

论文

关于极大强单调算子的不精确邻近点算法的收敛性分析

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摘要:

该文研究集值映象方程 $0 \in T(z)$ 的解的迭代逼近, 其中 T 是极大强单调算子. 设 $\{x^k\}$ 与 $\{e^k\}$ 是由不精确邻近点算法 $x^{k+1} + c_k T(x^{k+1}) \ni x^k + e^k$ 生成的序列, 满足 $\|e^{k+1}\| \leq \eta_k \|x^{k+1} - x^k\|$, $\sum_{k=0}^{\infty} (\eta_k - 1) < +\infty$ 且 $\inf_{k \geq 0} \eta_k = \mu \geq 1$. 在适当的限制下证明了, $\{x^k\}$ 收敛到 T 的一个根当且仅当 $\liminf_{k \rightarrow +\infty} d(x^k, Z) = 0$, 其中 Z 是方程 $0 \in T(z)$ 的解集

关键词: 邻近点算法, 极大强单调算子, 不精确方法

分类号:

47H09, 47H10, 47H17

On the Convergence Analysis of Inexact Proximal Point Algorithms for Maximal Strongly Monotone Operators

CENG Liu-Chuan

Abstract:

The purpose of this paper is to study the iterative approximation of solutions to the set valued mapping equation $0 \in T(z)$ where T is a maximal strongly monotone operator. Suppose that $\{x^k\}$ and $\{e^k\}$ are the sequences generated by the inexact proximal point algorithm $x^{k+1} + c_k T(x^{k+1}) \ni x^k + e^k$ such that $\|e^{k+1}\| \leq \eta_k \|x^{k+1} - x^k\|$, $\sum_{k=0}^{\infty} (\eta_k - 1) < +\infty$ and $\inf_{k \geq 0} \eta_k = \mu \geq 1$. Under suitable restrictions the author proves that $\{x^k\}$ converges to a root of T if and only if $\liminf_{k \rightarrow +\infty} d(x^k, Z) = 0$

Keywords: Proximal point algorithm, Maximal strongly monotone operator, Inexact method.

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