Abstracts

Electromagnetic Waves in Waveguides with Wall Impedance

K. Kurokawa. "Electromagnetic Waves in Waveguides with Wall Impedance." 1962 Transactions on Microwave Theory and Techniques 10.5 (Sep. 1962 [T-MTT]): 314-320.

A variational expression for the propagation constant of the waves in waveguides with inhomogeneous media and with wall impedance is presented. Using this expression, the shift of the propagation constant due to the wall impedance is calculated. It is also clarified how the removal of degeneracy takes place. Then the same problem is discussed using another approach, a perturbation method. The result is identical with that of the variational principle, as is to be expected. In the final section, taking degenerate TEM modes as an example, it is shown that appropriate choices of field configuration are necessary when the formula for an attenuation constant derived from the conservation of energy is applied to degenerate modes.

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