# Abstracts

## Novel Microstrip Multifunction Directional Couplers and Filters for Microwave and Millimeter-Wave Applications

*S. Uysal and J. Watkins. "Novel Microstrip Multifunction Directional Couplers and Filters for Microwave and Millimeter-Wave Applications." 1991 Transactions on Microwave Theory and Techniques 39.6 (Jun. 1991 [T-MTT]): 977-985.*

The design of a new class of microstrip couplers and filters is presented in this paper. The synthesis functions obtained from the solution of first-order nonlinear differential equation of nonuniform lines with a loose coupling assumption are modified and validated for higher coupling values. The design employs a nonuniform coupled line configuration along which a realizable continuous coupling coefficient is obtained by modifiing the reflection coefficient distribution function. This modification results in a frequency selective coupling which minimizes the out-of-band coupling in the specified frequency range. As a result it is possible to realize -3 dB directional couplers using double-coupled lines without the need for tandem connections or extreme photolithographic techniques. Experimental results for microwave band-pass and periodic couplers are presented together with the computed results. Potential applications of these novel components are discussed and the work is extended to include millimeter-wave realization.

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