Abstracts

Field-singularity correction in 2-D time-domain Haar-wavelet modeling of waveguide components

M. Fujii and W.J.R. Hoefer. "Field-singularity correction in 2-D time-domain Haar-wavelet modeling of waveguide components." 2001 Transactions on Microwave Theory and Techniques 49.4 (Apr. 2001, Part I [T-MTT]): 685-691.

A time-domain Haar-wavelet-based modeling technique has been applied to two-dimensional waveguide problems including discontinuities. The field singularity at discontinuities such as edges and corners of conductors is corrected by quasi-static field approximation. Combination of quasi-static correction and wavelet modeling significantly improves the computational efficiency compared to conventional time-domain analysis techniques. The proposed technique was applied to waveguides perturbed by thin and thick irises and also iris-coupled waveguide filters. The computational efficiency of the technique is demonstrated by examining the convergence of the results obtained with different discretizations.

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