Abstracts

A time-domain vector potential formulation for the solution of electromagnetic problems

F. De Flaviis, M.G. Noro, R.E. Diaz, G. Franceschetti and N.G. Alexopoulos. "A time-domain vector potential formulation for the solution of electromagnetic problems." 1998 Microwave and Guided Wave Letters 8.9 (Sep. 1998 [MGWL]): 310-312.

We present an alternative vector potential formulation of Maxwell's equations derived upon introduction of a quantity related to the Hertz potential. Once space and time are discretized, within this formulation the electric field and vector potential components are condensed in the same point in the elementary cell. In three dimensions the formulation offers an alternative to finite-difference time-domain (FDTD) method; when reduced to a two-dimensional (2-D) problem, only two variables, instead of three, are necessary, implying a net memory saving of 1/3 with respect to FDTD.

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