Abstracts

An analytical and numerical analysis of several locally conformal FDTD schemes

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The virtues of the finite-difference time-domain (FDTD) method for the electromagnetic analysis of arbitrary complex metal and dielectric structures are well known. Almost equally well known are the difficulties encountered by the technique when the material boundaries do not coincide with the Cartesian mesh. Until recently, there were few alternatives to the simple, but inaccurate, staircase approximation for these cases. However, over the past few years, there have been several solutions proposed, which maintain the simplicity and efficiency of the FDTD method while providing an accurate treatment of curved, offset, or sloping metallic boundaries. In this paper, analytical and numerical comparisons are presented and a clear recommended method is shown to emerge.

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