

Solving time-dependent two-dimensional eddy current problems

National Aeronautics and Space Administration - A Backward Euler



Description: -

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Eddy currents (Electric)

Maxwell equations.Solving time-dependent two-dimensional eddy current problems

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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



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Tags: #Finite #Element #Differential

Modeling of the Time

The MGRIT algorithm was implemented in Python using the Message Passing Interface MPI. To verify the correctness of the accepted assumptions, a physical experiment has been performed to record the instantaneous steady-state values of current and voltage in the primary winding of a single-phase transformer in idle mode. Schüller, Multigrid, Academic Press 2001.

Modeling of the Time

Accuracy of the method is verified with the finite element simulations. The publication 10 directly addresses the issues outlined above.

Multigrid

In it, the sample is a rectangular plane of a homogeneous material, which corresponds to the size and magnetic properties of a sheet from a three-dimensional model, and its specific electrical resistance is calculated. The comparison of average values of power consumed in these regimes is summarized in Table 3.

TWO

The problem is discretized using linear edge shape functions with 2269 in space and on a fine equidistant time grid with 2 14 intervals using backward Euler to resolve the pulses. For strongly time-dependent regimes, a set of complex static vectors is proposed as a natural basis.

Modeling of the Time

Thus, the field of the densities of currents for equivalent homogeneous structures, deprived of air gaps, is determined.

AMS :: Quarterly of Applied Mathematics

Numerical experiments show the effectiveness of the new method. A large time behavior for the solution is established.

Related Books

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