

# EXISTENCE OF FIXED POINTS AND BEST PROXIMITY POINTS OF $p$ -CYCLIC BOYD-WONG CONTRACTIONS\*

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## Abstract

We introduce a new contraction map called  $p$ -cyclic Boyd-Wong contraction, defined on the union of  $p$  ( $p \geq 2$ ) non empty subsets of a metric space. We give sufficient conditions for the existence of a unique fixed point, best proximity point or periodic point for the map and an iterative method is used to approximate the fixed point and the best proximate point.

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**keywords:**  $p$ -cyclic maps,  $p$ -cyclic contractions,  $p$ -cyclic non expansive maps, best proximity points.

## 1 Introduction and preliminaries

There are many interesting and useful generalizations of the celebrated Banach contraction theorem. Some of them are given in the literature ([1] to [10]). One of them is given by Boyd and Wong in [1]. The contraction given by Banach is essentially uniformly continuous whereas the contraction given by Boyd and Wong is upper semi-continuous from the right. The continuity condition of the contraction map is thus relaxed. In [6], the following type of maps are introduced, where the maps are not continuous.

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