Abstracts

Analysis of Discontinuities in an Asymetric Dielectric Slab Waveguide by Combination of Finite and Boundary Elements

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An approach that combines the finite-element and boundary-element methods is extended to the analysis of discontinuities in an asymmetric slab waveguide. The discontinuity region is divided into three regions. One is a finite region with arbitrary inhomogeneities, and the others are semi-infinite and homogeneous regions. The finite-element and boundary-element methods are applied to the former and latter regions, respectively. For uniform waveguide regions connected to discontinuities, analytical solutions are used, in which all the eigenmodes, namely guided modes, substrate radiation modes, and substrate-cover radiation modes are taken into account. To show the validity and usefulness of this approach, computed results are given for three kinds of step-discontinuities with TE and TM mode incidence.

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