Abstracts

The inclusion of fringing capacitance and inductance in FDTD for the robust accurate treatment of material discontinuities (Dec. 2000 [T-MTT])

C.J. Railton. "The inclusion of fringing capacitance and inductance in FDTD for the robust accurate treatment of material discontinuities (Dec. 2000 [T-MTT])." 2000 Transactions on Microwave Theory and Techniques 48.12 (Dec. 2000 [T-MTT] (Special Issue on 2000 International Microwave Symposium)): 2283-2288.

The analysis of structures, which contain sharp material discontinuities using the finite-difference time domain method (but without resorting to a very fine mesh) although much researched, has not yet been definitively solved. In this paper, the fringing fields associated with the discontinuities are dealt with by adjusting the permittivity and permeability assigned to the field nodes that are immediately adjacent to the discontinuities. This method is shown to be effective for a variety of structures and to be without the problems of violating energy or divergence conservation.

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