Abstracts

Analysis of elliptical waveguides by differential quadrature method

C. Shu. "Analysis of elliptical waveguides by differential quadrature method." 2000 Transactions on Microwave Theory and Techniques 48.2 (Feb. 2000 [T-MTT] (Mini-Special Issue on Research Reported at the 1999 Radio Frequency Integrated Circuits (RFIC) Symposium)): 319-322.

A new approach for elliptical waveguide analysis is presented in this paper. This approach applies the global method of a differential quadrature (DQ) to discretize the Helmholtz equation and then reduces it into an eigenvalue equation system. All the cutoff wavelengths from low-to high-order modes can be simultaneously obtained from the eigenvalues of the equation system. The present solver is general, which can be applied to elliptical waveguides with arbitrary ellipticity. It is demonstrated in this paper that the DQ results are in excellent agreement with theoretical values using just a few grid points and, thus, requiring very small computational effort.

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