Abstracts

A technique for improving the accuracy of the nonuniform finite-difference time-domain algorithm

Wenhua Yu and R. Mittra. "A technique for improving the accuracy of the nonuniform finite-difference time-domain algorithm." 1999 Transactions on Microwave Theory and Techniques 47.3 (Mar. 1999 [T-MTT]): 353-356.

This paper deals with the problem of improving the accuracy of the nonuniform finite-difference time-domain (NUFDTD) algorithm, which is known to contain higher discretization errors than the conventional uniform FDTD. The improvement is achieved by effectively canceling out the numerical reflections that typically occur due to dispersion in the nonuniform mesh. The modified nonuniform algorithm is applied to a generic coaxial discontinuity problem and to that of near-to-far-field transformation. The proposed method is simple, does not require any interpolations or extrapolations, provides higher accuracy than the conventional NUFDTD algorithm, and is stable.

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