Abstracts

A super absorbing boundary condition for the analysis of waveguide discontinuities with the finite-difference method

Jian Yi Zhou and Wei Hong. "A super absorbing boundary condition for the analysis of waveguide discontinuities with the finite-difference method." 1997 Microwave and Guided Wave Letters 7.6 (Jun. 1997 [MGWL]): 147-149.

A super absorbing boundary condition is presented for the analysis of waveguide discontinuities with the finite difference method (FDM). The discontinuity region is enclosed by the waveguide wall and two truncated planes at input and output waveguides, respectively. On the wall, homogeneous conditions are available. At mesh nodes in the region, finite-difference (FD) equations can be applied. When the truncated planes are far away from the discontinuity, the conventional dominant mode transmission condition can be used for deducing the FD-type local equation at the terminated mesh nodes. A super absorbing boundary condition presented in this letter can be used to terminate the meshes very close to the discontinuity. It results in dramatic savings in computing time and memory needs.

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