Abstracts

Minimization of Reflection Error Caused by Absorbing Boundary Condition in the FDTD Simulation of Planar Transmission Lines

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Residual reflection from absorbing boundaries introduces considerable error in the frequency-domain parameters of open-region planar transmission line components simulated in the time-domain. Various dispersive and super-absorbing boundary conditions have been developed to minimize this reflection. In this paper, a computationally efficient method, termed as geometry rearrangement technique (GRT), is proposed to correct the dominant reflection from absorbing boundaries by superposition of two subproblems with different source or boundary locations. The computational improvement of GRT is demonstrated by the FDTD simulation of dispersion in microstrip and coplanar transmission lines. A new method is discussed to accurately estimate the boundary reflection, and then applied to correct the characteristic impedance of planar transmission lines for boundary reflection.

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