Abstracts

Synthesis of cross-coupled resonator filters using an analytical gradient-based optimization technique

S. Amari. "Synthesis of cross-coupled resonator filters using an analytical gradient-based optimization technique." 2000 Transactions on Microwave Theory and Techniques 48.9 (Sep. 2000 [T-MTT] (Mini-Special Issue on Research Reported at the 8th Topical Meeting on Electrical Performance of Electronic Packaging (EPEP) 1999)): 1559-1564.

We propose a general approach to the synthesis of cross-coupled resonator filters using an analytical gradient-based optimization technique. The gradient of the cost function with respect to changes in the coupling elements between the resonators is determined analytically. The topology of the structure is strictly enforced at each step in the optimization thereby eliminating the need for similarity transformations of the coupling matrix. For the calculation of group delays, a simple formula is presented in terms of the coupling matrix. A simple recursion relation for the computation of the generalized Chebychev filtering functions is derived. Numerical results demonstrating the excellent performance of the approach are presented.

❑ Return to main document.