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NEW RESULTS OF MIXED MONOTONE OPERATOR EQUATIONS

Tian Wang — Zhaocai Hao

Abstract. In this article, we study the existence and uniqueness of fixed points for some mixed monotone operators and monotone operators with perturbation. These mixed monotone operators and monotone operators are e-concave-convex operators and e-concave operators respectively. Without using compactness or continuity, we obtain the existence and uniqueness of fixed points by monotone iterative techniques and properties of cones. Our main results extended and improved some existing results. Also, we applied the results to some differential equations.

1. Introduction and preliminaries

Throughout the paper, E is a real Banach space with norm $\|\cdot\|$. P is a cone in E if it satisfies:

(1) if $x \in P$, $\lambda \geq 0$ then $\lambda x \in P$;
(2) if $x \in P$, $-x \in P$ then $x = \theta$,

where θ is zero in E, $P^+ = P - \{\theta\}$.

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