Abstracts

Reduction of numerical dispersion in FDTD method through artificial anisotropy

J.S. Juntunen and T.D. Tsiboukis. "Reduction of numerical dispersion in FDTD method through artificial anisotropy." 2000 Transactions on Microwave Theory and Techniques 48.4 (Apr. 2000, Part I [T-MTT]): 582-588.

In this paper, a simple and computationally low-cost modification of the standard finite-difference time-domain (FDTD) algorithm is presented to reduce numerical dispersion in the algorithm. Both two- and three-dimensional cases are considered. It is shown that the maximum error in phase velocity can be reduced by a factor of 2-7, depending on the shape of the FDTD cell. Although the reduction procedure is optimal for only single frequency, numerical examples show that the proposed method can also improve the accuracy significantly in wide-band inhomogeneous problems.

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