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OPERATOR NORM INDEPENDENT SOLUTION OF SPLIT EQUALITY EQUILIBRIUM PROBLEM AND FIXED POINT PROBLEM FOR CERTAIN MULTIVALUED MAPS

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Abstract. In this paper, we introduce a new multivalued k-strictly pseudononpsreading mapping T with type-one condition and prove that the set of fixed points of T is closed and convex. We also proved that $I-T$ is demiclosed at zero without the condition that the set of fixed point of T is strict. Using this new mapping, we study the strong convergence of a new iterative algorithm for approximating a common element of the set of solutions of a system of split equality generalized mixed equilibrium problems and fixed point problem of k-strictly pseudononspreading multivalued type-one mappings without a prior knowledge of the operator norm in real Hilbert space. Furthermore, we give a numerical example of our main theorem in real Hilbert spaces. Our result improves and complements some recent corresponding results in the literature.

Keywords. Finite family, split equality, generalized equilibrium, fixed point problems, k-strictly pseudononspreading, multivalued mappings.

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1. Introduction

Let X be a nonempty set and $T : X \to 2^X$ be a multivalued mapping, a point $x^* \in X$ is called a fixed point of T if $x^* \in Tx^*$. If $Tx^* = \{x^*\}$, then x^* is called a strict fixed point of T. We shall denote the set of fixed points of T by $F(T)$. Let C be a nonempty closed subset of a real Hilbert space H and $CB(X)$ denote the family of nonempty closed and bounded subsets of X. The Hausdorff metric on $CB(X)$ is defined by

$$H(A,B) = \max\left\{\sup_{x\in A} d(x,B), \sup_{y\in B} d(y,A)\right\},$$

for $A, B \in CB(X)$, where $d(x,B) = \inf\{||x-y|| : \quad y \in B\}$.
Let X be a normed space, a subset C of X is called proximinal if for each