电子与信息学报 1990 12 (2): 187-191 ISSN: 1009-5896 CN: 11-4494/TN

研究简报

一种求解电磁位差分方程组的快速收敛方法

崔铮,童林夙

东南大学电子工程系 南京

收稿日期 1988-10-1 修回日期 1989-3-13 网络版发布日期 2009-12-14 接受日期

摘要
本文根据电磁位差分方程组系数矩阵对角元素占优以及稀疏性的特点,将直接求解一维线性方程组的追赶法与迭代法相结合,发展了一种准直接法。该方法对计算机内存的要求小于直接法,而收敛速度快于连续超松驰迭代法,适用于计算各种静态电磁场的有限差分解。文中介绍了准直接法的基本原理与特点,并与连续超松弛方法进行了比较。

关键词 电磁场数值计算方法 有限差分法 连续超松弛迭代法

分类号

A FAST CONVERGENT METHOD FOR SOLVING THE FINITE DIFFERENCE EQUATIONS OF ELECTROMAGNETIC PROBLEMS

Cui Zheng, Tong Linsu

southeast University, Nangjing

Abstract
A quasi-direct solution (QDS) for the finite difference equations has been developed, which is basel on the sparse and pivot-dominant properties of the matrix and is the combination of the direct method and the iterative method. The principle and the features of QDS method have been discussed. A comparison has been made with the successive over-relaxation (SOR) method. It is shown that the QDS method requires less computer memory than the direct method, covnerges faster than the SOR method and is suitable for calculating the finite difference equations of electromagnetic and magnetostatic problems.

Key words Numerical method for electromagnetic field Finite difference method Successive over-relaxation method

DOI:

通讯作者

作者个人主页 崔铮;童林夙