Abstracts

Numerical dispersion relation for FDTD method in general curvilinear coordinates

Fengchao Xiao and H. Yabe. "Numerical dispersion relation for FDTD method in general curvilinear coordinates." 1997 Microwave and Guided Wave Letters 7.2 (Feb. 1997 [MGWL]): 48-50.

The numerical dispersion relation (NDR) of the finite-difference time-domain method in general curvilinear coordinates (FDTD-GCC) is discussed for a two-dimensional (2-D) uniformly skewed mesh. The analysis shows that the average scheme, which is being used in the FDTD-GCC method, causes an additional numerical dispersion error. When this dispersion error is considered, the FDTD-GCC method holds the same NDR as that of the FDTD discrete surface integral (FDTD-DSI) method. It also indicates that the stable range of the FDTD-GCC method, with respect to the skewing angle in the 2-D case, is narrowed due to the average scheme.

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