Abstracts

Analyzing electromagnetic structures with curved boundaries on Cartesian FDTD meshes

In this paper, a new finite-difference time-domain (FDTD) algorithm is investigated to analyze electromagnetic structures with curved boundaries using a Cartesian coordinate system. The new algorithm is based on a nonorthogonal FDTD method. However, only those cells near the curved boundaries are calculated by nonorthogonal FDTD formulas; most of the grid is orthogonal and can be determined by traditional FDTD formulas. Therefore, this new algorithm is more efficient than general nonorthogonal FDTD schemes in terms of computer resources such as memory and central processing unit (CPU) time. Simulation results are presented and compared to those using other methods.

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