

Abstracts

A new 2-D image reconstruction algorithm based on FDTD and design sensitivity analysis (2002 Vol. II [MWSYM])

No-Weon Kang, Young-Seek Chung, Changyul Cheon and Hyun-Kyo Jung. "A new 2-D image reconstruction algorithm based on FDTD and design sensitivity analysis (2002 Vol. II [MWSYM])." 2002 MTT-S International Microwave Symposium Digest 02.2 (2002 Vol. II [MWSYM]): 1143-1146 vol.2.

In this paper, we propose a numerical algorithm to reconstruct the complex permittivity profile of unknown scatterers by using the FDTD technique and design sensitivity analysis (DSA). By introducing DSA and the adjoint variable method, we can calculate the derivatives of error functions with respect to complex permittivity variables, and reduce the computational cost. The proposed method is validated by application to the reconstruction of unknown 2-D scatterers which are illuminated by $TM_{sup 2}$ with a Gaussian pulsed plane wave.

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