Abstracts

Boundary-Marching Method for Discontinuity Analysis in Waveguides of Arbitrary Cross Section

S.L. Foo and P.P. Silvester. "Boundary-Marching Method for Discontinuity Analysis in Waveguides of Arbitrary Cross Section." 1992 Transactions on Microwave Theory and Techniques 40.10 (Oct. 1992 [T-MTT]): 1889-1893.

A recursive algorithm previously used in diffusion problems of geophysics and in electrostatics, is extended to wave phenomena. It is used to construct a matrix representation for an infinitely long waveguide of arbitrary cross-sectional shape. This representation is used in finite element analysis of waveguide discontinuities. In numerical tests, scattering matrices for the long guides converge to nearly full word-length in 6-7 recursion steps, and discontinuity characteristics are within 1%-2% of known results where they exist.

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