Abstracts

Numerical Analysis of the Rectangular Dielectric Waveguide and its Modifications

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Dielectric waveguides suitable for millimeter and submillimeter wave integrated circuits are analyzed by applying the generalized telegraphist's equations. The dielectric waveguides treated in this paper are the rectangular dielectric image line, the cladded rectangular dielectric image line, the insulated image guide, and the strip dielectric guide. Numerical results of the propagation constant, the power distribution, and the field configuration in these dielectric waveguides are presented. Values for the propagation constants obtained by our method are compared with other theoretical results. Although this work is based on a closed waveguide model, it may be applicable to wide classes of dielectric waveguides with arbitrary dielectric profiles and cross sections.

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