Abstracts

Analysis of Integrated Millimeter-Wave and Submillimeter-Wave Waveguides Using Orthonormal Wavelet Expansions

K. Sabetfakhri and L.P.B. Katehi. "Analysis of Integrated Millimeter-Wave and Submillimeter-Wave Waveguides Using Orthonormal Wavelet Expansions." 1994 Transactions on Microwave Theory and Techniques 42.12 (Dec. 1994, Part II [T-MTT] (1994 Symposium Issue)): 2412-2422.

A mixed spectral/space-domain integral formulation for the analysis of integrated planar dielectric waveguide structures with printed metallized sections is presented which exploits the newly developed multiresolution expansions based on the concepts of orthonormal wavelet theory. The proposed expansion basis, which is highly localized in both space and spectral domains, is entirely generated by the dilation and shifting of two closely related characteristic functions. It is demonstrated that using this type of expansions in the moment method solution of the integral equations leads to very sparsely populated moment matrices after performing a threshold procedure. Extensive numerical examples are provided for a variety of practical waveguide configurations.

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