Abstracts

Synthesis of cascaded quadruplet filters involving complex transmission zeros

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Cascade synthesis approach in transformed frequency domain (z-domain) is reformulated to cover the extraction of complex (s=/spl sigma/+j/spl omega/) and /spl sigma/-axis transmission zeros (TZs) in addition to the usual j/spl omega/-axis TZs. It is shown that complex conjugate quadruplets of TZs (s=/spl plusmn//spl sigma//spl plusmn/j/spl omega/) can be extracted as fourth order sections by applying zero shifting technique to the TZs at both s=0 and s=/spl infin/. The resulting fourth order sections are then transformed into cross-coupled forms with four coupled resonators, termed as linear phase cascade quadruplet (CQ) block. Such CQ blocks can be cascaded with the j/spl omega/-axis finite transmission zero (FTZ) CQ blocks or CT (cascaded triplet) blocks to realize linear phase filters with symmetric or asymmetric amplitude response.

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