Abstracts

Stability and dispersion analysis of Battle-Lemarie-based MRTD schemes

E.M. Tentzeris, R.L. Robertson, J.F. Harvey and L.P.B. Katehi. "Stability and dispersion analysis of Battle-Lemarie-based MRTD schemes." 1999 Transactions on Microwave Theory and Techniques 47.7 (Jul. 1999, Part I [T-MTT]): 1004-1013.

The stability and dispersion performance of the recently developed Battle-Lemarie multiresolution time-domain schemes is investigated for different stencil sizes. The contribution of wavelets is enhanced and analytical expressions for the maximum allowable time step are derived. It is observed that larger stencils decrease the numerical phase error, making it significantly lower than finite-difference time domain for low and medium discretizations. The addition of wavelets further improves the dispersion performance for discretizations close to the Nyquist limit, though it decreases the value of the maximum time step, guaranteeing the stability of the scheme.

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