

Dispersion Analysis of the ADI-FDTD and S-FDTD Methods

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Abstract

Numerical dispersion performances of ADI-FDTD and S-FDTD methods have been compared. It has been shown that for time steps below the stability limits of the S-FDTD method it has much better dispersion performance compared with the ADI-FDTD method and that the S-FDTD method can be usefully employed for space increments in the order of $\lambda/25$ to $\lambda/50$. Key Words: Symplectic finite-difference time-domain (S-FDTD) method, alternating-direction-implicit finite-difference time-domain (ADI-FDTD) method.