Abstracts

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

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A combination of the finite element and boundary element methods is proposed for the solution of arbitrarily shaped discontinnities in an open dielectric slab waveguide. The discontinuity region is divided into two regions. One is a finite region with arbitrary inhomogeneities, and the other is a semi-infinite and homogeneous region. The finite element and boundary element methods are applied to the former and the latter region, respectively. For uniform waveguide regions connected to discontinuities, analytical solutions in which both the guided and the radiated modes are taken into account are used. To show the validity and usefulness of this approach, computed results are given for several kinds of discontinuities, and the accuracy of the solutions is investigated in detail.

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