Abstracts

Absorbing Boundary Conditions for the Modeling of Scatterers in Parallel-Plate Transmission Media

C. Spillard, S.R. Pennock and P.R. Shepherd. "Absorbing Boundary Conditions for the Modeling of Scatterers in Parallel-Plate Transmission Media." 1995 Microwave and Guided Wave Letters 5.8 (Aug. 1995 [MGWL]): 241-242.

In modeling wave propagation using the Finite Difference Time Domain (FDTD) method, the field gradients at each point are calculated using central difference approximation. For points on the edge of the model volume a separate algorithm to simulate absorbing boundaries has to be used. Most of these absorbing boundary conditions assume normal wave incidence at the boundary, but at the sides of stripline or microstrip this is not the case. This letter proposes a variant of dispersive boundary conditions with one phase velocity given an infinite value to represent a wave traveling parallel to the boundary. When applied to uniform stripline, these boundary conditions gave better results than the original version of the dispersive boundary condition with two finite phase velocities. These boundary conditions enable the use of a smaller calculation volume, thus saving computing memory and time.

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