes rigorously into account both the finite iris thickness and the higher order mode interaction at all step discontinuities, as well as asymmetric irises. This allows the stopband characteristic to be included in the filter design, and dual-mode resonance effects may be utilized to achieve improved edge steepness and rejection characteristics. The theory is verified by measurements.

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