

Mathematical analysis of the guided modes of an integrated optical guide

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Abstract

© 2002 IEEE. The eigenvalue problem for guided modes of an integrated optical guide is reduced to a strongly-singular domain integral equation. It is proved that the operator of the domain integral equation is a Fredholm operator with zero index. It is also proved that the spectrum of the original problem can only be a set of isolated points.

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Keywords

Eigenvalues and eigenfunctions, Integral equations, Integrated optics, Mathematical analysis, Optical fibers, Optical refraction, Optical variables control, Planar waveguides, Propagation constant, Refractive index