Abstracts

Synthesis of all-optical microwave filters using Mach-Zehnder lattices

A synthesis algorithm which generates the set of coupling ratios required to produce a desired time-domain window response using an all-optical Mach-Zehnder lattice network Is presented. The analysis assumes incoherent interference of the lightwaves within the structure. The window coefficients are dictated by the coupling ratios of the couplers forming the lattice, leading to a simple structure comprising only passive components. Since its impulse response (IR) is finite, the filter will be stable, and the algorithm is capable of generating a wide range of responses In terms of their extinction ratios and passbands. The theory has been validated by experiment.

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