Abstracts

Wave Propagation in Inhomogenous Slab Waveguides Embedded in Homogeneous Media

A. Yata and H. Ikuno. "Wave Propagation in Inhomogenous Slab Waveguides Embedded in Homogeneous Media." 1982 Transactions on Microwave Theory and Techniques 30.11 (Nov. 1982 [T-MTT]): 1947-1951.

Wave propagation in inhomogeneous slab waveguides embedded in homogeneous media is analyzed by rising the uniform asymptotic technique. This technique accurately evaluates the effect of the refractive-index profiles with various core and cladding structures on the guided modes. We calculate the guided modes of waveguides with asymmetric claddings in the eases of a near-parabolic profile core and a quasi-Gaussian profile core. The results show that the third-order asymptotic solution is accurate for all the guided modes in the case of the near-parabolic profile core and for modes far from cutoff in the quasi-Gaussian core case. The dispersion relation indicates that modes guided in strongly asymmetric profiles have almost the same propagation constants as odd-order modes of propagation in the symmetric structure.

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