APPROXIMATING FIXED POINTS OF GENERALIZED NONEXPANSIVE MAPPINGS VIA FASTER ITERATION SCHEMES

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Abstract. In this paper, we approximate fixed points of generalized nonexpansive mappings in Banach spaces under relatively faster iteration schemes and also prove some weak and strong convergence theorems. Our results generalize and improve several previously known results of the existing literature.

Keywords: generalized nonexpansive mapping; weak convergence; strong convergence; condition (A').

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1. Introduction and preliminaries

Generally, a Banach space E is said to have the fixed point property for nonexpansive mappings provided every nonexpansive self-mapping of every nonempty, closed, convex, bounded subset K of E has a fixed point. The fixed point property heavily depends upon geometric characteristics of the classes of Banach spaces (under consideration) e.g., uniformly convex Banach spaces, strictly convex Banach spaces and similar others. Nevertheless, if the norm of a Banach space E has suitable geometric properties such as: uniform convexity and strict convexity, then every nonexpansive self-mapping defined on every weakly compact and convex subset of E has a fixed point. In such instances, E is said to have the weak fixed point property. Here, it can be