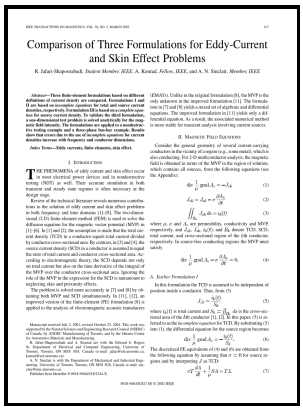
Solving time-dependent two-dimensional eddy current problems

National Aeronautics and Space Administration - TWO



Comparison of Three Formulations for Eddy-Current and Skin Effect Problems

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Description: -
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Eddy currents (Electric)
Maxwell equations.Solving time-dependent two-dimensional eddy current problems
-
NASA technical memorandum -- 100875Solving time-dependent two-dimensional eddy current problems
Notes: Microfiche. [Washington, D.C.? : National Aeronautics and Space Administration], 1988. 1 microfiche.
This edition was published in 1988

Tags: #TWO

Multigrid

Lavers, A method for circuit connections in time-dependent eddy current problems, IEEE Trans.

Modeling of the Time

Discretizing in space using edge shape functions yields a system of index- 1 differential-algebraic equations DAEs. The governing two dimensional partial differential equations are solved for the source, conducting, and non-conducting regions including air gap. This physical application allows us to prove the accuracy of this basis-set technique by comparison with a standard mesh technique.

AMS :: Quarterly of Applied Mathematics

These magnetic forces can be in low and high frequency ranges. Developments in Electromagnetic Theory and Applications, vol 10.

Finite Element Differential

However, closed form solution of magnetic field provides a fast and approximated solution of the field analysis for the beginning of the design.

A numerical analysis of time-dependent two-dimensional magnetic fields, International Journal for Numerical Methods in Engineering

We derive an error estimate of the fully discrete scheme, and prove the convergence of the alternating method. The numerical procedure utilizes implicit time stepping with an iterative scheme to solve the resulting set of equations.

CiteSeerX — A Backward Euler

Time-dependent Schrödinger TDS equations can be solved efficiently by expanding the solution on a finite basis set. A backward Euler-DtN alternating method is designed to solve the discrete coupled problem. The conductor is assumed to be a good but not perfect conductor.

Solving time

This method is applied in rotating cylinder excited by a stationary coil. Finite elemental models: 3D a ; 2D b Caption: Fig. .

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