Abstracts

An Explicit Design Technique for Wideband Couplers and High Quality Filters Using Periodic Topology

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A novel approach is introduced for computer-aided design (CAD) of wideband couplers and high-quality filters using periodic structures. This design technique consists of two explicit steps. The first step is to obtain single periodic cell parameters for a given electrical specification or vice-versa by the use of field-theoretical approaches in conjunction with the Floquet's theorem. The next step is to determine number of the given periodic cell used in wideband couplers or high-quality filters for a desirable coupling or filtering characteristic. Theoretical and experimental results are presented for non-uniform planar periodic coupler and filter, which are found to be in good agreement. Some interesting features of lossy and lossless periodic structures with finite number of cells are discussed.

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