

论文

一般线性或非线性约束下的共轭投影变尺度方法

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摘要 梯度投影法是一类有效的约束最优化算法, 在最优化领域中占有重要的地位. 但是, 梯度投影法所采用的投影是正交投影, 不包含目标函数和约束函数的二阶导数信息. 因而, 收敛速度不太令人满意. 本文介绍一种共轭投影概念, 利用共轭投影构造了一般线性或非线性约束下的共轭投影变尺度算法, 并证明了算法在一定条件下具有全局收敛性. 由于算法中的共轭投影恰当地包含了目标函数和约束函数的二阶导数信息, 因而收敛速度有希望加快. 数值试验的结果表明算法是有效的.

关键词 [非线性规划](#) [共轭投影](#) [变尺度方法](#) [全局收](#)

分类号

A CONJUGATE PROJECTION VARIABLE METRIC ALGORITHM FOR LINEAR AND NONLINEAR CONSTRAINED OPTIMIZATION PROBLEM

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Abstract The gradient projection method is a class of effective algorithms for constrained optimization problem, and it has an important position in optimization. But the projection used in gradient projection method is an orthogonal projection which does not contain the second derivative information of objective and constrained functions, thus the convergence rate of gradient projection method is not contented. This paper introduces a kind of conjugate projection with which a conjugate projection variable metric algorithm for linear and nonlinear constrained optimization problem is presented. The global convergence of the algorithm is proved under certain conditions. Since the conjugate projection in algorithm finely contains the second derivative information of objective and constrained functions, the convergence rate of algorithm in the paper is expected to be accelerated. The numerical results illustrate that the algorithm in the paper is more effective than gradient projection method.

Key words [Nonlinear programming](#) [conjugate projection](#) [variable metric algorithm](#) [global convergence](#) [numerical e](#)

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