

Chandok, Sumit; Narang, T. D.

Common fixed points and invariant approximation for Banach operator pairs with Ćirić type nonexpansive mappings. (English) [Zbl 1276.47073](#)

Hacet. J. Math. Stat. 40, No. 6, 871-883 (2011).

For a metric space (X, d) , a continuous mapping $W; X \times X \times X \rightarrow X$ is said to be a convex structure on X if, for all $x, y \in X$ and $\lambda \in [0, 1]$, $d(u, W(x, y, \lambda)) \leq \lambda d(u, x) + (1 - \lambda)d(u, y)$ holds for all $u \in X$. The metric space (X, d) together with a convex structure is called a convex metric space.

The ordered pair (T, I) of two self-maps of a metric space (X, d) is called a Banach operator pair if the set $F(I)$ of fixed points of I is T -invariant, i.e., $T(F(I)) \subset F(I)$. In Section 2.1 of this paper, two fixed point for Banach operator pairs with Ćirić nonexpansive mappings in convex metric spaces are proved, which extend and improve the results by Lemma 2.1 and Theorem 2.2 from *N. Hussain* [*J. Math. Anal. Appl.* 338, No. 2, 1351–1363 (2008; [Zbl 1134.47039](#))].

In Section 2.2, the authors prove the existence of some common fixed points of best approximation for a Banach operator pair with Ćirić type nonexpansive mappings.

In Section 2.3, a common fixed point theorem for Banach operator pairs with generalized nonexpansive mappings in metric spaces is proved. The results from Sections 2.2 and 2.3 extend and improve some recent results of the authors and other results from the literature.

Reviewer: [Valeriu Popa \(Bacău\)](#)

MSC:

[47H10](#) Fixed-point theorems

[54H25](#) Fixed-point and coincidence theorems (topological aspects)

[47H09](#) Contraction-type mappings, nonexpansive mappings, A -proper mappings, etc.

Cited in **3** Documents

Keywords:

fixed points; nonexpansive mappings; Banach operator pair; convex metric space