Abstracts

Thin frequency-selective lattices integrated in novel compact MIC, MMIC, and PCA architectures

H. Contopanagos, Lijun Zhang and N.G. Alexopoulos. "Thin frequency-selective lattices integrated in novel compact MIC, MMIC, and PCA architectures." 1998 Transactions on Microwave Theory and Techniques 46.11 (Nov. 1998, Part II [T-MTT] (Special Issue on Innovative Integration Techniques for Microwave and Millimeter-Wave Circuits)): 1936-1948.

We analyze and optimize the design of novel composite materials for ICs and printed circuit antenna (PCA) applications. We are using a variety of finite artificial lattices (FALs) carrying passive metalo-dielectric unit cells. We first examine and optimize these lattices as freestanding structures, regarding them as FSSs and space filters. We obtain several designs for appropriate metalo-dielectric unit cells, as well as stacking geometries for constructing thin laterally infinite artificial lattices. Further, we examine the action of the corresponding FAL within integrated architectures, emphasizing crosstalk suppression, circuit-coupling tailoring, and gain enhancement. We find very significant directive gain enhancements for compact packaged PCA applications. Finally, anomalous scaling of the resulting circuits and tunable designs are also presented.

❑ Return to main document.