Abstracts

A Simple Technique for Minimization of ABC-Induced Error in the FDTD Analysis of Microstrip Discontinuities

X.P. Lin and K. Naishadham. "A Simple Technique for Minimization of ABC-Induced Error in the FDTD Analysis of Microstrip Discontinuities." 1994 Microwave and Guided Wave Letters 4.12 (Dec. 1994 [MGWL]): 402-404.

Imperfectly absorbing truncation boundaries in the simulation of microstrip circuits by the finite-difference time-domain (FDTD) method necessitate large computational domains, imposing a significant burden on the resources. Residual boundary reflection sometimes causes serious degradation of the computed parameters (e.g., oscillatory behavior). We introduce a simple modification of the FDTD implementation for microstrip discontinuities, wherein two sub-problems whose domains are reduced by bringing the absorbing boundary close to the circuit, are superposed to cancel the dominant boundary reflection. Computed results on transmission line and resonant type discontinuities demonstrate that significant computational savings can be achieved without compromising accuracy.

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