Abstracts

Multiresolution time-domain (MRTD) adaptive schemes using arbitrary resolutions of wavelets

E.M. Tentzeris, A. Cangellaris, L.P.B. Katehi and J. Harvey. "Multiresolution time-domain (MRTD) adaptive schemes using arbitrary resolutions of wavelets." 2002 Transactions on Microwave Theory and Techniques 50.2 (Feb. 2002 [T-MTT]): 501-516.

A space- and time-adaptive two-dimensional multiresolution time-domain (MRTD) algorithm based on arbitrary resolutions of Battle-Lemarie wavelets is proposed. Analytic expressions for the finite-summation coefficients are derived and details concerning the modeling of hard boundaries, excitation, and field reconstruction are extensively discussed. Through the use of a combination of absolute and relative thresholding, a dynamically changing grid is developed with minimal computational requirements in comparison to the finite-difference time-domain technique. After the validation process, MRTD is used for the first time for the numerical optimization of complex RF structures such as evanescent-mode filters.

❑ Return to main document.