Abstracts

Finite-difference vector potential time-domain approach to the analysis of planar structures

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A time-domain finite-difference approach based on the expression of the field vectors by the vector potential functions is proposed for the analysis of planar structures. The algorithm is theoretically equivalent to the time-domain integral equations (TDIE) approach but is much faster because the calculation of the vector potentials is carried out by the finite-difference wave equation instead of integration. Still, integration can be involved when electrically remote objects are present. Only four tangential to the planar interfaces components of the vector potentials are calculated which makes this algorithm advantageous to the FDTD one in respect of storage requirements.

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