Abstracts

Field interpolation across discontinuities in FDTD

G. Marrocco, F. Bardati and M. Sabbadini. "Field interpolation across discontinuities in FDTD." 1998 Microwave and Guided Wave Letters 8.1 (Jan. 1998 [MGWL]): 1-3.

Primary field quantities and their derivatives, like power flux density or surface equivalent currents, are usually required in practical applications of finite-difference time domain (FDTD). The data obtained from the FDTD algorithm are therefore interpolated to provide the whole set of the electrical and magnetic field components at each grid node to evaluate them. In the presence of a material discontinuity, however, the linear interpolation, having the accuracy of the FDTD algorithm at points where the field is continuous, will fail for the components which are orthogonal to the interface. A dielectric interpolator is presented for these cases which retains accuracy by preserving the correct field discontinuities.

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