ARAB JOURNAL OF
MATHEMATICAL SCIENCES

Arab J Math Sci 24 (2) (2018) 166–181

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

ANUPAM SHARMA

Department of Mathematics and Statistics, Indian Institute of Technology, Kanpur 208 016, India

Received 11 August 2017; revised 16 March 2018; accepted 17 March 2018
Available online 26 March 2018

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]).

E-mail address: anupam@iitk.ac.in.
Peer review under responsibility of King Saud University.

Production and hosting by Elsevier

https://doi.org/10.1016/j.ajmsc.2018.03.002