

一种基于Doolittle LU分解的线性方程组并行求解方法

徐晓飞 曹祥玉 姚旭 陈盼*

空军工程大学电讯工程学院 西安 710077

Parallel Solving Method of Linear Equations Based on Doolittle LU Decomposition

Xu Xiao-fei Cao Xiang-yu Yao Xu Chen Pan*

Telecommunication Engineering Institute, Air Force Engineering University, Xi'an 710077, China

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摘要 矩阵方程的快速求解是矩量法计算电大问题的关键, LU分解是求解线性方程组的有效方法。该文详细地分析了Doolittle LU分解过程, 基于分解过程的特点, 在MPI(Message-Passing interface) 并行环境下, 提出了按直角式循环对进程进行任务分配的并行求解方法。实验证明该方法可以有效地减少进程间数据通信量, 从而加快计算速度。

关键词: Doolittle LU分解 线性方程组 并行计算

Abstract: The fast matrix solving is the key of the moment method when computing the electrically large issues. LU decomposition is a efficient algorithm for solving linear equations. In this paper, Doolittle LU Decomposition is described detailedly. Based on the decomposition characteristics, a parallel solving method looping over squares is proposed in MPI (Message-Passing interface) parallel environment. The experiments indicate that the method can decrease communication quantity between processes and accelerate computing speed efficiently.

Keywords: Doolittle LU decomposition Linear equations Parallel computation

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通讯作者: 徐晓飞 Email: x.f.xu@live.cn

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