Abstracts

Analysis of waveguide discontinuities using edge elements in a hybrid mode matching/finite elements approach

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A mode matching (MM)/finite element method (FEM) for the analysis of waveguide discontinuities is presented. The hybrid approach described combines the computational efficiency of the modal analysis with the versatility and flexibility of FEM and enables us to accurately model arbitrary cross section waveguides, where modal expansions cannot be derived analytically. The proposed procedure is based on the edge element expansion of the transverse field components for the direct calculation of the coupling integrals involved in the MM formulation. Numerical and experimental results are presented to show the validity and the accuracy of the method.

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