Abstracts

On the accuracy of Haar-based multiresolution time-domain schemes

S. Grivet-Talocia. "On the accuracy of Haar-based multiresolution time-domain schemes." 2000 Microwave and Guided Wave Letters 10.10 (Oct. 2000 [MGWL]): 397-399.

We discuss in this paper the numerical accuracy of multiresolution time-domain (MRTD) schemes based on Haar scaling functions and wavelets. It has been noted that when the first resolution of wavelets is included in the schemes, the discrete difference equations arising from the Maxwell's system do not couple the scaling and wavelet coefficients except at boundary and excitation points. This fact is proved to be a serious drawback, since both a dispersion analysis and numerical tests for terminated and nonterminated schemes show that the addition of wavelets does not improve significantly the numerical accuracy of the underlying coarse-grid FDTD scheme.

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