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Approximating fixed points of nearly asymptotically nonexpansive mappings in CAT(k) spaces

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Abstract. In this paper we approximate common fixed points of nearly asymptotically nonexpansive mappings under modified SP-iteration process in the setting of CAT(k) spaces and establish strong and Δ-convergence theorems. Our results generalize and improve the corresponding known results of the existing literature.

Keywords: Δ-convergence; Modified SP-iteration process; Nearly asymptotically nonexpansive mapping; Common fixed point; CAT(k) space

Mathematics Subject Classification: 47H09; 47H10

1. INTRODUCTION

The class of asymptotically nonexpansive mappings was introduced by Goebel and Kirk [8] as an important generalization of the class of nonexpansive mappings. They proved that if K is a nonempty closed and bounded subset of a uniformly convex Banach space, then every asymptotically nonexpansive self-mapping of K has a fixed point. There are many papers dealing with the approximation of fixed points of asymptotically nonexpansive mappings and asymptotically quasi-nonexpansive mappings in uniformly convex Banach spaces, using modified Mann, Ishikawa and three-step iteration processes (see, [8,16,23,24,26,27,29–34]).

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