Abstracts

Propagation and Coupling Properties of Integrated Optical Waveguides--An Integral Equation Formulation

The propagation and coupling properties of integrated optical waveguides are analyzed by means of the electric field integral equation approach. The kernel of the integral equation is the Green's function of a two-layered medium. The Galerkin's method is then employed to solve the integral equation numerically. The set of basis and test functions consists of entire domain plane wave functions. Fast convergence and superior accuracy are the advantages of the chosen set of basis and test functions. The method is used to compute the propagation and coupling properties of several structures. Very good agreement is observed with previously published results. Field distributions of several coupled mode structures, such as the symmetrical and asymmetrical coupler are also investigated and presented. Finally, the same method is used to produce the field distribution of waveguides having more complex cross section like the trapezoidal waveguide.

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