Abstracts

Analysis of Integrated Dielectric Waveguides Using Orthonormal Wavelet Expansions

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The newly developed theory of orthonormal wavelet transforms is exploited in the numerical solution of a spectral-domain integral equation, which covers a wide range of planar dielectric waveguides suitable for microwave and optical applications. A major advantage of using wavelet expansions in conjunction with the method of moments is its rendering of very sparsely populated eigenmatrices. It is shown that a careful selection of both scaling functions and wavelets for the expansion basis leads to a significant reduction in the number of basis functions. Numerical results for various dielectric guiding structures are presented.

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