Abstracts

A generalized 3D subgrid technique for the finite-difference time domain method

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A new subgridding technique for finite difference (FD) methods is presented. The method is based on the integral form of Maxwell's equations combined with a simple yet efficient orthogonalization technique for the discretization geometry at subgrid interfaces. No additional correction factors or interpolations are required. This leads to spurious-mode free solutions when applied to FD approximations of eigenvalue problems and to stable difference formulations when applied to the finite difference time-domain (FD-TD) method. The high efficiency of the subgridding technique is demonstrated by the FD-TD analysis of an inter-digital filter with circular posts.

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