Abstracts

A Full-Wave Analysis of an Arbitararily Shaped Dielectric Waveguide Using Green's Scalar Identity (Short Papers)

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An integral equation analysis is proposed to determine the phase constant of an arbitrarily shaped dielectric waveguide. The main feature of this approach is the use of Green's scalar identity in which only simple contour integrals have to be evaluated. Different scalar Green's functions are considered to satisfy the boundary conditions for the electric and magnetic fields in each region. This approach is combined with the boundary element technique with linear elements for the computation. The case of the rectangular dielectric image waveguide is first discussed, and numerical results are found to be consistent with other theories and experiments. Also, the cases of hollow rectangular and semicircular image waveguides are analyzed and numerical results are presented.

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