Volume Integral Equations for Analysis of Dielectric Branching Waveguides

New forms of volume integral equations are developed for the exact treatment of wave propagation in two-dimensional dielectric branching waveguides. The new integral equations can be obtained by considering the condition at a point far away from the junction section. An approximate solution by the Born approximation and a numberical solution by the moment method established the validity of the new volume integral equations. The numerical results are discussed from the viewpoint of energy conservation and reciprocity. The solution is exact if sufficiently large computer memory and computational time are employed.

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