Abstracts

Considerations on Matrix Methods and Estimation of Their Errors

M. Hashimoto and K. Fujisawa. "Considerations on Matrix Methods and Estimation of Their Errors." 1970 Transactions on Microwave Theory and Techniques 18.7 (Jul. 1970 [T-MTT]): 352-359.

Two-dimensional field equations are reduced to Fredholm integral equations of the second kind. The integral equations are solved by matrix methods. The convergence of the matrix solutions is discussed. The matrix methods are applied to calculating the cutoff wavenumbers of waveguides. A method of estimating the errors is proposed. A method of correcting the matrix solutions is described and applied to a field problem in which the boundary is large compared with the wavelength. It is pointed out that for the commonest method of solving integral equations numerically (the method of subsections), the accuracy depends strongly on the position in each subsection of the point to which the field is referred. The dependence of the error on position is examined quantitatively.

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