Abstracts

An Efficient Numerical Procedure Using the Shifted Power Method for Analyzing Dielectric Waveguides Without Inverting Matrices (Short Papers)

A numerical procedure using the finite-difference scheme and the shifted power method is used to analyze the propagation characteristics of dielectric waveguides. The unique feature of this procedure is that in determining the eigenvalues corresponding to dominant modes no operation as costly as matrix inversion, such as Gaussian elimination, LU decomposition, or tridiagonalization, is invoked. So the proposed procedure is rather efficient in both memory space and computer time. Numerical results of a circular step-index fiber are presented for comparison. Due to its efficiency, the proposed procedure is capable of analyzing coupled waveguides.

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