Abstracts

An E Vector Variational Formulation of the Maxwell Equations for Cylindrical Waveguide Problems

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A vector variational formulation of the Maxwell equations applicable to cylindrical waveguide problems is developed in terms of the electric E field. This three-component vector formulation allows an approximate solution of loaded waveguide structures which cannot be described in terms of a single-field component or potential function. The three-component formulation is more economical than corresponding six-component formulations for a given order of approximation because the solution matrices which result are reduced in size (/spl sim/1/2) and contain fewer zero elements. The E-field variational integral is expanded in terms of the field components for inhomogeneously loaded parallel-plate and rectangular waveguide geometries to illustrate a computer-assisted vector variational solution procedure.

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