

基于部分基变量的LP问题矩阵算法

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Matrix Algorithm for LP Problem Based on Partial Basic Variables

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摘要 基于部分基变量提出了LP问题的矩阵算法. 该算法以最优基矩阵的一个充分必要条件为基础, 首先将一个初始矩阵转化为右端项和检验数均满足要求的矩阵, 再转为检验数满足要求的基矩阵, 最后转化为最优基矩阵. 该算法具有使用范围广、计算规模小、计算过程简化、计算机易于实现的优势. 矩阵算法的核心运算是求逆矩阵的运算, 提出了矩阵算法的求逆问题, 讨论并给出了求逆快速算法, 该算法充分利用了矩阵算法迭代过程中提供的原来的逆矩阵的信息经过简单的变换得到新的逆矩阵, 该算法比直接求逆法计算效率更高.

关键词: LP问题 矩阵算法 部分基变量 最优基矩阵 求逆快速算法

Abstract: Matrix algorithm for LP problem based on partial basic variables is put forward, which is based on a necessary and sufficient condition of optimal basic matrix. At first the initial matrix of algorithm is transformed into the matrix meeting the requirements of right-constant and test number; then the matrix is transformed into basic matrix meeting the requirements of test number; finally the matrix is transformed into optimal basic matrix. Matrix algorithm has the advantages of wide usage, small calculation scale, simplified calculation process, easy realization and so on. The operation of finding inverse matrix is the key operation of matrix algorithm, so finding inverse matrix problem of matrix algorithm is put forward, and a fast algorithm finding inverse matrix is discussed and given. The fast algorithm can find inverse matrix by utilizing inverse matrix in the last iteration. The computational efficiency of the fast algorithm is higher than that of direct inversion method.

Keywords: linear programming problem (LP problem), matrix algorithm, partial basic variables, optimal basic matrix, fast algorithm finding inverse matrix

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